ATCO NEWSLETTER

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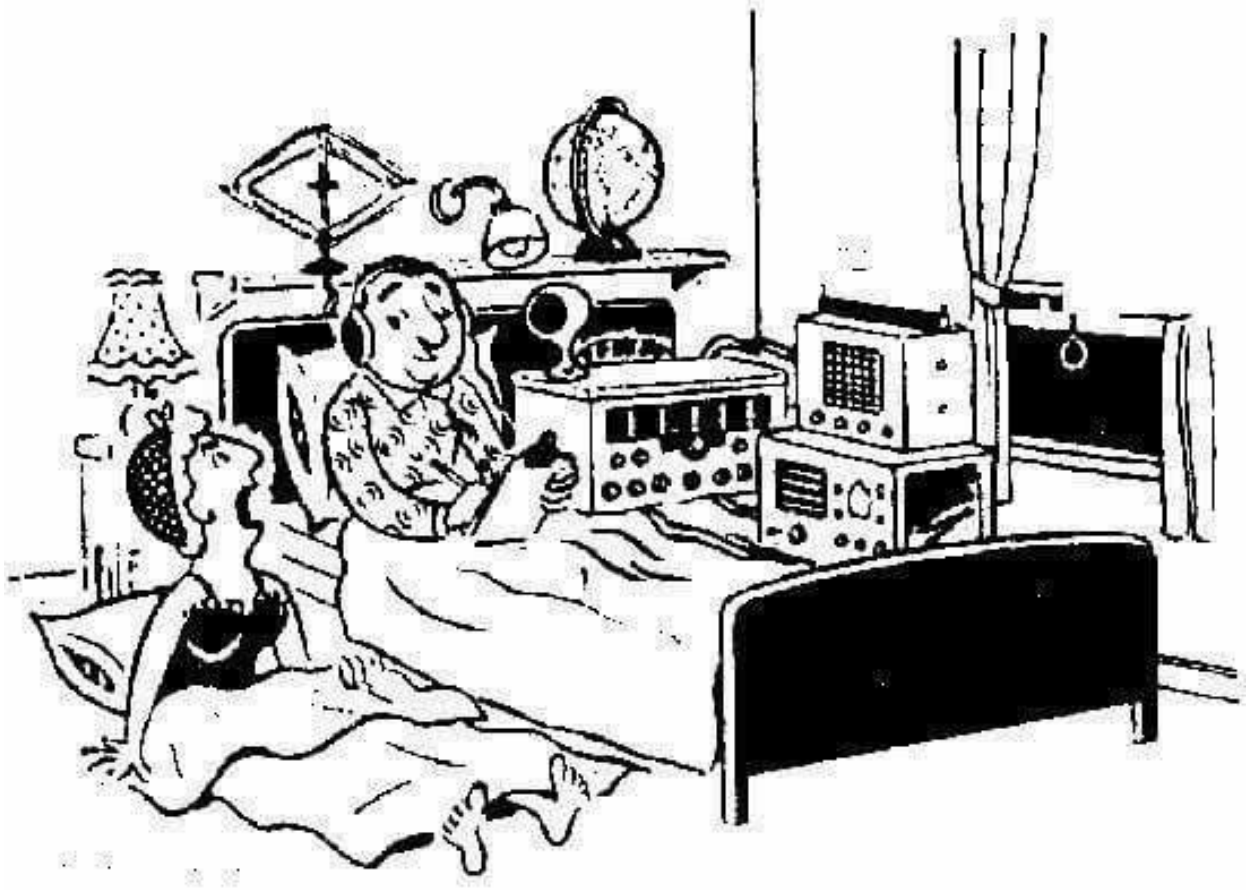
The ATCO newsletter is the official publication of a group of amateur television operators known as "AMATEUR TELEVISION IN CENTRAL OHIO Group Inc" published quarterly (January, April, July, October)

ATCO SPOTLIGHT TOPIC



…WA8RMC

ACTIVITIES ... from my Workbench

Well, we're in the middle of summer and here I am trying to find a plausible excuse for not cutting the grass. Looking out the window, I see nothing but heavy rain coming down. **How about that!** I'm sitting here trying to think of an **excuse** and what I find is a good **reason**. But I digress. Let's get back on track.

First and foremost is our ATCO repeater re-work. I wasn't planning for this right now but I'm forced into replacing all eight of our repeater Heliax RF feedlines. The building we're on is having the roof replaced so we must remove all feedlines then re-install them after they construct new roof feedthroughs. It's a $40-$50 million overall renovation project to replace all windows and re-caulk the entire 42 story building going on for about 4 years now. Most is now complete except for the leaking roof over the communication room. I got the word to remove our feedlines about 3 weeks ago with a 60-day window to complete it. Sounds like an easy chore but re-working 8 sealed Heliax cables in the gridwork on top of the building takes a lot of time. About 20 total hours into it, I now have the lines re-routed and secured. The repeater power is back on but first the transmitters need testing for SWR to make sure I got the right cables connected to the correct transmitter. The 147.48 - 446.350 link system is on and OK but the rest must be verified.

As soon as the ATCO repeater is returned to normal operation, I need to remove our MESH node there and replace it with a dual polarity / dual frequency unit. The assembly is ready to go up but, as stated above, the repeater work comes first. I'm expecting to remove the existing unit on Saturday 7/23/22 weather permitting. I need to get the new assembly from Ken, W8RUT, and weatherproof it before installation hopefully the following week. We'll see how it goes.

I'm still working on my new DATV VersaTune receiver design project but a supply chain limitation is preventing me from buying the needed Raspberry Pi computer boards to continue software design work. The board I now have failed and I can't find the problem. The Raspberry Pi foundation has made suggestions but to no avail so far. I truly believe it's a hardware failure so I'm ready to give up on that. As soon as I can get at least one good board, I'll send it to the guy in the U.K. doing some of the software work. Right now, the best estimate for Raspberry Pi delivery is **August 2023!!!!** Therefore, further work is on hold for a while. **If any of you guys have a Raspberry Pi model 4 with 2GB or more memory that you will sell me, I would be forever grateful**.

(News flash!!! I went to Microcenter on Saturday and was told there are now 10 RPIs in stock that came in the day before. I quickly grabbed 2 but was told there is a limit of one per customer. So, I bought one, put it in the car and went back in. Then I was told it is really one every 24 hours but they will make an exception for me this time.

My hardware design is done and I have a complete prototype but software debugging is the issue as there is no way to test it right now. There are boards available but at an extremely high price (over $200 each) from unreliable Ebay sellers so I'm not going to chance that one.

We REALLY need to have a higher participation on the ATCO repeater. How about new people?? We need to have some volunteers get on the phone and wake up some of us who haven't been active in some time. Do any of you have a spare ATV transmitter (analog or digital) that you can loan or sell to a prospective ATVer so they can try it? I'm working hard to restore our existing ATV repeater. It will be sad if no one will use it.

Last note: I'd like to re-establish our Saturday breakfast activity. We used to meet on the first Saturday of each month so let's do that again! Roger, WB8DZW, you used to designate the restaurant so can you start it again?
Also, I'd like to start having our Spring/Fall events again. Since we can no longer use the ABB cafeteria and since Troy, AC8XP, left the area, the Otterbein facility may not be available, so we need to find a place to meet. **Any suggestions? Let me know**. We MUST find something because I'm accumulating a lot of stuff for door prizes that I don't want to throw away! We normally have the Fall Event at the end of October, so let's tentatively assign it as Sunday October 30 at noon.

That's it for now,
…WA8RMC

ATV ACTIVITIES AT HAMVENTION 2022:

On the right is the truck that provided the anchoring support for two masts and antennas that were used during the booth's three-day crosslink demo. It was configured to run the link to the DARA ATV repeater and back. The shorter mast in the photo is a multi-section push-up mast made by Will-Burt Company called the "Hurry-Up" mast. Its extended height was 25 ft that supported the 70cm Yagi. We decided to extend this mast at its full height, although such an extension was determined to be severe overkill because the repeater's 2 MHz wide DVB-T ATV signal was being received at -55dBm with a 17 dB SNR at the 7 ft point. The other mast supported the 23cm Loop Yagi at 30 ft. We used military aluminized poles for this antenna and attached the arrangement to a bumper hitch mast support. The full 30 ft height was required for 23cm due to the antenna's pointing azimuth that was inconveniently bore sighted a nearby tree. We were still able to make the 22-mile link back to the DARA site on 23cm (17 miles) in spite of leaf attenuation and the low 5-watt power level on DVB-T. To add to this attempt, there was also considerable vegetation beyond the special "tree attenuator" between the fairgrounds and the ATV repeater in Huber Heights.

Pictured below on the right is the receiving end of the crossband link. A cavity was required to keep the very local QRM out of the ATV receiver's front end (HV110).

Pictured below within the lower left of the photo is the HV310 and amplifier used for the 23cm's transmitter crosslink. Looking closely on the amplifier are the words "HILLBILLY ATV GO KIT". The monitor/receiver to the right-front of the Hillbilly Go Kit is an HV122A test jig (for troubleshooting, if it was required). The center-background gear is an HV-110 receiver/monitor (not used for the demo).

On the right are a few recognizable faces within the ATV community at large (do any of these guys photos show up at the post office???)

Left to Right Mike Collis WB6SVT, Dave Schwab KE8DOC, Dave Stepnowski KC3AM, Vince Vitullo N3BFZ, Charles Beener WB8LGA.

At right: A lucky participant Dan Brieg, KM6PO won the HV110 receiver door prize at the ATV Dinner on Friday night. He is the guy smiling in the photo!

On the right is Art Towslee, WA8RMC, with Mike Collis, WB6SVT, holding the monogrammed ATN shirt that he volunteered to wear during the next day's ATV Forum during his presentation.

(They could have taken a better picture! I'm REALLY not unhappy about it)

HAMVENTION ATV FORUM VIDEO ON UTUBE

Control+click on the following for the complete U Tube video of the 2022 Hamvention ATV Forum.

ATV Forum Hamvention 2022 unedited - YouTube
…AH2AR

HAMVENTION 30 SECOND CLIP

Here's a 30 second clip of us at the ATN/ATCO booth at Hamvention. Guys, sorry if I seem to have ruined the video quality and content. Blame Dave, AH2AR, for he was doing the camera work. I'll see if I can do better next year. Control+click to watch video.
…WA8RMC
https://youtu.be/ANTgKaSmOP0

SK, GARRY COTTER, N8CXI

Garry Cotter, age 71, of Columbus, passed away on Wednesday, June 8, 2022. He was born in Columbus on February 9, 1951 to the late John "Jack" and Mildred "Millie" Cotter. Garry grew up playing the piano and learning many different instruments. He never could read music, but could pick up an instrument and play a song just by teaching himself. He also had "perfect pitch" and was known to tune all of the instruments used by the folk group at Mass. Garry played in the "pit band" for several musicals while attending Ohio Dominican College. He also composed and performed his original composition on piano there for the play, "Oedipus".

While attending Ohio Dominican in his freshman year, he met Linda McCard- Horn. They married a few years later and just celebrated their 49th wedding anniversary on June 3.

Garry (call sign N8CXI) was also a member of the amateur radio community for about 40 years and a lifetime member of ARRL, achieving Novice, Technician, General, and, finally, Advance class licenses. He was less active recently, but joined his "Ham" friends on Zoom with the local ATV group.

In addition to his parents, Garry is preceded in death by his nephew, Nathan Myers; Mother and Father-in-Law Arnold (Irmgard) Horn; and many aunts, uncles, and cousins.

He will be deeply missed by his loving wife, Linda Cotter; siblings, John (Evelyn) Cotter, Maureen (Donald) Kocarek, Elaine (Ronald) Myers; Sister-in-Law Patricia (Ronald) Spence and Brother-in-Law Steven (Lisa) Horn; many nieces, nephews, cousins, longtime friend Joseph (Alice) Brehm; many Ham radio friends, and our loving St. Bernard Kirby.

Arrangements have been entrusted to SCHOEDINGER NORTHEAST FUNERAL HOME. In lieu of flowers, donations in Garry's name may be made to Charity Newsies by visiting https://charitynewsies.org/ways-to-give/donate-online/.

STRONG RF SIGNAL RECEIVER DESENSE

*The following is a "**must read**" if you experience poor ATV reception. Perhaps your problem may be other issues but, in my experience, the inability to receive an otherwise strong RF signal may be signal desense caused by nearby strong signals close but not directly on your desired frequency. It could be fooling you because you hear nothing but background noise-floor noise and not a trace from the signal you want to receive. Sit back, get a cup of coffee (or something stronger) and digest the important material below.*

Thanks go to Paul for this enlightening article. Reprinted with permission. Paul has a wealth of microwave related material on his web site at: www.w1ghz.org and is the editor of the "Microwavelengths" column in ARRL's QST magazine.
…WA8RMC

Great Noise Figure, but still can't hear?

Paul Wade W1GHZ ©2022 w1ghz@arrl.net

Most of us have taken preamps to a conference to measure noise figure. Sometimes we are disappointed, but most recent devices provide very good measured noise figures. Then when we get home, they don't improve things as much as we had hoped.

Early GaAsFET preamps provided good noise figure with a terrible input match, very critical tuning, and sometimes marginal stability. Connecting a real antenna could produce different results and even oscillations. Modern designs tend toward unconditional stability and better matching, so that real world performance is good.

At VHF and UHF frequencies, MMICs are available with excellent noise figure with no tuning, making broadband preamps possible with minimal effort. Except for EME, there seems to be little need for anything fancier.

What's the problem?

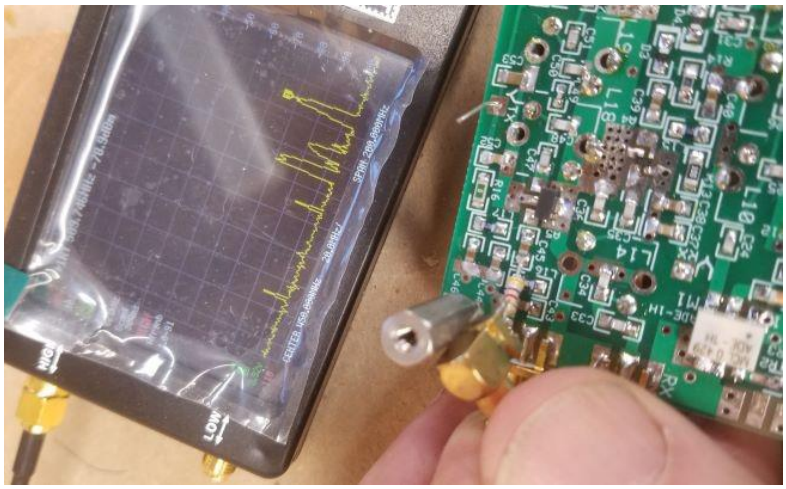
I designed a new 432 MHz transverter in 2018, and was pleased with the performance. The front end was an untuned MMIC, followed by two printed combline filters separated by a second-stage amplifier to provide good band-pass characteristics. It worked very well for a couple of years.

Activity in this area is sporadic, so I leave the rigs monitoring beacons for 222 and 432 MHz, VE2FUT/b at 195km distant is weak but solid, a good performance monitor. Sometime last year, the 432 beacon became hard to find; perhaps I should have been concerned. Then in the 2022 January VHF contest, I found that the background noise was very high to the east, so that I was unable to make any contacts in that direction. I suspected that a neighbor had gotten a new gadget and I would have to chase it down when the weather got warmer.

During the 2022 Spring Sprints, N1JEZ complained of overload from me on 222 MHz Afterward, we ran some tests; his mast-mounted preamp plus new transverter had too much gain – easily fixed. Then we ran a quick test on 432, and I couldn't hear him. Something was seriously wrong.

After tests confirmed that the problem was the transverter, I opened it up and started tracing signals using a TinySA [2] spectrum analyzer, probing with a 470-ohm resistor with short leads on an SMA connector, in Figure 1. The resistor minimizes loading on the circuit and only reduces signal level by perhaps 10 dB – not a problem for a sensitive spectrum analyzer. I quickly found that the front-end MMIC was not amplifying. I also noticed the fairly strong digital TV signals in Figure 1 being picked up by the short probe, roughly -80 dBm around 470 and 509 MHz.

Fig. 1 Probing RF circuit with Spectrum Analyzer thru isolating resistor probe.



The failed front-end MMIC was a Minicircuits PSA4-5043. I replaced it with a PGA-103, which is slightly larger and draws more current, but still has a low noise figure; I thought it might be more robust than the one that failed.

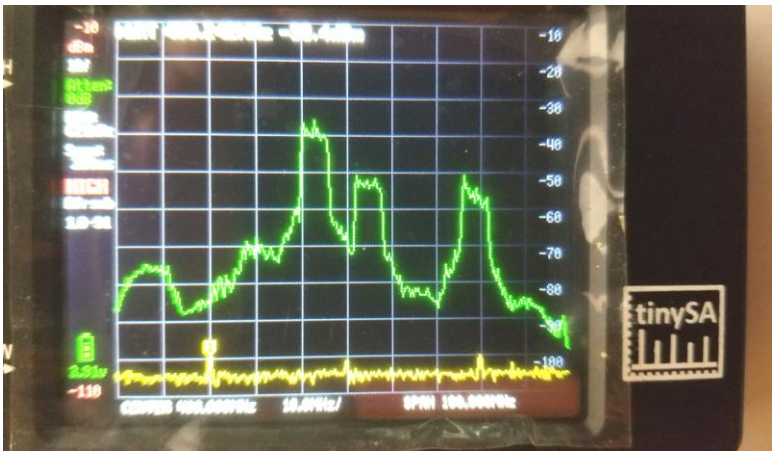
After things were back together, I connected the antenna and still couldn't hear the beacon. The noise floor seemed high and rose much higher with the antenna to the east. Maybe that TV signal was adding noise.

I dug out a combline filter [3] that I built several years ago to see if it would help. It has about 2 dB loss, but 470 MHz is 52 dB down. Putting it in front of the transverter reduced the noise floor by 20 dB and eliminated the additional noise to the east. And the beacon popped right up in the panadapter.

What is going on?

Obviously, the problem is caused by out-of-band signals that the filter attenuates enough. My QTH is line-of-sight to all the TV broadcast transmitters – I can see the towers, 42km away, out the shack window. I connected the TinySA spectrum analyzer to a WA5VJB[4] log-periodic antenna for 400 to 1000 MHz, took it outside, and pointed it at the towers, (283 degrees). The 470-476 MHz TV channel peaked at -32 dBm, with additional channels at 482-488 MHz and 506-512 MHz nearly as strong. The TinySA display in Figure 2 shows the DTV signals filling the 6 MHz channels

Fig. 2 DTV signals received on log-periodic antenna



How much of this power gets into the 432 MHz yagi?

HEADING 308° 270° 90° 103°(back of Yagi)

470-476 -52 -54 -48 -44 dBm WCAX ch3
482-488 -64 -62 -52 -51 WFFF ch44
506-512 -50 -53 -42 -40 WPTZ ch5
578-584 -64 WETK ch33
174-180 -66 -72 WVNY

The highest power into the Yagi is off the back. This is not surprising – at frequencies above the operating frequency, the directors on the Yagi act as multiple reflectors, while to the rear there is only one reflector. A year or so ago, the FCC reshuffled the DTV channels, moving several of them closer to 432 MHz. I had to rescan the TV set, but hadn't noticed any immediate effect on 432 – I wasn't paying close enough attention.

Intermod

A DTV signal is spread out over the entire 6 MHz channel, as seen in Figure 2. To a narrow band receiver, it is 6 MHz noise source. If we just consider the fundamental signals, the sum and difference frequencies cover the range of 6 to 42 MHz; if the DTV signals get into the mixer, any common IF frequency would suffer. If the third-order inter-modulation products[4], 2F1 – F2 and 2F2 – F1, are considered, the result is even worse. The combination of the strongest channel 506-512 MHz with either 470-476 MHz or 578-584 MHz results in IM products from 428 to 446 MHz, effectively wiping out the entire 70cm band. The untuned front end of my transverter adds another 20 dB or so to the signal levels in the table above, enough to cause intermod in almost any semiconductor device. For a device

with a high IP3 (third order intercept point), the calculated intermod level might be 100dB down, but that is still above the noise floor.

Solution

Clearly, the solution is to keep the DTV signals out of the front end. The comb-line filter [2] has about 2 dB loss, increasing system noise figure by 2 dB, but it is 52 dB down at 470 MHz, with rejection increasing at higher frequencies. With the filter, the noise floor dropped by roughly 20dB, and is low in all directions. The beacon popped right up at the expected level, so the filter has cured the problem without significantly affecting sensitivity. Better to lose a small amount than not to hear anything. I had previously noticed the need for a filter on 222 MHz, after a DTV station was moved to Channel 13 (210-216 MHz). The filter here reduced the noise floor by at least 6 dB. I haven't checked recently, but the table above shows nothing on Channel 13. The station that had been there is now on 482-488 MHz. The new station on 174-180 MHz has a signal level of -51 dBm on the 222 MHz antenna. Having a filter before the front end should be adequate for anything but EME. Some EME stations use cavity preamps – a good one should keep the DTV noise down and have excellent noise figure.

Summary

All sorts of new electronics devices are generating increased RF noise. Broadcast signals were pretty stable for 50+ years, so they could be dealt with once, but today things are shifting around. Whatever the source, it pays to keep track of your noise floor. Monitoring the noise floor and the signal level of beacons on a panadapter makes accurate comparisons possible. Don't trust your ears – noise increases are often small and insidious. The morning after I finished the first draft of this paper, I noticed that the noise floor on 222 MHz had increased by 5 or 6 dB, not noticeable by ear. Since the beacon level can vary by 30dB from day to day, that is a poor indicator. Swinging the antenna around found that the increase was mainly in the direction of the TV towers; something had changed. It appears to have gone back down after a day or two. But that evening, the noise floor on 432 jumped about 15 dB, with dirty signals wandering through the passband. Rotating the antenna made no difference, so I suspect it is some new gadget in the house. This one went away after a bit, so I'll have to chase it down.

So, keep an eye on your noise floor. If you wait for a contest or opening, like I did, you might get an unpleasant surprise and miss some QSOs.
73 de Paul, W1GHZ, Cabot, Vermont

Notes

1. Paul Wade, W1GHZ, "432 MHz Transverter for an SDR."
http://www.w1ghz.org/xvtr/432MHz_Transverter_for_an_SDR.pdf
2. www.tinysa.org
3. Paul Wade, W1GHZ, "Combline Filters for VHF and UHF."
http://www.w1ghz.org/filter/Combline_Filters_for_VHF_and_UHF.pdf
4. www.wa5vjb.com
5. https://www.everythingrf.com/community/what-is-intermodulation-distortion

FCC PROPOSES RECORD FINE FOR INTERFERENCE

FCC Proposes Record $34,000 Fine for Alleged Interference and Unauthorized Transmissions During Idaho Wildfire

The Federal Communications Commission (FCC) has proposed a $34,000 fine against Jason Frawley of Lewiston, Idaho, for allegedly interfering with radio operations of the U.S. Forest Service during firefighting activities for the Johnson Creek Fire near Elk River in July 2021. The FCC issued a Notice of Apparent Liability for Forfeiture (NAL) on June 8, 2022 to Frawley.

The FCC states in the NAL that Frawley holds an Extra-class Amateur Radio Service license, WA7CQ, and is the owner/operator of Leader Communications LLC, licensee of eight microwave licenses and one business license. The FCC alleged in the NAL that "On July 17, 2021, using his amateur hand-held radio, Frawley transmitted five (5) times, and on July 18, 2021, Frawley transmitted three (3) times on frequencies allocated and authorized for government use, apparently causing harmful interference with his apparently unlawful transmissions." The frequencies with which Frawley is alleged to have interfered were being used to coordinate firefighting crews from the U.S. Forest Service and Idaho Department of Land to fight the 1,000- acre Johnson Creek Fire, including the communications between fire suppressant aircraft and ground crews.

The NAL includes details of the Forest Service's complaint and the FCC's investigation. On July 18, 2021, the Johnson Creek fire operations section chief drove to the Elk River airstrip and hanger where Frawley, who had disclosed his location, was found holding a radio next to a banner that read, "Leader communications." Frawley admitted to transmitting on government frequencies and identifying himself as "comm tech." He argued that he was not trying to cause interference but instead was transmitting to provide information to the fire fighters. "[A]t no time was I trying to disturb any other communications or air traffic. I was honestly just giving them information I had since I have been working on the butte since the early 90's . . . " wrote Frawley in his October 15, 2021 response to a Letter of Inquiry from FCC Special Counsel Laura Smith. The FCC however concluded that "Frawley's admitted unauthorized transmissions on frequencies for which he did not have a license had the potential to cause substantial harm to life and property."

The FCC held that Frawley, by his own admission, apparently willfully and repeatedly violated the Commission's rules when he made eight separate radio transmissions on a frequency for which he did not have a license. The FCC stated that unauthorized transmissions on frequencies licensed to public safety entities using those frequencies to respond to emergencies also constitutes a violation of Section 333 of the Communications Act of 1934, as amended. A news release from the FCC states that the fine is the largest of its kind proposed. "The Communications Act prohibits such interference with authorized radio communications and the Commission takes very seriously any interference with public safety communications," said the FCC. In a separate statement, FCC Chairwoman Jessica Rosenworcel added, "You can't interfere with public safety communications. Full stop. So today we propose the largest fine of its type for this interference.

W4HTB's UNUSUAL BAND OPENING

Hank is located in Bowling Green Kentucky. The attached video documented his reception of WB8LGA in Morrow County, Ohio, located 311 miles from Bowling Green. The image was taken in Hank's Ham Shack and it is of the KY4TV ATV repeater, located in Bowling Green Kentucky that was receiving W8ZCF's video located in Cincinnati Ohio, a 182 mile Reinforce path.

Here is Hank's account of the Band Opening:
On June 14th and 15th a group of ATVers experienced a very rare opening which we've only experience 2 or 3 times in the past 20 years. The magnitude of these openings is frequently found along the gulf coast into Texas and western states.

The ATV group has existed for over 30 years meeting each morning 24/7 around 1130 utc for an hour or so.
Our purpose is to test and improve our systems by checking propagation between each station. Presently there are 10 or so that gather on zoom (same ID and pw as weekly nets from ATCO and DARA)
These stations range from northern OH to Southern KY and PA.
Zoom provides us with a medium whereby we can see our own video signal at all the receiving stations.
On the morning of June 14th I really got excited when experiencing one of these openings, especially this one as we've had our local ATV repeater copy W8ZCF Farrell from Cincinnati some 182 miles.

This was the first time for an out of state contact
On June 15th great propagation still existed as I was able to copy Charles WB8LGA Maringo O. live video some 362 miles.
With openings like this power levels don't make much difference as we ran from 2 watts to 150-200w with P4-P5+ pictures. Hopefully we will have frequent openings and will pique the activity of other ATVers in the Midwest.
Presently we're running A5 on 439.25mhz but in past openings Digital has worked well for us,
but this opening caught us off guard and none were setup for digital
…W4HTB

ANALOG TV's FOR NTSC WEAK SIGNAL ATV RECEPTION

According to FCC Rule 15.118 - https://www.ecfr.gov/current/title-47/chapter-I/subchapter-A/part-15/subpart-B/section-15.118 - all TV's imported and marketed in the USA must have NTSC tuners capable of cable channels 1-125 still. So, if you/they are seeing TV's that won't receive NTSC on cable channels, they probably did not arrive in this country legally.

What I find difficult for many new to ATV is that setting up a newer TV by having to go through the scan process and not over loading them to distortion from their own transmitter as the signal source thus skipping over as a valid occupied channel. Each scan for valid channels can take many frustrating minutes. Also annoying is the blue screen mode when searching for sync bars in the snow while rotating the antenna for DX. Sometimes you can find older TVs in second hand stores that might be more suited to NTSC ATV.
…Tom W6ORG

Dave Pelaz says:
There are thousands of manually tuned TV sets available. As an example, look up "Bentley TV "on eBay and there are hundreds available at any given time. Bentley is an excellent small CRT-type B&W TV set that is great for weak signal work.

There are also a number of flat panel color tv's that provide channel-manual tuning. One of the model numbers is Sansui model number SLED1980D. It's a 19-inch model that weighs less than 8 pounds so it can be mailed without excessive cost. Another plus is that the Sansui also doesn't incorporate blue screen which is very important. This Sansui comes with HDMI input, composite video input, and off-air output via F-connector. Of course, these TV sets are not available "new". The Sansui model comes up on eBay once or twice every few months. There is only one available currently. Have patience and you can find one.
… AH2AR Dave

By the way, there are other Sansui 19inch flat panel model numbers that are excellent choices. I will put a short article together about what I have found that works fine for analog ATV. Beware as tv's may have thousands of hours on the screen, so you have to be willing to look carefully in order to find a good unit.

From Mike Collis:
Early on with the scanning TV sets, most allowed manual channel entry. Nowadays only scan to set up the channels.
…WA6SVT Mike

From Tom O'Hara:
There is a lot of good video still possible between a one and a zero... just say 'in
…W6ORG Tom

From Dave again:
There are no shortages of analog tv's whatsoever on eBay. As long as there is eBay, there will always be a large selection of TV sets available. By the way…. I think I remember hearing somebody stating that CW was dead!
We also have a large thrift store in the area that have "giveaway prices" on TV sets.
…Dave

From Jim Williams:
"I have also heard it reported that hams wishing to purchase a new TV receiver are finding many of them no longer include an NTSC, analog receiver."
…Jim KH6HTV

ANALOG TV SETS STILL AVAILABLE ON "USED" MARKET

The question came up last week regarding the difficulty finding a good analog TV to use with PC Electronics transceivers or TVC-series downconverters. There are two fundamental problems with finding working TVs for A5 use. One primary problem is that all new TV sets have a programmed-channel scanning function that makes it difficult to use it to receive an "off-air" Channel three. You must first scan the channel and you have to depend upon having an active channel in order to retrieve that channel. The other problem that is encountered is that all new TV sets have a "Blue-screen" function that makes it impossible to see a "snow-field" when there is no signal present. Consequently, finding used TV sets that work for analog ATV use may on the surface seem to be a showstopper. However, there are literally hundreds of used TV sets available through e-bay. In this article I have identified several models that are widely available on e-bay that work fine as these used sets can be re-purposed for ATV use.

"**BENTLEY TV":** At any given time, there are literally hundreds of these TV sets available on e-bay. The majority of these TV sets were made around 2010-2011. Having an extremely small "footprint". the TVs take up little shelf-room in the ham shack. Varactor tuning allows you to continuously tune through the lower VHF channels. These TVs have Black & White CRT's and have a 5-inch diagonal screen. There are several "hacks" that can be accomplished for re-purposing these TVs. Firstly, be aware that the proprietary DC input plug has a negative voltage center-pin on its proprietary connector. Hams in this region usually bypass the DC plug by installing another chassis style barrel connector where it can be powered by a 12 VDC power supply. The other issue encountered with these TVs is that it requires a 3.5mm male mono plug jack to hook up the downconverter IF output into its external TV input jack. The solution to this issue is to simply use an F-connector to 3.5mm plug adapter, or an alternate solution is to install a chassis mount female F-connector on the side of its enclosure. Once these modifications are made, powering the TV and hooking it up to the downconverter IF output provides a simple means for these TVs to be used for ATV.

FAQS:
Why use a Black and White TV? A Black and White raster offers more contrast receiving weaker ATV signals.

Is there a "risk" when buying a used Bentley TV from e-bay (or any used e-bay products for that matter?) The way e-bay works is that purchases are biased for the buyer. If you find that the TV is inoperative (such as horizontal hold does not lock, as an example) it is up to you to resolve this issue through the seller to your satisfaction. Keep in mind that these TVs are 12+ years old and its always possible you may get a lemon. Note however, many of these sets have been employed in a time-limited "portable" operation, and I have found that nine times out of ten, the CRTs are in good shape.

If I don't want to modify the proprietary DC plug, is there another option? Yes, since the unit takes D cell batteries, you can always hook up a DC supply to the battery terminals in the battery compartment or you can use the Bentley TV wall wart, if the wall wart comes with the TV.

PHOTO #1 AH2AR's in-shack Bentley TV on 18 June 2022 receiving W8ZCF via simplex in Cincinnati (60 miles)

PHOTO #2 SANSUI Model SLED1980D Receiving a "P3" A5 Video from the W8BI ATV Repeater site

Also available through e-bay are SANSUI Flat panel TVs that are absent of the "Blue Screen Feature" and also can be manually configured to receive channel 3. The TV comes with a number of other useful features, such as an HDMI input, an F-connector-style VHF TV external antenna input, a composite video input, and a VGA input. The SANSUI pictured was purchased on e-bay for $30. This Flat Panel is actually pretty light as it weighs about 7 pounds, so shipping is not prohibitively expensive.

PHOTO #3 SANSUI Model SLED 1980D Receiving a 2 MHz-wide bandwidth DVB-T Video from the W8BI ATV Repeater site

PHOTO #4 Back Panel of the TV
Subject: Sansui tv on cable channel 57

- the tv works on cable channels for directly receiving ATV signals. The TV set was tuned to cable channel 57, (421.250 MHz) for this test, and it was confirmed that the channel can be manually selected as the TV set does not require channel scanning.

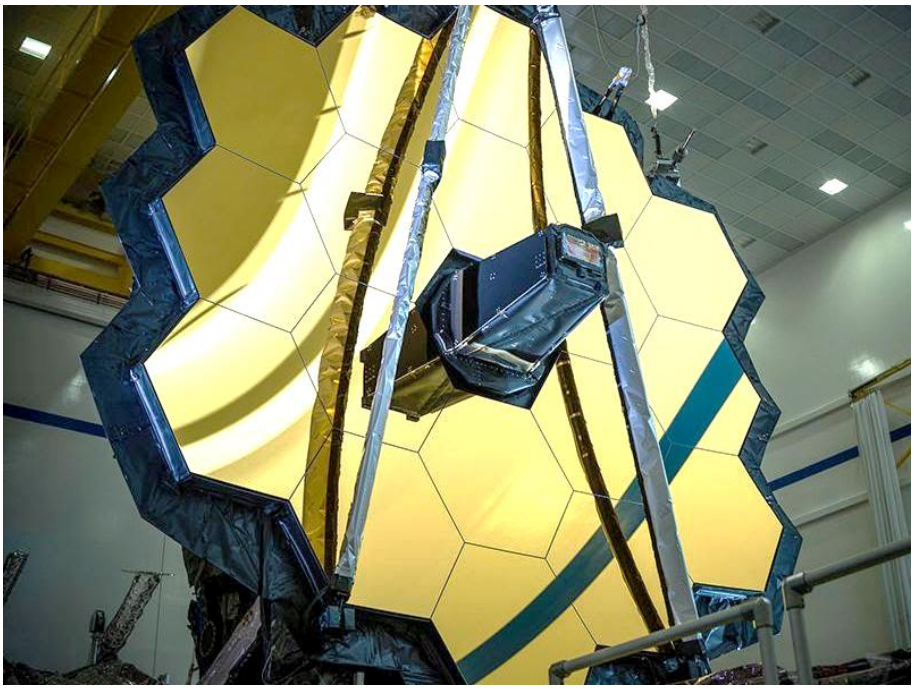
-like all cable ready tv's, sensitivity is terrible when using flat panel tv's for direct receive on 70cm

- I had to use a preamp in order to receive the repeater, otherwise I was unable to tell the repeater was even on the air without the preamp.

- Last, the tv does not have the blue screen feature, consequently, a snow-raster is present when receding a weak signal.

FIRST IMAGES FROM WEBB TELESCOPE RELEASED JULY 12

We're almost ready to unveil the first full-color images from the James Webb Space Telescope.
These images will demonstrate Webb at its full power, ready to begin its mission to unfold the infrared universe.



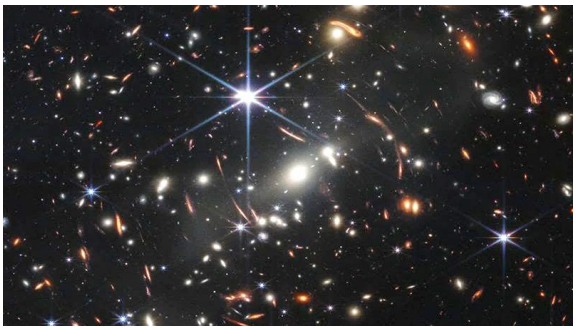
The images will be released one-by-one during a televised broadcast beginning at 10:30 a.m. EDT on Tuesday, July 12, from NASA's Goddard Space Flight Center in Greenbelt, Maryland. Live coverage of the image release broadcast will air on NASA TV, the NASA app, and the agency's website. The public also can watch live on Facebook, Twitter, YouTube, Twitch, and Daily Motion.

Additionally, Webb experts will answer questions about the first images and data in a NASA Science Live show on Wednesday, July 13, at 3 p.m. EDT. The broadcast, Webb's First Full-Color Images Explained, will air live on the NASA Science Live website, as well as YouTube, Facebook, and Twitter. NASA will also broadcast a live social media event in Spanish on its NASA en español YouTube, Facebook, and Twitter accounts.

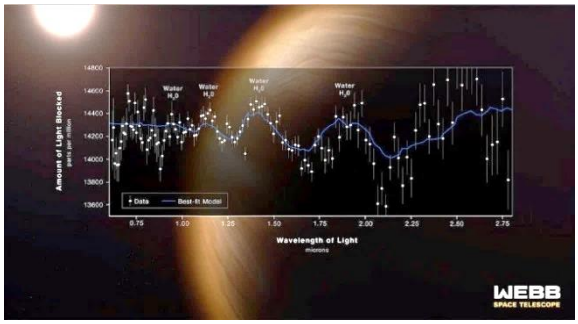
Webb, an international collaboration led by NASA with its partners the European Space Agency and the Canadian Space Agency, is the biggest telescope ever launched into space. It will unlock mysteries in our solar system, look beyond to distant worlds around other stars, and probe the mysterious structures and origins of our universe and our place in it.

The world got its first look at the full capabilities of the telescope, an international collaboration between NASA, the European Space Agency, and the Canadian Space Agency, when the full set of its first full-color images and spectroscopic data were unveiled during a live broadcast on Tuesday, July 12.

Webb's First Deep Field – Webb has produced the deepest and sharpest infrared image of the distant universe to date. This image shows the galaxy cluster SMACS 0723 as it appeared 4.6 billion years ago, with many more galaxies in front of and behind the cluster. This slice of the vast universe covers a patch of sky approximately the size of a grain of sand held at arm's length by someone on the ground.



Steamy Atmosphere – Webb captured the distinct signature of water, along with evidence for clouds and haze, in the atmosphere surrounding WASP-96 b. Observation of this hot, Jupiter-like exoplanet demonstrates Webb's ability to analyze atmospheres more than a thousand light-years away, marking a huge leap forward in the quest to characterize potentially habitable planets beyond Earth.



SO, YOU WANT TO SET UP A DATV STATION????

The ATV Forum at Hamvention this year seems to have stirred up interest about setting up a Digital ATV station. As a result of the presentation by Mel Whitten, K0PFX, Brett, KD8MEE, reached out to Jim KH6HTV, who then referred them to Dave, AH2AR, and myself with a number of questions. After we answered them, others chimed in with their comments. As a result, valuable information transpired. Since all comments were very relevant and informative, I thought it best to include them here. The following is what happened in regard to the pros and cons about DVB-T bandwidths.
…WA8RMC

Bret starts out by asking*:*
Hello Art, and Dave:
After attending Art's forum presentation at the Dayton Hamvention, my friend KE8DLH and I have been talking about setting up DATV stations to link our QTH's respectively. Although we don't know of any DATV repeaters in our area (Akron, OH) we would want to be compatible with one in the future. After talking with Jim (KH6HTV) about some of the equipment, he recommended I contact you about the possibility of DATV repeaters near Akron, and for a recommendation on the proper bandwidth of the equipment. For our 70CM simplex set up we are considering the standard 6MHz bandwidth.
Questions:
1. Do you know of any existing, or planned DATV repeaters in range of Akron, OH?
2. What bandwidth do you recommend we use for our stations?
3. Do you have any recommendations for equipment? (Jim is recommending HiDes HV-320e for the modulator, although there are less expensive options)
4. Let me know of any other information you can offer for our new stations.
Thank you,
Brett Nekola
KD8MEE

Dave responds as follows:
Brett,
I believe you and your buddy are pretty close mileage-wise. If you guys are close, then 6MHz may work. Of course, you will be able to go to a narrower bandwidth if you need additional realized gain to close the link between you two if for some reason, the additional gain is needed. What is the distance between you two?
I can assure you that the less expensive HV310 will be exactly the same, performance wise, and you can only tell the difference between the HV310 and the HV 320 by examining the waveform closely with a spectrum analyzer, otherwise, resolution/ received picture quality and power output will be exactly the same when comparing the two. —I actually have several of both unit models and trust me, actual on-air performance won't suffer at all—- with the less expensive HV310. Jim gave you great advice, but I must disagree with him in steering you away from the HV310 which I can personally attest that you will find absolutely no operational advantages when in the field between the two units. The cost delta between the two units is absolutely not worth it. As they say, advice is cheap!

Jim's excellent offer to purchase and set your units up for you will save you some really major headaches/growing pains! If you have never set up the hides gear, you may find that setting them up for the first time may be a daunting task due to the wide number of parameters that is required for the units to work together seamlessly. Also, some of the setting's instructions are a little counterintuitive and can be problematic during initial setup to the newbie.
There is no hope in finding an ATV repeater in your region/locale… nothing available within that area of Ohio,
Cheers,
Dave AH2AR

Bret responds:
Hi Dave,
Thank you for your reply. We (KE8DLH and I) are about 6 miles apart. How do you get additional gain with narrower band width? Given that advantage, why is the narrower bandwidth not the "standard"? We are planning on using 6 element Yagi's mine at 40' AGL his at 25' AGL.

Jim's big thing between the two modulators (HV310, and the HV320) is that the cheap one splatters crap on the adjacent channels; I don't want to be "that guy"! (The person who is polluting the bands, causing annoyance to others). I know you said "operationally" there is no difference, but what about our commitment to using our resource responsibly? Is that worth the delta $?
Thank you,
Brett

Dave responds:
Realized gain is achieved as there will be more average spectral energy per MHz on the narrower bandwidth. The tradeoff is that when using the narrower bandwidth such at 2MHz, it can only support a lower data rate signal and consequently you can only expect to transmit SD (standard definition) video. High-Definition video can occupy 4 MHz and 6 MHz bandwidths without any issues.

Note that (we) DARA have been using 2 MHz bandwidth on our repeater since 2014, because 2 MHz was made the standard in this region due to its use for ATV DX. This conforms to the 2 MHz standard that the ATV DX Midwest Group exclusively runs, due the gain advantage. Consequently, we are able to use the DARA ATV repeater as an ATV signal source to look for band openings.

To answer your question about splatter: Any spectral differences between the 310 and 320 are completely transparent to anyone receiving the decoded video. More importantly, any spectral artifacts would not encroach into adjacent bandwidth where it could ever be detected by a third party, even under the most pristine conditions. Trust me.

I have used an HV310 on the W8BI repeater since 2014, and there are 8 in people locally using HV310s, along with others around the region. I would change the HV310 out in a heartbeat if it was causing problems or if there were real issues with it at the repeater site.

On a different note, Mel Whitten in St Louis is using 4 MHz band bandwidth for their ATV group's repeater. 4 MHz may be a good compromise for you. The distance between you and your friend should be fine for use of 6 MHz bandwidth. If for some reason that there may be an obstacle/foliage issue you can always change to a narrower bandwidth to achieve a few more dB of realized gain, as mentioned earlier.
Cheers,
Dave AH2AR

Dave again adds:
Brett,
Note that the HV-310's out of channel spectrum suppression at -35 dB for 2Mhz bandwidth DVB-T stays well within the ATV band segment. These artifacts appear as spectral bumps that are only 1 MHz wide on either side of the waveform's shoulders. Even after using a linear amplifier with 30dB gain, these bumps will contain -5dBm of spectral energy. This is only 0.3 milliwatts of RF, absolutely not detectable by a third party, unless that third party is in the same room. One will be splitting hairs to ever think that this is a problem, as it is making a mountain out of a -0.3 dBm molehill. This explanation might put this issue in better perspective for you.
Cheers
Dave AH2AR

Now, it's my turn:
Bret,
Let me chime in with a few comments. I agree with all that Dave has said but let me add:

It is said additional **gain** is achieved using 2MHz bandwidth. I don't believe that is actually the case, only additional apparent gain. The signal is not **amplified** by changing from 4MHz to 2MHz bandwidth. It seems that way because the signal to noise ratio is improved by using a narrower bandwidth. The tradeoff is a lower data rate at 2MHz. If you would compare the two with actual pictures, you would find that higher motion images could appear to momentarily freeze or flicker to accommodate dropped frames at 2MHz. That is rarely an issue with ATV transmissions as we don't usually televise "race car" events. You can still use HD video with a 2MHz bandwidth, just with higher flicker or freezing. If you transmit still images, you shouldn't notice the difference.

Last, at ATCO we transmit on 423 MHz. If we used a 4 MHz bandwidth here, that would put the lower part of the carrier right at 421 MHz which is right on the lower band edge of the ham band, not a good thing to do. So, if you want to use a bandwidth wider than 2MHz, stay above 425MHz (6MHz B/W) or 424MHz (4 MHz B/W). That assumes a "guard band" of at least 1 MHz above band edge.

Last, many commercial receivers for DVB-T only allow a 6 MHz bandwidth. The HiDES receivers are the exception. So, if you want to include the possibility of using some of those, a 6 MHz bandwidth is an option with the sacrifice of input **sensitivity**. (Notice I avoided the use of the term "**gain**" here. I will be releasing a new DVB-T /DVB-S receiver later this year that will allow bandwidths below 1 MHz. 1 MHz, 500 KHz bandwidths and below are in use now for DX operation.

The ATCO 423 MHz repeater transmitter in Columbus Ohio has used DVB-T 2 MHz bandwidth, 2K FFT carrier, 1/32 guard bandwidth, 7/8 FEC since its inception in 2010. The 439 MHz DVB-T receiver there is the same but uses 1/2 FEC.

Good luck with your DATV experiments. Perhaps we will be able to work each other during band openings as we are about 70 miles closer to you and our antenna is much higher. (About 650 feet above street level).
Art WA8RMC

Dave chimes in again:
Bret and Art,
We are in agreement Art. I must add also that as long as the data rate isn't higher than the bandwidth it occupies, there will be no freezing or stuttering of the video. This is why we pass standard definition (SD) video over 2Mhz bandwidth as opposed to the higher data rate demand of High-Definition video.

This next comment I have may be a real long shot, especially if higher gain Yagi antennas are not being used, but it may be useful for Bret to have 423 MHz @ 2 MHz bandwidth programmed on his HV110 receiver as an additional frequency as there is always the possibility of 70cm band openings to the Columbus ATV repeater. Since the 423 MHz DVB-T transmitters at the ATCO repeater is ALWAYS transmitting, it is a simple matter to keep an eye on an idling HV110 in Akron, especially in the mornings as that is when band openings occur on 70cm.

In the MidWest, for ATV DX (emphasis on DX), a six element Yagi puts the operator at a great disadvantage. Of the many years (35+) of working ATV DX, I can't think of a single instance where anyone has successfully employed a six element Yagi for ATV DX work. Alternately, a six element Yagi can work ok for in-city ATV repeater use. Please don't let me discourage you as it should work ok for your in-city point to point contact.

The ATV DX Midwest group routinely takes advantage of DX ATV paths open into Dayton, Columbus, Cincinnati, and Kentucky. It would surely be great if we could include Akron!
Cheers,
Dave AH2AR

OK, Mike, WA6SVT, couldn't resist the urge to respond:
Hello to the ATVers in this email thread,
I would like to throw my comments into the mix. Hi Bret, I'm Mike WA6SVT, trustee of W6ATN. We have seven linked ATV repeaters that have 2 MHz bandwidth DVB-T receivers on 434 MHz as the digital ATV input used on our repeaters. We also have analog 434 MHz too. I am a broadcast transmitter engineer for KCBS & KCAL in the Los Angeles market.

1. The data rate has to remain about 15 to 20% less as headroom is needed for housekeeping data such as PSIP etc.

2. There is a difference between sensitivity on the bench and in the real-world environment so you will likely not achieve the same sensitivity due to other signals that are lurking on the band.

3. The most robust signaling for DX is using MPEG2 encoding and QPSK constellation. Having said that, the HV-100 and 102 series modulator-exciters allow you to select encoding while the HV-310 1nd 329 only allow H.264 encoding. You get about 30 to 45% more data throughput using h.264 but take a larger hit when QRM or radar or spread spectrum pulses are co-channel.

4. On the bench you take a 5 dB hit to sensitivity but get twice the data throughput using QAM 16 constellation. In the real world over the air use of QAM 16 vs QPSK is much less than the 5 dB on the bench hit due to weak other signals on the band. Military uses spread spectrum communications radios as well as some weak signal from Canada (Line A) in the background in your area. In our area it is spread spectrum, occasional RADAR and DRM hot spots.

5. HiDes receivers do have the narrow bandwidth. However the minimum IF bandwidth is 5 MHz thus less effect of a lower noise floor at 2 MHz as the receiver is still dealing with 5 MHz noise floor and any signals within the 5 MHz window. The way to fix this is run a 2.2 MHz minimum bandwidth filter after the LNA which will give you maximum sensitivity and the filter will cut off white noise outside the filter bandwidth. We have done this with two of our repeaters and noticed a difference. We have a six MHz wide filter ahead of the LNA and a splitter so we can also feed the analog receiver. Look at Jim's notes on his KH6HTV.com site. He shows the gain in receiver sensitivity as bandwidth is reduced and you will see the 6 MHz vs 5 MHz and the percentage of improvement. For 5 to 4 MHz and lower bandwidths, the sensitivity improvement is not as intense.

6. The speed of the data per MHz of bandwidth is the same whether you are using 2 MHz or 6 MHz, the data throughput does change (size of the pipe), this is assuming the same constellation and encoding (MPEG2 or H.264) is used for both bandwidths. As in FM video or digital video the signal is spread out across the bandwidth so there is a sort of transmitter gain. One of our repeaters is Oat Mountain and currently has a 919.25 MHz analog output and for two months we tried both 6 MHz and 2 MHz DVB-T, 2 MHz worked better in the high level of part 15 spread spectrum signals. The receivers did show a higher RSL at 2 MHz as compared to 6 MHz. I find this odd as the wattmeter showed the same average power output at the repeater site.

7. ATV at the band edge, for simplex the guys are correct, stay away from the edge. Hams need to have spurious signal (spectrum regrowth in the case of digital ATV) down a minimum of -38dBc. -30 dBc as in driving your amplifier harder or using a typical ham amplifier used for SSB and FM (the 12volt ones) or using the HV-310 may be an issue if you follow the letter of the law. If you run a bandpass filter, the filter should greatly reduce adjacent channel spectrum regrowth and spurious signals. If you use the 439-441 MHz area, this is not as much of an issue. One of our repeaters at Snow peak runs 4 MHz bandwidth on 1242 MHz due to an FAA radar station 95 miles away at 1247 MHz (3 MHz bandwidth radar receiver). Our 10 pole ATV filter cuts off regrowth below 1240 MHz. We are using an HV-320 as well due to much cleaner spectrum than the 310. We also do not drive the amplifier too hard and it is a LDMOS medium voltage transistor that is very clean.

Having said so much, let's keep it simple. If you stay away from the band edges, use low loss feedlines such as LMR-400, N connectors (stay away from PL-259 as they are not 50 ohms at UHF), get your antenna above the roofline and even better if above the tree line, you will enjoy ATV digital simplex even with a lower gain antenna. Buildings and

trees are a sponge to UHF signals and I would take a six element ATV beam in the clear any day over a stacked set of long boom Yagis 5 ft off the roof. But I do enjoy having both for maximizing ATV DX.

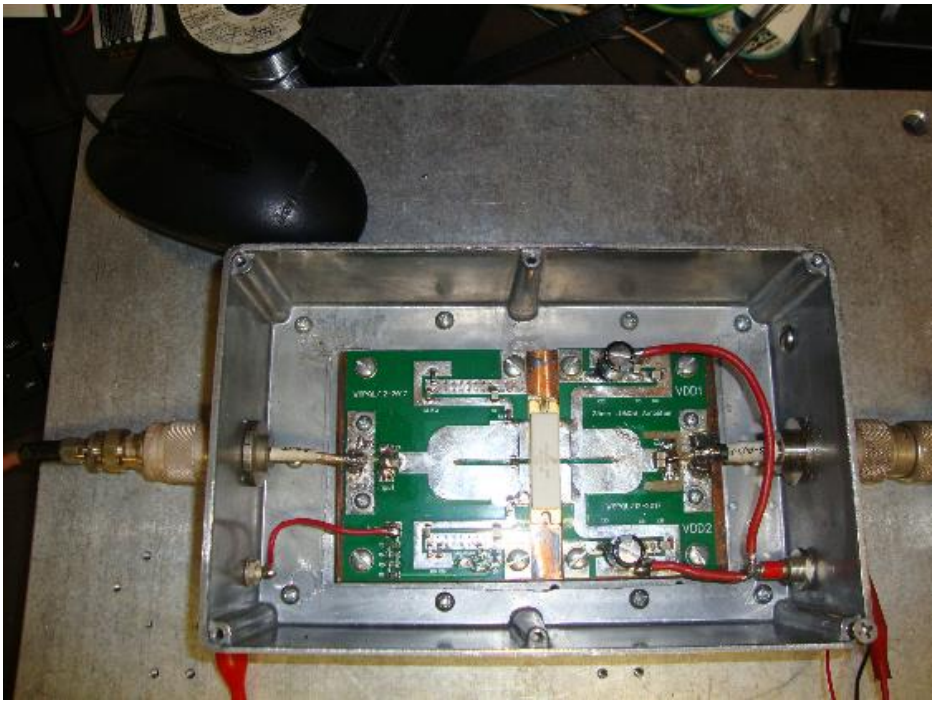
You will most likely need a good digital rated ATV amplifier. Jim Andrews has a good one ready to go and I would suggest a purchase of his highest-level power amplifier. If you want to make your own, Mini Circuits has PHA-1+ MMIC that makes a great pre-driver that will get you up to about 15 milliwatts (digital average). They have also have a PHA-101+ that is nearly 10 dB higher output than the PHA-1+. I use a PHA-1 driving a PHA -101+ as my post HV-320 amplifier then drive a two or four RF module amplifier or broadcast TV used broadband RF pallet for high power ATV. As you can tell, I like to build a lot of ATV gear. The Photo at right is an LDMOS 600-watt amplifier I built for several of our ATV repeaters output on the 23 cm band. It runs on 50 volts, 20.5 dB gain, saturates at nearly 700 watts and we run it in analog mode at 400 watts peak sync and at 100 watts average DVB-T. These pallets as well are complete ready to plug and play amplifiers HF through 23 cm band.

73,

Mike WA6SVT

There you go! Great participation among all that participated.

…WA8RMC

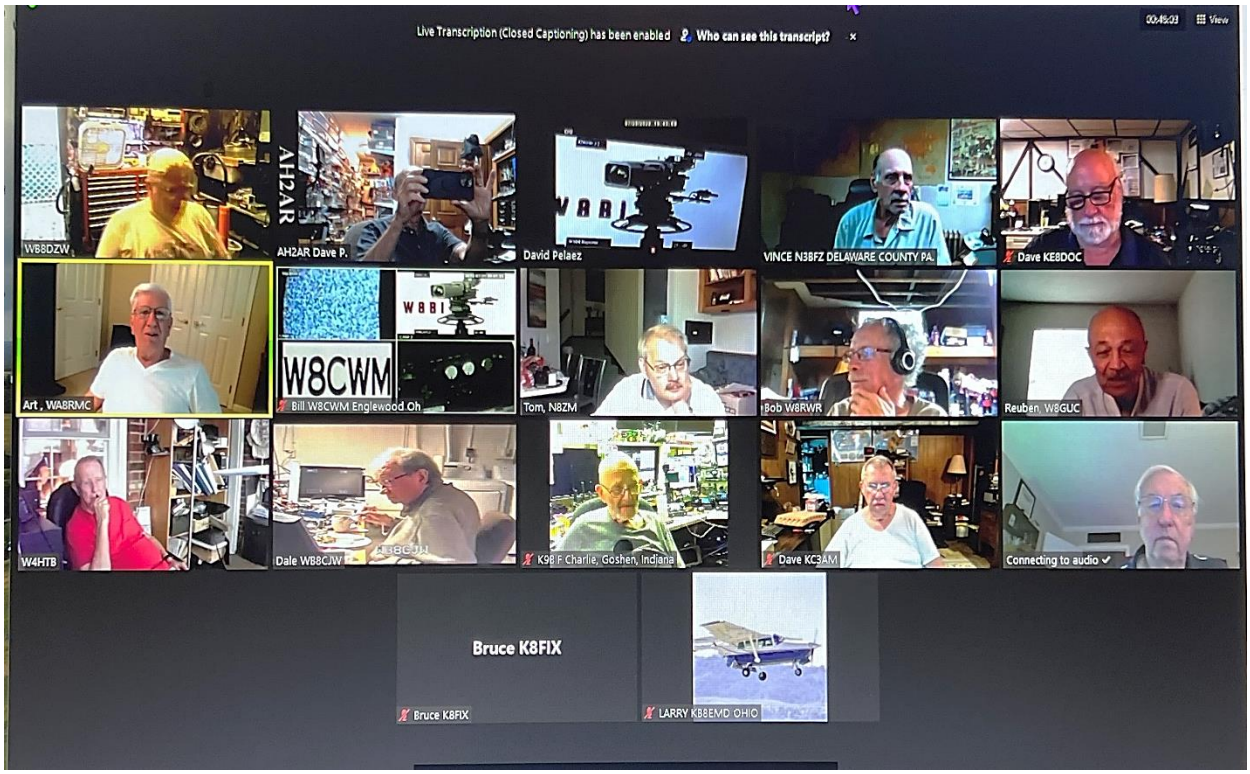


WA6SVT's, High Power 23cm Amplifier

WEDNESDAY DATV NET PARTICIPANTS

We always have great participation in our Wednesday night ZOOM meetings. Just turn on ZOOM, select the 9670918666 ID with the 191593 password at 8 PM EDT to view or participate in the ATV discussions. All are invited. Below are the 17 that were there on 7/20/22. Enjoy!!!!

…WA8RMC



USA ATV REPEATER DIRECTORY June 2021

NOTES:

1. All repeaters are NTSC, VUSB-TV, 6 MHz channel, unless otherwise noted. Some repeaters are using non-standard, lower sideband instead of upper sideband. The frequency listed is the video carrier frequency.
2. Digital TV lists center frequency. 6 MHz channel, unless otherwise noted. dt = DVB-T, ds = DVB-S, da = ATSC
3. For full details, go to the listed web site, or send an e-mail to the contact person
4. Some ATV groups also post repeater info on www.qrz.com under their call sign

Location	Call Sign	Output	Input(s)	Modes	Web Site & Contact for info
ARIZONA					note: AZ is linked to W6ATN in S. CA & NV www.atn-tv.org
Phoenix, White Tank	W7ATN	1253.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	wb9kmo@gmail.com kwjacob@icsaero.com
Mesa	W7ATN	1289.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	wb9kmo@gmail.com kwjacob@icsaero.com
Tucson, Mt. Lemmon	W7ATN	1277.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	wb9kmo@gmail.com kwjacob@icsaero.com
N.E. AZ & NM Green's Peak	W7ATN	1289.25	434.0	VUSB	wb9kmo@gmail.com kwjacob@icsaero.com
CALIFORNIA					W6ATN rptrs linked to AZ & NV
Orange Santiago Peak	W6ATN	1253.25 5910 fm	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wa6svt@gmail.com
Los Angeles, central Mt. Wilson	W6ATN	1265.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wa6svt@gmail.com
Los Angeles, north Oat Mtn.	W6ATN	919.25 3380 fm	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wa6svt@gmail.com
Jobs Peak	W6ATN	1253.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wa6svt@gmail.com
San Bernardino Snow Peak	W6ATN	1242 / 4 dt	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wa6svt@gmail.com
Santa Barbara	WB9KMO	1289.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wb9kmo@gmail.com linked with W6ATN
San Diego	KD6ILO	423 dt 1243 dt 1268 ds	441 dt 1286 ds 5885 fm	DVB-T, DVB-S, FM	kd6ilo@yahoo.com also AREDN mesh
San Jose	W6SVA	427.25	910 fm, 1255 fm	VUSB, FM	www.k6ben.com :w2nyc@pacbell.net
Clayton	W6CX	1244.5 ds	1292.5, 1273, 915 ds, & 1273 fm	DVB-S, FM	www.mdarc.org info@mdarc.org
Palomar	W6NWG	1241.25	915 fm 2441.5 fm	VUSB, FM soon be DVB-S	w6nwg@palomararc.org mountain.michelle@gmail.com
COLORADO					
Boulder	W0BTV	423 / 6 dt or 421.25 5905 FM	1243 / 6 dt 441 / 6 dt 439.25	DVB-T, VUSB, FM	www.kh6htv.com kh6htv@arrl.net
Pueblo	W0PHC	423 / 6 dt	441 / 6 dt	DVB-T	billn@billnicoll.com www.puebloradio.org
DELAWARE					
Wilmigton	KC3AM	423 / 6 dt	439.25 AM, LSB	DVB-T AM	KC3AM@verizon.net qrz.com
FLORIDA					
Cape Coral	W1RP	421.25	439.25	VUSB	paul@cardlink.com
Cocoa Beach	K4ATV	427.2	439.25	VUSB	www.lisats.org
Panama City	KV4ATV	434.0	919.25	?	kv4atv@gmail.com
S.W. Idaho	WI7ATV	1257 fm	426.25	VUSB, FM	ka7anm@yahoo.com under construction
IOWA					
Davenport	W0BXR	421.25	439.25	VUSB	http://www.arcsupport.com/drac/

KANSAS					
Wichita	KA0TV	421.25	439.25	VUSB	k0wws@arrl.net
KENTUCKY					
Bowling Green	KY4TV	421.25	439.25 1280 fm	VUSB FM	w4htb@ieee.org www.qrz.com www.atn-tv.org
LOUISIANA					
New Orleans	WD0GIV	421.25	439.25	VUSB	wd0giv@att.net
MARYLAND					
Laurel	W3BAB	421.25	434.0	VUSB	www.qsl.net/w3bab
Towson	W3BAB	1291 fm	434	VUSB, FM	www.qsl.net/w3bab
Baltimore	W3WCQ	439.25 911.25	426.25 1253.25	VUSB	http://bratsatv.org/ brats@bratsatv.org
MICHIGAN					
Jackson	KC8LMI	923.25	439.25, AM LSB	VUSB	KC8LMI@hotmail.com
Grand Rapids	K8DMR	421.25	439.25	VUSB	ron_fredricks@att.net
Flushing	KC8KCG	1253.25	439.25 AM LSB	AM	kf8ui@mscginc.org
Flint	KC8KGZ	1253.25	439.25	VUSB	www.mscginc.org kf8ui@mscginc.org
MINNESOTA					
Wabasha	KD0HWX	421.25	439.25	VUSB	jonmcpete@yahoo.com
MISSOURI					
St. Louis	W0ATN	426 / 4 dt	440 / 4 dt	DVB-T	k0pfx@arrl.net
NEBRASKA					
Omaha	WB0CMC	421.25	434.0	VUSB	wb0cmc@cox.net
NEVADA					
Las Vegas	N7ZEV	1253.25 912 fm	434.0, 434.0 / 2 dt 2441 fm	VUSB, FM DVB-T	frank.n7zev@gmail.com linked to W6ATN S. CA & AZ
NEW JERSEY					
Vernon	W2VER	5885 fm	5665 fm	FM	jaythienel@yahoo.com
OHIO					
Columbus	WR8ATV	423 / 2 dt 427.25 1258 fm 1268 ds 2397 mesh 10350 fm	439 / 2 dt 439.25 AM LSB 1288 fm 1288 ds 10450 fm	VUSB AM FM DVB-T DVB-S MESH	www.ATCO.tv gkenmorris@gmail.com towslee1@ee.net
Dayton	W8BI	421.25 428 / 2 dt 1258 fm	439.25, 439 / 2 dt 1280 fm	VUSB, FM DVB-T	www.w8bi.org dpel@aaahawk.com
Van Wert	W8FY	434.0	923.25	VUSB	ka8zge@w8fy.org
OREGON					
Portland	W7AMQ	1257 fm	426.25	FM, VUSB	belles73@comcast.net
Portland	WB2QHS	426.0	910 fm	VUSB, FM	emellnik@emavideo.com
PENNSYLVANIA					
Delaware County	KC3AM	421.25	439.25 AM, LSB	VUSB, AM	KC3AM@verizon.net
PUERTO RICO					
Aguas Buenas	KP4IA	426.25	439.25, 1252 fm	VUSB, FM	kp4ia@yahoo.com
WASHINGTON					
Seattle	WW7ATS	1253.25	434.0	VUSB	https://www.qsl.net/ww7ats/ ww7ats@gmail.com qrz.com

Revision Notes:
Aug. 2019 --(1) corrected data for Kentucky (2) changed call sign for Boulder, CO Sept. 2019 - -added Pueblo, CO
Oct. 2019 --added San Diego, CA Feb. 2020 -- changed K6BEN to W6SVA, CA --added KC8KGZ, MI Mar. 2020 -- added Davenport, IA
May 2020 --corrected typos Jan. 2021 -- updated Boulder, CO repeater info June 2021 -- found 20 more ATV repeaters listed on www.repeaterbook.com -- attempted to contact all of their trustees to confirm them. Most are obsolete listings and are no longer on the air. Added only two -- Cocoa Beach, FL, Wichita, KS,

LOCAL HAMFEST SCHEDULE

This section is reserved for upcoming Hamfests. They are limited to Ohio and vicinity easily accessible in one day. Anyone aware of an event incorrectly or not listed here; notify me so it can be corrected. This list will be amended, as further information becomes available. To see additional details for each Hamfest, Control Click on the blue title and the magic of the Internet will give you the details complete with a map! To search the ARRL Hamfest database for more details, CTL click ARRLWeb: Hamfest and Convention Calendar …WA8RMC.

08/06/2022 - Columbus Hamfest

Location: Grove City, OH
Type: ARRL Hamfest
Sponsor: Aladdin Shrine Audio Unit
Website: http://columbushamfest.com

08/13/2022 - Cincinnati Hamfest℠

Location: Owensville, OH
Type: ARRL Hamfest
Sponsor: Milford ARC
Website: https://CincinnatiHamfest.org
Website: http://W8FY.ORG

08/21/2022 - Warren ARA Tailgate Swap

Location: Cortland, OH
Type: ARRL Hamfest
Sponsor: Warren ARA
Website: http://facebook.com/w8vtd

09/17/2022 - Mound Amateur Radio Assoc.

Location: Miamisburg, OH
Type: ARRL Hamfest
Sponsor: MARA
Website: http://W8DYY.ORG

09/25/2022 - Cleveland Hamfest

Location: Berea, OH
Type: ARRL Hamfest
Sponsor: Hamfest Assoc. of Cleveland
Website: http://www.hac.org

10/30/2022 - Massillon Hamfest (OH)

Location: **Green, OH**
Type: **ARRL Hamfest**
Sponsor: **Massillon Amateur Radio Club**
Website: **http://w8np.net**

12/03/2022 - FCARC WinterFest

Location: Archbold, OH
Type: ARRL Hamfest
Sponsor: Fulton County Amateur Radio Club
Website: https://k8bxq.org/hamfest

WEDNESDAY NITE ZOOM NET

Every Tuesday night @ 8:00PM WA8RMC used to host a net for ATV topic discussion. However, in order to consolidate the two nets, ours on Tue. and the DARA net on Wed. we'd like to have only one net on Wednesday, same time at 8 PM. We will rotate the net control host duty so you won't be bored with just me. All are invited as we get check-ins from all around the USA and sometimes from international participants.

To join ZOOM for the first time, simply type **https://zoom.us/join** then download, install the .exe program and run it. ZOOM will start. Click on **join**, enter the **9670918666 meeting ID** then the **191593 password.** Use video or just audio if you don't have a camera.

ATCO TREASURER REPORT - de N8NT

OPENING BALANCE (04/15/22)	$ 3907.37
Receipts (dues)	$ 30.00
PayPal fee	$ (2.52)
CLOSING BALANCE (07/22/22)	$ 3934.85

ATCO REPEATER TECHNICAL DATA SUMMARY

Location: Downtown Columbus, Ohio
Coordinates: 39 degrees 57 minutes 47 seconds (latitude) 82 degrees 59 minutes 58 seconds (longitude)
Elevation: 630 feet above the average street level of 760 feet ASL (1390 feet above sea level)

TV Transmitters: 423.00 MHz DVB-T, 10 W cont. FEC=7/8, Guard=1/32, Const=QPSK, FFT=2K, BW=2MHz, PMT=4095, PCR=256, Video=256, audio=257
427.25 MHz Analog VSB AM, 50 watts average 100 watts sync tip (cable channel 58)
1258 MHz 40 watts FM analog
1268 MHz DVB-S QPSK 20W cont. SR=3.125MS, FEC=3/4, PMT=32, Video=162, Teletext=304, PCR=133, Audio=88, Service =5004)
Two video channels in this output: Channel 1 is fed from all receivers. Channel 2 is fed from 439.25 analog receiver only.
2397 MHz Mesh Net transceiver 600mw output (channel 1 minus 2). ID is WR8ATV-2
10.350 GHz: 1watt continuous analog FM

Link transmitter: 446.350 MHz: 5 watts NBFM 5 kHz audio. This is an output used for control signals and to repeat the 147.48 MHz and 449.975 MHz input.

Identification: 423, 427, 1258, 1268 MHz, 10.350 GHz transmitters video ID every 10 min. with active video and information bulletin board every 30 min.
423 MHz digital, 1268 MHz digital & 10.350 GHz analog - Continuous transmission of ATCO & WR8ATV with no input signal present.

Transmit antennas: 423.00 MHz - 8 element Lindsay horizontally polarized 5 dBd gain "omni"
427.25 MHz - Dual slot horizontally polarized 7 dBd gain "omni" major lobe east/west, 5dBd gain north/south
1258 MHz - Diamond vertically polarized 12 dBd gain omni
1268 MHz - Diamond vertically polarized 12 dBd gain omni
2397 MHz - Ubiquiti dual polarity omni 13dBi gain slot for channel 1 minus 2 MESH Rx/Tx operation
2397 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (Used for experimental Mesh operation)
10.350 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni

Receivers: 147.480 MHz - F1 audio input with touch tone control. (Input here = output on 446.350)
439.000 MHz - DVB-T QPSK, 2MHz BW. Receiver will auto configure for FEC's. (Input here = output on all TV transmitters)
439.250 MHz - A5 NTSC video with FM subcarrier audio, **lower sideband**. (Input here = output on all TV transmitters & also direct to 1268 MHz DVB-S output channel 2.)
449.975 MHz - F1 audio input aux touch tone control. 131.8 Hz PL tone. (Input here = output on 446.350).
1288.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters)
1288.00 MHz - DVB-S QPSK SR=4.167MS, fec=7/8. PIDs: PMT=133, PCR=33, Video=33, Audio=49 (Input here=output on all Trans.)
2398.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters) (inactive at this time because of MESH on 2397)
10.450 GHz - F5 video analog NTSC. (Input here = output on all TV transmitters)

Receive antennas: 147.480 MHz - Vert. polar. Diamond 6dBd dual band (Shared with 446.350 MHz link output transmitter)
439.00/439.250 MHz - Horizontally polarized dual slot 7 dBd gain major lobe west (Shared with 439 digital & 439.25 analog receivers)
1288.00 MHz - Diamond vertically polarized 12 dBd gain omni (shared with analog and DVB-S receivers)
2398.00 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (inactive at this time because MESH is on 2397)
10.450 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni

Auto mode Input control:	Touch Tone	Result (if third digit is * function turns ON, if it is # function turns OFF)
	00*	turn transmitters **on** (enter manual mode-keeps transmitters on till 00# sequence is pressed)
	00#	turn transmitters **off** (exit manual mode and return to auto scan mode)
	264	Select Channel 4 Doppler radar. (Stays on for 5 minutes) Select # to shut down before timeout.
	004	Select 10.450 GHz receiver. **(Always exit by selecting 001)**
	001	Select 2398 MHz receiver then 00# for auto scan to continue

Manual mode Functions:		
	00* then 1 for Ch. 1	Select 439.25 analog /438 digital receiver (if video present on digital, it is selected. Otherwise, analog)
	00* then 2 for Ch. 2	Select 1288 digital receiver
	00* then 3 for Ch. 3	Select 1288 analog receiver
	00* then 4 for Ch. 4	Select 2398 receiver
	00* then 5 for Ch. 5	Select video ID (17 identification screens)
	01* or 01#	Channel 1 439.25 MHz scan enable (hit 01* to scan this channel & 01# to disable it)
	02* or 02#	Channel 2 1288 MHz digital receiver scan enable
	03* or 03#	Channel 3 1288 MHz analog receiver scan enable
	04* or 04#	Channel 4 2398 MHz scan enable
	A1* or A1#	Manual mode select for 439.25 receiver audio
	A2* or A2#	Manual mode select for 1288 digital receiver audio
	A3* or A3#	Manual mode select for 1288 analog receiver audio
	A4* or A4#	Manual mode select for 2398 receiver audio
	C0* or C0#	Beacon mode – transmit ID for twenty seconds every ten minutes
	C1* or C1#	No function at this time
	C2* or C2#	No function at this time

ATCO MEMBERS as of July 2022

Call	Name	Address	City	St	Zip
KD8ACU	Robert Vieth	3180 North Star Rd	Upper Arlington	OH	43221
KC3AM	Dave Stepnowski	735 W Birchtree Ln	Claymont	DE	19703
AH2AR	Dave Pelaez	1348 Leaf Tree Lane	Vandalia	OH	45377
W8ARE	Terry Meredith III	6070 Langton Circle	Westerville	OH	43082-8964
K9BIF	Charlie Short	415 West Pike Street	Goshen	IN	46527-0554
VK3BFG	Peter Cossins	14 Coleman Road	Melbourne	Au	03152
N9BNN	Michael Glass	6836 N. Caldwell Rd	Lebanon	IN	46052
WB8CJW	Dale Elshoff	8904 Winoak Pl	Powell	OH	43065
N8COO	C Mark Cring	8774 Jersey Mill Rd	Alexandria	OH	43001
N3DC	William Thompson	6327 Kilmer St	Cheverly	MD	20785
K8DMR	Ron Fredricks	8900 Stonepoint Ct	Jennison	MI	49428-8641
WA8DNI	John Busic	2700 Bixby Road	Groveport	OH	43125
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	OH	43026
KB8EMD	Larry Baker	4330 Chippewa Trail	Jamestown	OH	45335-1210
WB4IR	Bob Holden	7725 Tressa Circle	Powell	TN	37849
WA8HFK,KC8HIP	Frank & Pat Amore	P.O. Box 2252	Helendale	CA	92342-2252
W8KHP	Allen Vinegar	2043 Treetop Lane	Hebron	Ky	41048
WA8KKN	Chuck Wood	5322 Spruce Lane	Westerville	OH	43082-9005
WB9KMO	Rod Fritz	8334 E. Culver Street	Mesa	AZ	85207
WB8LGA	Charles Beener	2540 State Route 61	Marengo	OH	43334
W8MA	Phil Morrison	154 Llewellyn Ave	Westerville	OH	43081
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	OH	45660
N8NT	Bob Tournoux	135 Barrett Hill Road	Center Rutland	Vt	05736
W8NX, KA8LTG	John & Linda Beal	5001 State Rt. 37 East	Delaware	OH	43015
WU8O	Tom Walter	15704 St Rt 161 W	Plain City	OH	43064
KB8OFF	Jess Nicely	1888 Woods Drive	Beavercreek	OH	45432
W6ORG,WB6YSS	Tom, Maryann O'Hara	2522 Paxson Lane	Arcadia	CA	91007-8537
WA8RMC	Art Towslee	438 Maplebrooke Dr W	Westerville	OH	43082
W8RUT,N8KCB	Ken & Chris Morris	2895 Sunbury Rd	Galina	OH	43021
KB8RVI	Dave Jenkins	100 Miller Ave Apt. 108	Ashville	OH	43103
W8RWR	Bob Rector	135 S. Algonquin Ave	Columbus	OH	43204-1904
W8RXX, KA8IWB	John & Laura Perone	3477 Africa Road	Galena	OH	43021
WA6SVT	Mike Collis	PO Box 1594	Crestline	CA	92325
NR8TV	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123
KB8UWI	Milton McFarland	115 N. Walnut St.	New Castle	PA	16101
WA8UZP	James Reed	818 Northwest Blvd	Columbus	OH	43212
KC8WRI	Tom Bloomer	PO Box 595	Grove City	OH	43123
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	OH	43224-3011
AC8XP,KE8GTT,KE8HPA	Troy,Seamus Bonte	5210 Smothers Road	Westerville	OH	43081
AC8YE	Larry Howell	4080 Dill Road	Centerburg	OH	43011-9771
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	OH	43064
KD8YYP	Anna Reed	818 Northwest Blvd	Columbus	OH	43212
WB8YTZ	Joe Coffman	233 S. Hamilton Rd	Gahanna	OH	43230-3347
N8YZ	DaveTkach	2063 Torchwood Loop S	Columbus	OH	43229
W8ZCF	Farrell Winder	6686 Hitching Post Ln.	Cincinnati	OH	45230
N8ZM	Tom Holmes	1055 Wilderness Bluff	Tipp City	OH	45371

ATCO CLUB OFFICERS

President: Art Towslee WA8RMC
V. President: Ken Morris W8RUT
Treasurer: Bob Tournoux N8NT
Secretary: Mark Cring N8COO
Corporate trustees: Same as officers

Repeater trustees: Art Towslee WA8RMC
Ken Morris W8RUT
Dale Elshoff WB8CJW
Statutory agent: Stan Diggs AA8XA
Newsletter editor: Art Towslee WA8RMC

NEW MEMBER(S)

Let's welcome the new members to our group! If any of you know anyone who might be interested, let one of us know so we can flood them with information. New members are our group's lifeblood so it's important we aggressively recruit new faces.

No new members this time.

ATCO MEMBERSHIP INFORMATION

Membership in ATCO (Amateur Television in Central Ohio) is open to any licensed radio amateur who has an interest in amateur television. The annual dues are $10 per person. Additional members within an immediate family and at the same address are included at no extra cost.

ATCO publishes this Newsletter quarterly in January, April, July and October. It is sent to each member without additional cost. All Newsletters are sent via Email unless the member does not have an internet connection. Dues payments are as of the date paid and will expire on the same month/year on the due date year.

Your support of ATCO is welcomed and encouraged.

Membership expiration notices will be sent out weekly via Email starting 30 days prior to expiration date.
NOTE: Dues records on your individual portion of the ATCO website are listed as the date money is received if after the due date. If before the due date then it is due one year from the due date.

ATCO MEMBERSHIP APPLICATION

RENEWAL ○ NEW MEMBER ○ DATE _____
CALL _____
OK TO PUBLISH PHONE # IN NEWSLETTER YES ○ NO ○
HOME PHONE _____
NAME_____
INTERNET Email ADDRESS_____
ADDRESS _____
CITY _____ STATE _____ ZIP _____-_____
FCC LICENSED OPERATORS IN THE IMMEDIATE FAMILY
_____
COMMENTS_____
_____
_____

ANNUAL DUES PAYMENT OF $10.00 ENCLOSED CHECK ○ MONEY ORDER ○
Make check payable to ATCO or Bob Tournoux & mail to: Bob Tournoux 135 Barrett Hill Road, Center Rutland, Vermont 05736.
Or, if you prefer, pay dues via the Internet with your credit card. Go to www.atco.tv log in, click on **Members** then **Pay Dues** and fill out the details. Credit card payment is made through "PayPal" but you DO NOT need to join PayPal to send the dues. Simply DO NOT fill out the password details and there will be no "PayPal" involvement.

ATCO Newsletter
c/o Art Towslee -WA8RMC
438 Maplebrooke Dr. West
Westerville, Ohio 43082

FIRST CLASS MAIL

REMEMBER...CLUB DUES ARE NEEDED.
CHECK THE
MEMBERS PAGE OF ATCO WEBSITE FOR THE EXPIRATION DATE.
SEND N8NT A CHECK OR USE PAYPAL IF MEMBERSHIP IS EXPIRED.