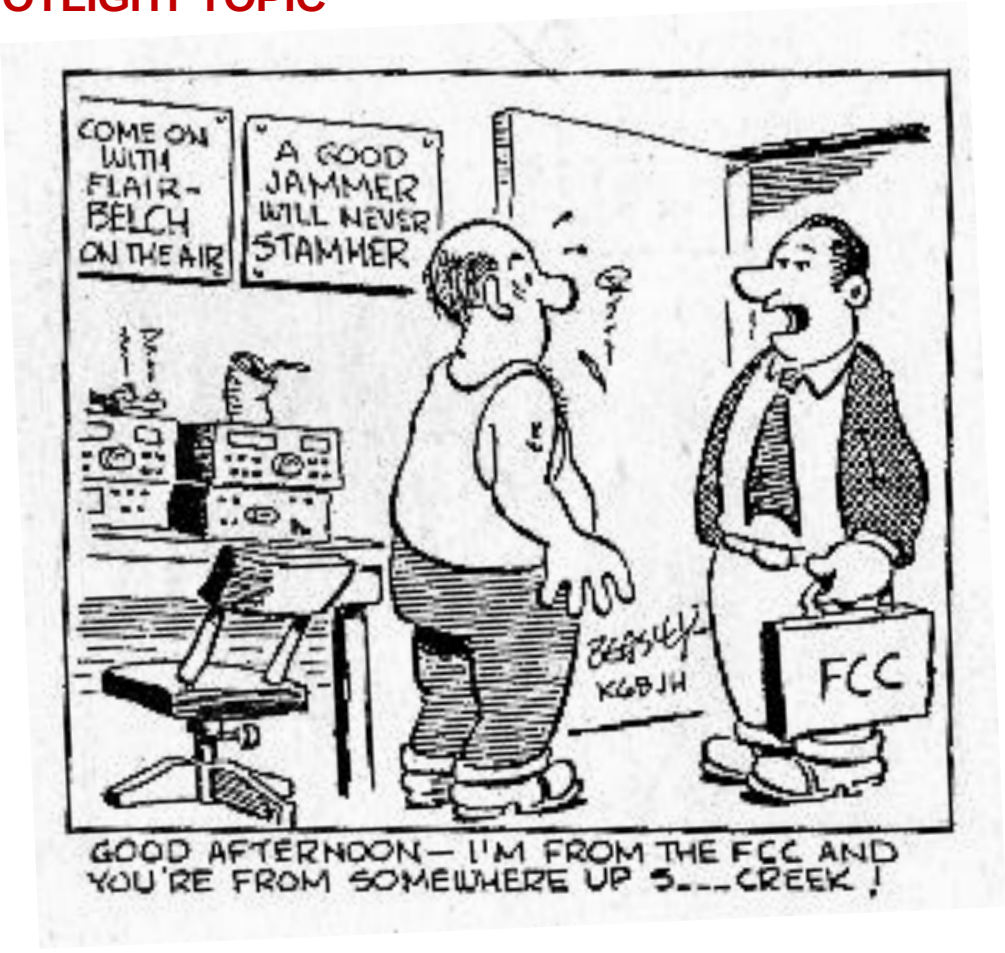
ATCO NEWSLETTER

VOLUME 39 NUMBER 4 **October 2022**

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



ACTIVITIES ... from my Workbench

Holy s###. It's Fall already! Where did the summer go? No need to cut the grass now but, you guessed it, it's leaf rake time. However, here I sit, working on the Newsletter. Fear not, it's almost complete.

First and foremost is the effort to prepare Dale's electronic items for bid. As most of you know, Dale passed away recently and his wife asked us to remove his items, offer them for bid sale and donate all proceeds to the ATCO treasury. Roger, WB8DZW, volunteered to help me with the task to remove the treasures Dale has been collecting for over 40 years or so. That has proven to be a sizeable task as we have removed over 10 loads each into my car trunk and Roger's van so far and we're not done yet. The task is about 90% complete now with some of the shelves of magazines left to remove yet. The items of significant value are available by bid. I've sent out a bid list to everyone on the ATCO address list both present and old members but if you were not one of them and would like to see the bid list, send me an Email at towslee1@ee.net and I'll send it to you. The list contains over 80 items so it is too long to include in this Newsletter. Help our treasury and bid on these! Besides, I don't want them to occupy my basement floor forever.

Dale's tower also needed to be removed as it was close to falling down on its own. The tower leg base was completely rotted away so it was just sitting on the concrete base and not physically connected to it. It was still held in place by the guy wires and house bracket. In fact, when we sawed the U bolts holding the tower to the house bracket away, the tower dropped an inch or so down to the concrete base. Scarry! Fortunately, we got the tower clear of the house and cut loose the west side guy wires so the whole tower fell into the back yard between two trees without hitting either. It was way too risky to try to save any of the antennas as our life is more valuable than the price of the antennas. As luck was with us, only the 2-meter beam was damaged beyond repair. His 2.4g loop Yagi, the 1.2g loop Yagi and 438MHz regular Yagi elements were only slightly bent so they were easily repaired. The cross booms of each are OK. Also, a side mounted 1.2G loop Yagi and a mesh Tx/Rx module with omni antenna are OK. I have each of these antennas so if anyone needs any and is willing to make a small donation to the ATCO treasury, they are yours. I'll bring some bid items and antennas to the Fall Event so if you win any of them, you can pick it up then. In the meantime, if you would like to see and apply power to any of the items I have, please stop by and chat.

OK, now to some repeater details. The ATCO repeater is now back up and running after a rather significant antenna feedline retrofit. The facility where we have our "antenna farm" is changing the roof entry fittings which required us to replace all 9 of our feedlines. Sounds simple but it was a difficult process that took about a month to accomplish. At this time everything is back to normal except for a problem with the DATV 423MHz transmitter. It didn't power up correctly so I need to return to either fix it on site or pack it up under my arm for some home bench surgery. It's a HiDes HV100R unit that worked OK before but can lose some setup if left unpowered for an extended period. We'll see. So, in the meantime, the 423 continuous signal is off the air.

We are in serious need of new or old ATCO members right now. Please, help us by becoming more active. If we are to survive, more participation is needed. If I can help in any way, let me know. I can try to help you get back on the air. Most important is to come to the ATCO Fall Event and socialize with us. ATCO will have complementary food (And not just sandwiches / pop!). I'm planning to have chicken or pulled pork, potato salad, baked beans, Cole slaw and a variety of pop. (Sorry, no beer). Don't forget, the Fall Event will be on Sunday November 13 from 1 to 4 PM at the Westerville Library. More detail in the later pages of this Newsletter.

That's it for now,
…WA8RMC

SHORT HISTORY ABOUT MORSE CODE AND HAM RADIO

(From the Postscript Newsletter, August 2022. OK, it's not ATV related but interesting in any case! We all need some variety in our life so here's my contribution. Enjoy. WA8RMC

Morse Code / Ham Radio – Important Factors in The History of the World!

People who are Ham Radio Operators, people who know morse code, are sometimes considered just a bit "weird" by most of the other inhabitants of this planet. Yet, we are daily putting our mark on society, history and culture – in some very interesting ways!

Samuel FB Morse was the son of a Calvinist preacher. Morse studied philosophy and mathematics at Yale University before turning his attention to the arts, eventually travelling to England in 1811 to study painting. He became a portrait painter. In fact, he was a very good portrait painter. So good, that in 1825 he was commissioned by the United States Government to come to Washington DC (his home town was in Connecticut) to paint a portrait of the French General Marquis de Lafayette. While in Washington, Morse got word that his wife was sick. That word, sent by horse carried letter took several weeks to get there. By the time he could get home, his wife had died and had already been buried. Morse was devastated and spent most of the rest of his life trying to improve the state of long-distance communications. Working with newly discovered Electricity / Electro-Magnetic currents he sought to move information via wire.

Others were working on that same problem in a similar fashion. Most other systems required multiple wires while Morse's system required only one wire. Morse received a patent for his system in 1838, but still did not have a viable system. In 1844 Congress appropriated money to Morse to continue his development of a system. On May 23,1844, Morse, situated in the U.S. Capitol, tapped out a message to his longtime assistant Alfred Vail. Seconds later, Vail, sitting in a Baltimore, Maryland, railroad depot less than 50 miles away, received the brief message that would usher in a new world of communication—What hath God wrought?

At the end of WWII, Hideki Tojo, a ruthless Japanese General, not wanting to face war- crime hearings, shot himself in a suicide attempt. (Apparently, he was too chicken to use the traditional Hari-Kari that most of his other officers had used for committing suicide.) American doctors saved his life!

Tojo wears false teeth, and while imprisoned at Sugamo Prison, needs a new set. American military dentists Dr. George Clark Foster and Dr. Jack Mallory were given the assignment. Clark later wrote, in 1888 "Needless to say, our sentiment toward the Japanese was not the most favorable so soon after WW II I figured it was my duty to carry out the assignment. But that didn't mean I couldn't have fun with it." Tojo's new teeth came with a message: Remember Pearl Harbor. This was drilled into the back side of the false teeth in a series of dots and dashes. Although the prank was meant to be kept secret, after word of the prank got out, the message had to be removed from the teeth. (Tojo was later hanged for war crimes).

Move forward to July 1965. Navy pilot Jeremiah Denton is shot down in his A6 Intruder over North Viet Nam. North Viet Nam was a signatory to the Third Geneva Convention in 1949, but the Communist government in Hanoi claimed that the rules for humane treatment of prisoners did not apply in "undeclared wars of aggression." Denton spent 8 years as a POW. Four of those years were spent in solitary confinement. He was tortured, beaten. And then in May of 1966 he was taped for a propaganda video. In the weeks prior to this session, he was continually beaten to ensure his performance. As he sat with a Japanese reporter he blinked continuously through the interview, pretending to be adjusting to the television camera lights. He was actually sending a message back home by repeatedly blinking the word TORTURE in morse code. When the reporter asked about the US involvement in the war, he replied: "I don't know what is happening but whatever the position of my government is, I support it – fully. Whatever the position of my government is, I believe in it, yes sir. I'm a member of that government and it's my job to support it and I will as long as I live." Blinking his morse code message the entire time. He really did not expect to live much longer after that, but he was returned to the US in 1973.

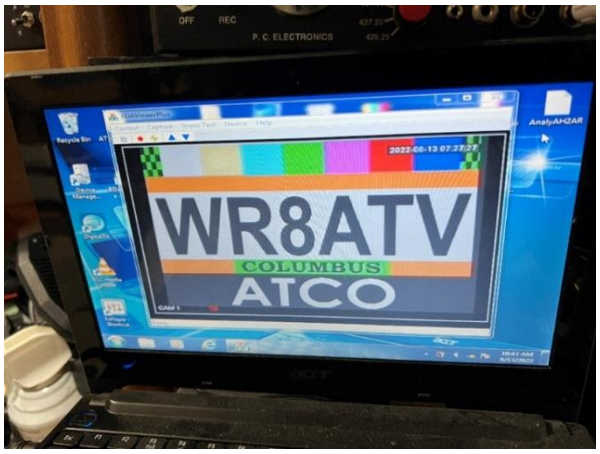
Denton was promoted to Rear Admiral before he left the Navy. In 1976 he published a book titled “When Hell Was in Session” which was an account of his days as a POW. He served as US Senator from Alabama 1981 – 1987. Jerry Denton died March 28, 2014; 3 months shy of his 90th birthday. The following clip is from his 1966 interview; https://youtube/rufnWLVQcKg

Moving forward, in the movie “Enemy of the State” (1998) starring Will Smith, it’s the “Deep State” who are the bad guys (how prophetic). Smith’s character is being chased by the bad guys, using all the resources of the US government, including satellites. Several times in the movie, they call on the satellites (and do amazing things with them!) and when they do, they cut to an image of a satellite (actually a model made for the movie) and present it as if it is in space orbit. Now, if you wanted to have a High- Tech item presented, you had to give it a High-Tech sound track! The following clip has a short bit of that, there are others in the movie. Notice that High-Tech sound track is none other than morse code! Listen carefully. I’m pretty sure you’ll be able to make out the letters CQ CQ CQ. I’m betting there was a ham involved! https://youtu.be/TTzl0PzPiK0. While I haven’t found this one yet, I’m told that Iron Butterfly, on their first album in 1968, had a theme track that at the end of it the keyboard player tapped out “I Love You” in morse. If you find that one, please send it to me! On Manfred Mann’s album Chance there is a cut called Stranded. You’ll find morse in that one too. The Clash did a song called “London Calling.” Check it out. Back to the movies for my final example. Pee Wee’s Big Adventure. Another “high-tech” movie. The following clip shows the security that had to be passed to get Pee Wee’s bike out of the garage. And yes, rather fast, it includes morse code. https://youtube/69ZqiwHYzmM. Check it out! I can cite lots of other examples! In the Sylvester Stallone movie “Cliff Hanger” all of the Rocky Mountain Search and Rescue people are using Amateur Radio Equipment. And the guys in the field can use handi-talkies to communicate with the base stations using HF radios! Pretty amazing. You’ll find ham radio gear in most of the Die-Hard movies too! Keep your eyes and ears open. Our culture and society are molded by many different influences. Ham radio and morse code are just two of them!
73, de Tom wb8lcd

BAND OPENING, (yep, another one!

Subject: ATCO repeater seen in Dayton (band opening) 13 August 2022

Distance is 63 miles at 0810 local.



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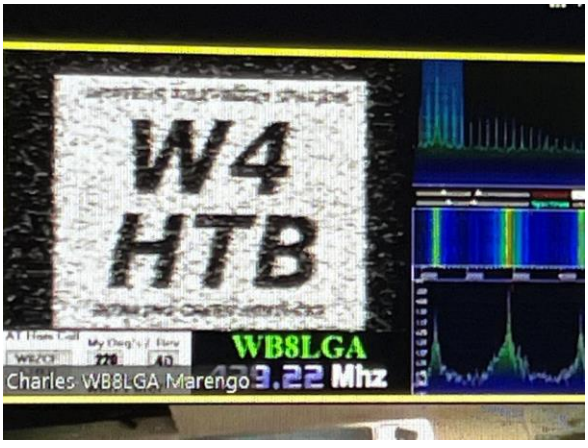
311 MILE A5 70CM BAND OPENING FROM KENTUCKY TO OHIO

Dave, AH2AR, reports --- Analog ATV is far from dead in this region. Several other folks had success during this opening, including a two way contact between W8URI and W4HTB, a 320-mile path. Pictured above: Here is a screenshot from WB8LGA's station as he was receiving W4HTB, in Bowling Green, Kentucky (311 miles) on Saturday, 1 October 2022.

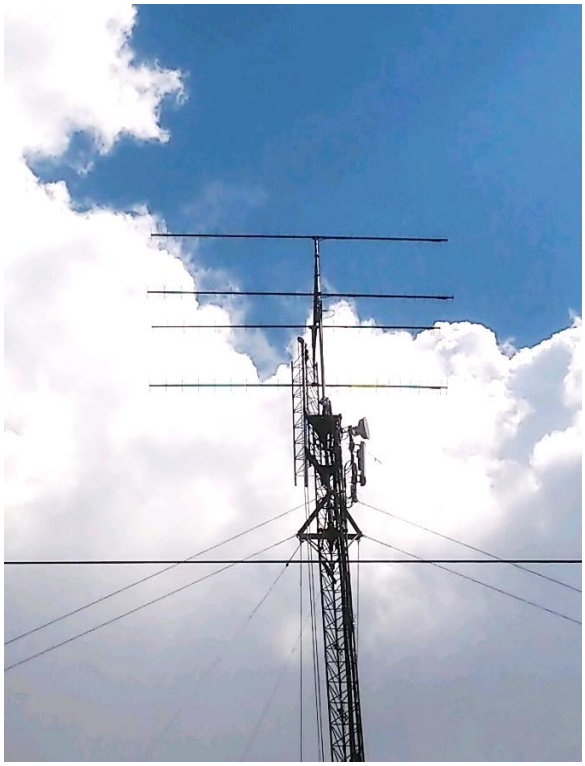


MICHIGAN ANTENNA UPDATE FROM BRYAN KC8LMI

Hello Art,

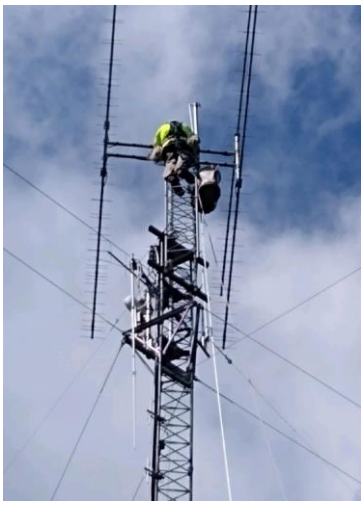
I'm still around and trying to stay active up here in Pleasant Lake, Michigan. Working more, unfortunately. I did upgrade to a 2 inch chromoly 4130 22ft steel mast about a week ago and today with mom and dad's help got up (4) dsfo25 ATV antennas. Took down the 2 old k1fo 33's, as the insulators were dry rotted and causing major issues. They have been up for a long time with no service. I got the 4 antennas from Bob ka9uvy years ago when he got out of ATV.

We started this morning around 6:35 am. The whole upgrade took a lot of time, money, and work! To say it was a lot of work is an understatement as I was the only one on the tower. It took several climbs on different days just to get the rigging in place. The mast is 2-inch dia. 22 ft long chromoly steel and weighs about 130 pounds. We clamped a section of r45 so that 5 ft was sticking above the existing tower top then moved the gin pole up to the top of that section to gain the needed headroom to install the mast. About 15ft 4 inches overhead total. The bottom of the H frame is about 8 feet above the top of the tower. The 2 lower antennas stick down about 2.5 feet from the frame. A lot of work was done by mom and dad as the ground crew as well in making this happen for me. The SWR is sweet between 1.1 and 1.0!



Made up all new phasing cables and switched to a half wave 4 port power divider. It has been a lot of money and a lot of work! Now I need a band opening.

….Bryan Dygert KC8LMI Pleasant Lake, Michigan near Jackson and due west of Detroit.



Ron, K8DMR comments as follows:

Here are some pictures taken yesterday (Saturday) at KC8LMI Bryan Dygert's place in Pleasant Lake MI (about 80 mi from my Jenison, MI qth). Four new K1FO's have replaced the single K1FO with the bad element insulators (and missing part of its reflector). Also, Brian raised their height above the tower by another 10 feet, using a 20-foot mast pipe dropped in the 100' tower. To mount such a long mast, he was unable to use a gin-pole but had to use a side mounted 20' tower section as a gin pole. The extra 10 feet was critical to clear a nearby tree/hill due west of his QTH.

Brian should be on 144.34 FM (V) and 439.25 U-VSB ATV (H) around 8 AM Sat/Sun and 8PM most evenings. Not sure how good his internet connection is for zoom nets, however. Brian's 2-meter FM Yagi is also on the tower and I have told him Ohio uses 147.48 for their ATV coordination.

…Ron K8DMR

10 TH WORLD-WIDE DATV QSO PARTY

Below is a summary of the efforts both in Australia and here in the USA. In Columbus, we had audio issues from Peter's end as we used only ZOOM while the rest used SRT. Perhaps next year we will upgrade also. However, there has been some discussion about the legality because of the encrypted format of SRT. I'll report on that later.

Peter's report follows:
We had a few hitches but the SRT direct into VK3RTV was a great success. Here in Australia DATV Repeaters in New South Wales (VK2RTS) and South Australia (VK5DMC) were linked by SRT in to VK3RTV as well as Bill AB0MY feeding the Boulder Repeater WB0TV and Roland KC6JPG with the multiple ATN Network Repeaters. Video quality was hugely improved over previous years. Hopefully next year we could include the Columbus and Dayton Repeaters as well. Having the SRT service simplified the operation. We ran a Back Channel on Zoom just for liaison purposes. Would be great if an SRT service could be offered the other way across the pacific pond.
…Best 73, Peter VK3BFG

Below is a link to a newsletter written by Mick VK3CH. Has a good wrap up of the DATV QSO Party as well as a lot of other material. I don't know how Mick finds the time! The September edition of NEVARC News is on the club website at https://nevarc.org.au/. The complete Newsletter with all pictures is at:
https://nevarc.org.au/wp-content/uploads/2022/08/

TIMELINE 10 YEARS OF THE WORLDWIDE DATV QSO PARTY
2011 1st DATV QSO Party 100 Years of Amateur Radio Victoria
2012 2nd DATV QSO Party
2013 3rd DATV QSO Party
2014 4th DATV QSO Party
2015 5th DATV QSO Party
2016 6th DATV QSO Party
2017 7th DATV QSO Party
2018 Not Held - VK3RTV, Out of Service, moving from Olinda to Mount View
2019 Not Held - VK3RTV, Out of Service, moving from Olinda to Mount View - COVID-19 first reports
2020 8th DATV QSO Party - VK3RTV Tuesday Night Nets start late July
2021 9th DATV QSO Party
2022 10th DATV QSO Party
The 2011 DATV QSO Party was sponsored originally by Amateur Radio Victoria and was a part of its 100-year celebration but has continued on now over a number of years. Friday night was Australia only as usual. Bevan VK5BD (Whyalla/Port Perie) used our SRT input system as did Roland KC6JPG (Los Angeles) and Bill AB0MY (Boulder, Colorado) on our Saturday morning, their Friday night. Bevan Roland and Bill will be fed video received from their local Repeaters. This is exactly the right concept, maximize the use of amateur radio frequencies and only use the Internet as a link. For those that have seen the SRT process the video is of a high quality. Special thanks to Phil VK3GMZ with assistance from Rob VK3RTX for installing this technology. SRT users should be aware that VK3RTV is 'first in, best dressed' the saying goes. VK3RTV treats the SRT input as any normal input. SRT stations need to drop the SRT link when it was time for Australian stations to respond or when they finished their session.

SRT is a video streaming transport protocol and technology stack designed to connect two endpoints for the purposes of delivering low latency video and other media streams across lossy networks such as the public internet. In a nutshell, SRT brings the best quality live video over the worst networks. It accounts for packet loss, jitter, and fluctuating bandwidth all while maintaining the integrity and quality of video. With SRT, you can keep your streams secure and easily traverse firewalls. Because SRT operates at the network transport level, acting as a wrapper around your content, it can transport any type of video format, codec, resolution, or frame rate. Thanks to SRT's security and reliability, the public internet has now become a viable option for an expanded range of streaming applications. SRT offers significant operational flexibility and cost savings compared to satellite or custom network infrastructures.

FRIDAY NIGHT SESSION

The session started at 7.30pm local time and went until 10.20pm local. The presentations can be summarized in four words – Effort, Engineered, Expensive, Enthusiastic. Some of the station setups were really fantastic, so much care and work over what must be many years for some operators. The presentations were very professional and wide range of aspects of the amateur radio hobby were on display. Technical glitches were few, audio seems to still be the biggest factor, but the SRT links were faultless and very high video quality. Peter Cossins VK3BFG started the night, then across to VK2, then back to VK3, followed by VK5, then back to VK2, then VK3 and VK5 with Peter VK3BFG wrapping up the night. The running order was: Garry VK2CRJ, John VK2ATU, Paul VK2JEL and Simon VK2ZSJ. Then back to Victoria with Mick VK3CH, John VK3ATV, Richard VK3VRS and Bruce VK3VRS. To South Australia with Bevin VK5BD, John VK5KJG, Roger VK5YYY and David VK5DMC. Back up to Sydney with John VK2ATU and Garry VK2CRJ. Back to Melbourne with Clint VK3CSJ, Dennis VK3YLH, Ian VK3QL, Neil VK3BCU and Mick VK3CH. Then Bevin VK5BD, John VK5KJG and Roger VK5YYY. In closing Peter VK3BFG thanked everyone for their presentations and the anchors and back-channel operators with the SRT links for all their help. But we all think it is both Peter VK3BFG and Phil VK3GMZ that deserve all the credit for all the work that goes into making VK3RTV such a versatile television repeater. Thanks also to both Ian VK3QL and Neil VK3BCU for assistance and linking support for Peter VK3BFG.

SATURDAY SESSION

For the USA, the QSO party started with Art Towslee - WA8RMC for the eastern US, followed by Bill Eberle AB0MY, for Boulder / mid US, then Lee Weitzel - K0CCU representing Arizona, Jim Tittle - K6SOE leading Mt. Diablo, Ben Carlucci -W2NYC representing the Silicon Valley ATV, and Roland with the six ATV repeaters in SoCal, and one ATV repeater in Nevada. The Boulder coordinator is Bill, AB0MY. The Saturday session was a new record for time and stations attending. Peter Cossins was very happy with how it all went with only some glitches which due to live television will always happen, but no one lets that spoil the event. Even with reduced bandwidth internet at his QTH, Peter VK3BFG still put on a fantastic DATV QSO Party with help from all the anchors both VK and USA. Some screen grabs of the international stations on Saturday, or their Friday night locally, as the VK stations were on also the day prior I have not reproduced their pictures as details are similar to the previous day. The first session was done via Zoom, then the rest used the new SRT link. Peter Cossins reduced bandwidth only just coped with the linking, but the ISP was to blame. All the VK stations that transmitted Friday also returned for the Saturday session. Peter thanked both Ian VK3QL and Neil VK3BCU for all their help with linking. VK3RTV was on air from 9.30am until just past 2.00pm Melbourne time.

DIY Hybrid?

USB TV TUNER DONGLE FOR DVB-T

Would you like to get started in digital ATV? Don't have a receiver? Want to try receiving the ATCO DVB-T or DARA DVB-T repeater outputs? Strapped for money? No hardware construction expertise? You're in luck!!
The following dongle costs only $27 from Amazon whereas if you purchase a dongle from HiDes, it will set you back over $100 bucks. So, purchase one from Amazon and try it out. If you do, let me know so I can pass the info to others. Pete, WB2DVS bought one and gives the following response. Now, after you buy and install the dongle, you will no doubt want to know more about how DVB-T works. Again, this is your lucky day. The following article supplies some much-needed detail!
…WA8RMC

(Credit for the following articles is Jim Andrews, KH6HTV from Boulder ATV club Newsletter.)
He describes his experience below:

I recently bought a Nooelec NESDR Mini 2+ SDR and DVB-T USB dongle. ($27 on Amazon, Nooelec NESDR Mini 2 SDR & DVB-T USB set including antenna. R820T2 tuner is guaranteed.) It is supposed to be an improved version of the RTL-SDR dongles that many of us are familiar with. It uses a newer tuner (R820T2) and a lower noise internal power supply. It also has a greater precision oscillator (TCXO) than most have. The antenna connector is MCX. There are a couple of accessories that come with the dongle. There is an MCX to SMA adapter and a little antenna with an MCX connector on it. It works well, but here's the catch; Getting the correct driver is tricky. Microsoft does not have the correct driver. If you do a driver update you will get an old driver from 2010. A Realtek 2832U driver from 2012 is needed for this to work. Rather than trying to describe the process of getting the correct driver here, I refer the reader to, http://www.users.on.net/~learoy/Installing%20RTL.pdf. This will give you a link to the correct driver and tell you how to install it. To see/hear a DVB-T signal I use the **VLC** program which is free. (**https://www.videolan.org/vlc/)** To use it, open VLC, go to "media" along the top menu bar and go to "open capture device". From there, find the capture mode pull down menu and select TV-digital. Be sure DVB-T is selected. Set your frequency in the "transponder/multiplex frequency" field and pull down the bandwidth menu and select your bandwidth. Press "Play" and you should soon see your TV signal. TV Rptrs Rptr-107.doc (8/1/2022, kh6htv) p. 7 of 11 If you want to use the dongle as an SDR for general purpose receiving, go to **start.nesdr.com** for details on how to install a different driver to do that. Unfortunately, no one driver allows use both as an SDR and a DVB-T receiver. I am happy with this so far, but I haven't used it to receive off the air yet, just across the room from a DVB-T transmitter. Pete, WB2DVS, Boulder, Colorado.

Now, learn a little more about DVB-T inner workings…
Go to K0DVB's web site: https://k0dvb.org/television/atv-training and down-load his pdf file on ***DVB-T Training - Part 2***. Matt was the Boulder County, Colorado, ARES (BCARES) ATV guru and coordinator for several years. He gave several training classes on ATV to BCARES members. For his classes, he developed some excellent power-point slide presentations. In this particular lecture he dug deeply into the internal workings of DVB-T. Matt says "My main interest is in digital amateur TV using DVB-T is in a public safety context. I am a graduate of the University of Colorado; my background includes service as an officer in the US Navy as well as many years building complex software for telecommunications and data storage. Matt was unfortunately also a victim of the Marshall Fire Storm which destroyed 1000+ homes. As a result, Matt has relocated back to Texas.

What Are the Differences in Receiver Sensitivity for 2, 4 & 6 MHz Band-Width DVB-T Signals?
Recently, in this newsletter there has been discussions on the pros and cons of narrow vs. wide band-widths for DVB-T. It is obvious that we can get high-definition, 1080P resolution, high quality video and CD quality audio with 6 MHz band-width. DVB-T was originally designed to do just that for commercial broadcast TV with either 6, 7 or 8 MHz band-widths. But how well does it work for lower band-widths, such as 4 MHz as used by the ATV hams in St. Louis or 2 MHz as used in southern California and Dayton, Ohio? So, I decided to run an experiment to measure receiver sensitivity for 2, 4 and 6 MHz band-widths. My experiment looked at many different settings. I used all three possible modulations of QPSK, 16QAM and 64QAM. I used two different digital encoding FEC settings for what I

called "*normal*" and "*aggressive*". "*Normal*" used 8K FFT, 5/6 code rate and 1/16 guard interval. "*Aggressive*" used 8K FFT, 1/2 code rate and 1/4 guard interval. I also tested with and with-out a low noise pre-amplifier in front of the DVB-T receiver. **Test Set-Up:** I used a Hi-Des model HV-320E modulator as my DVB-T signal source. I programmed the various operating parameters in it using a Windows 10 PC running the program AV-Sender. The DVB-T receiver used was a Hi-Des model HV-110. Its HDMI output was displayed on an 11", 1080P flat screen monitor. I used a DVD player playing a pre-recorded video to provide a 1080P, HDMI source of "live", full motion video and audio for the modulator. I measured the rf power out of the modulator using an HP 432A rf power meter with an HP 478A thermistor rf power sensor head. I controlled the rf signal level into the receiver using fixed 20dB and 30dB SMA attenuators plus a Midwest Microwave rotary step attenuator. (0 - 69dB in 1dB & 10dB steps). The low noise pre-amplifier used was a KH6HTV Video model 70-LNA with 21dB gain and 0.7dB noise figure. Different video data bit rates were required for each and every combination of bandwidth, modulation and encoding. AV-Sender calculates for each setting, the max. theoretical limit. Hi-Des recommends the data rate not be set any higher than 80% of the max. limit. This is to allow for data overhead and the audio encoding data stream. For lower band-widths and more aggressive encoding, I found it necessary to use an even lower percentage than 80%
… Jim Andrews, kh6htv

Media Configuration Settings: H.264 Video Encoding, 60 GOP length, Frame Rate 30 fps, ---- MPEG2 Audio Encoding at 96kbps TV

Video Resolution: I used 1920 x 1080 for both 6 MHz and 4 MHz band-widths successfully. I tried 1080 on 2 MHz but detected some artifacts in the transmitted video, so I used 1280 x 720 for 64QAM and 16QAM. For 2 MHz BW and QPSK, I found I needed to lower the resolution down to 640 x 480.

Receiver Measurements: For each test, the step attenuator was adjusted to determine the digital threshold. This is defined as the weakest signal for which a perfect, P5 picture and Q5 audio is obtained. Dropping another 1dB caused either total lockout or at least picture breakup with freeze frames. The on-screen display (OSD) feature of the HV-110 receiver was used to measure the signal to noise ratio. The following table summarizes the results.

Comparison of Digital Thresholds with & without low noise, pre-amp:

Band-Width Modulation Normal/ Aggressive HV-110 70-LNA HV-110 Improvement with pre-amp S/N max / min

6 MHz 64QAM Normal -81dBm -84dBm 3dB 32/22dB
64QAM Aggressive -87dBm -90dBm 3dB 32/15dB
16QAM Normal -86dBm -91dBm 5dB 26/15dB
16QAM Aggressive -90dBm -96dBm 6dB 26/10dB
QPSK Normal -94dBm -98dBm 4dB 23/8dB
QPSK Aggressive -97dBm -103dBm 6dB 23/5dB
4 MHz 64QAM Normal -83dBm -86dBm 3dB 32/22dB
64QAM Aggressive -88dBm -91dBm 3dB 32/15dB
16QAM Normal -88dBm -91dBm 3dB 26/15dB
16QAM Aggressive -91dBm -94dBm 3dB 26/12dB
QPSK Normal -96dBm -97dBm 1dB 23/8dB
QPSK Aggressive -98dBm -99dBm 1dB 23/5dB
2 MHz 64QAM Normal -86dBm -89dBm 3dB 32/22dB
64QAM Aggressive -92dBm -95dBm 3dB 32/15dB
16QAM Normal -92dBm -94dBm 2dB 26/15dB
16QAM Aggressive -95dBm -97dBm 2dB 26/12dB
QPSK Normal -99dBm -100dBm 1dB 23/8dB
QPSK Aggressive* -101dBm -101dBm 0dB 23/6dB

S/N: For QPSK, the max. possible s/n is 23dB. For 16QAM, it is 26dB. For 64QAM, it is 32dB. The lowest possible s/n at digital threshold depends upon the modulation and TV The aggressiveness of the FEC. For QPSK it was 8 and 5dB. For 16QAM, it was 15 and 12dB. For 64QAM, it was 22 and 15dB

6 MHz BW Summary: For normal FEC encoding, the sensitivity measured was - 94dB (QPSK), -86dBm (16QAM) and -81dBm (64QAM). Lowering the data rate and using very aggressive Forward Error Correction (FEC) of 1/2 was seen to buy several dB of improvement. Also using a low noise pre-amp adds 3 to 6dB improvement.

4 MHz BW Summary: I found it possible to use 1080P for all settings on 4 MHz band-width. For normal FEC encoding, the sensitivity measured was -96dB (QPSK), - 88dBm (16QAM) and -83dBm (64QAM). In other words, going from 6 to 4 MHz brought a 2dB improvement in sensitivity. Lowering the data rate and using very aggressive Forward Error Correction (FEC) of 1/2 was seen to buy several dB improvements. Up to 5dB. Also using a low noise pre-amp was seen to add 3dB improvement for QAM. For QPSK it was only 1dB.

2 MHz BW Summary: As mentioned previously one needs to lower the video resolution for 2 MHz BW. 720P works well for QAM. QPSK requires even lower 480. For normal FEC encoding, the sensitivity measured was -99dB (QPSK), -92dBm (16QAM) and -86dBm (64QAM). Lowering the data rate and using very aggressive Forward Error Correction (FEC) of 1/2 was seen to buy at most 3dB improvement with 64QAM and none with QPSK. Also using a low noise pre-amp was seen to add 3dB improvement for 64QAM. 2dB for 16QAM. It had no effect for QPSK
.…73 de Jim, KH6HTV, Boulder, Colorado

Feedback on DVB-T Band-Widths…
Jim, --- Wow! That is a really comprehensive summary of the possibilities of DVB-T You can't put your tools to their best use without knowing their capabilities and limitations. Thanks!
… 73 de Pete, WB2DVS, Boulder, Colorado

Jim,
You have done a lot of work putting together those test results for the different bandwidths and encodings. Good job. It is going to take a bit of time to digest all of this info. Two things stick in my mind. With a 21 dB gain preamp with 0.7 dB NF, the improvements in performance were much less than 21 dB gain of the preamp. That puzzles me. The other is with signals that low (-100 dBm) could there have been leakage out of the modulator case and directly into the receiver case perturbing the observations?

…73 de Don, N0YE, Boulder, Colorado

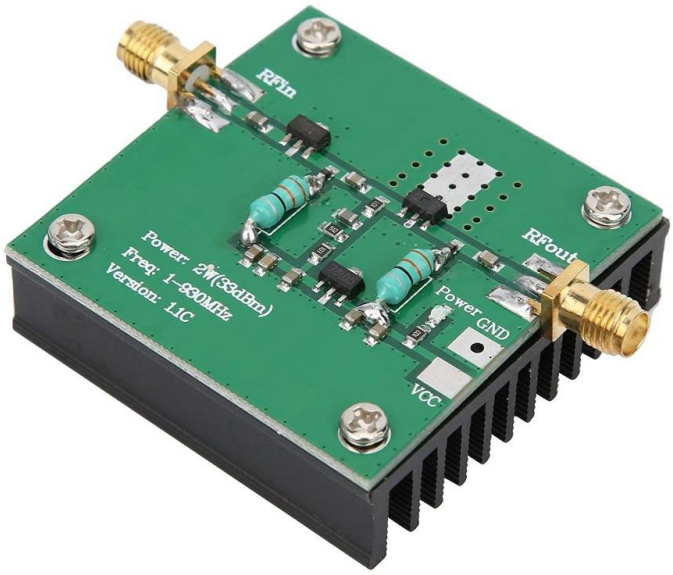
Jim,
This is in regards to your excellent comparison that you put together regarding bandwidth and constellation settings test information that you compiled in the last newsletter We are curious as to why the receive sensitivity stays at -101dbm for the 2 MHz wide bandwidth using the QPSK constellation after inserting the preamp in line with the HV-110? Note that in everyone's experience during weak signal work (while using this bandwidth with the same parameters), using a preamp allows for decoding in situations where without the preamp the HV110 fails to decode the transmission. Is the preamp improving the MER but not showing an increase in signal strength? That was the only thing I could figure out what may be occurring. Your thoughts? Cheers
…Dave, AH2AR, Dayton, Ohio

Hi Jim, ---- Very interesting test of DVB-T bandwidths. I am wondering if lowering the frame rate by 1/3 or /12 would allow a larger screen, or maybe with the same screen size would give better results at 2 MHz? Another question came up last night on out local ATV Zoom session. Why was a 20dB preamp only improving things by 6 dB at best, and sometimes 0? Dave, AH2AR, and I couldn't think of any reason for that.
… 73 de Tom Holmes, N8ZM, Dayton, Ohio

KH6HTV Replies: *Good point Tom. My guess is Yes. A lower frame rate, but same overall bit rate should allow higher resolution frames. Adding a preamp typically only improves things by the difference in noise figures of the basic receiver vs. the preamp. Never by the gain of the preamp. But yes, I too was baffled by sometimes not seeing any improvement.*

A NEW, CHEAP, LOW POWER RF AMPLIFIER

(Credit Jim Andrews Boulder ATV Newsletter)



Recently while surfing the Amazon web site, I stumbled upon a cheap ($12.39) RF amplifier which caught my eye. It had very minimal specs. as normal for Amazon, E-Bay, etc. Basic specs. are the same as printed on the above pc board, i.e., 2 Watts, 1-930MHz and 12Vdc. It is made in China by Ladieshow with a part# of Ladieshowk9g5r4qms2. Well for only $12, it was worth buying and seeing what it would really do. Here is what I found. As seen in the above photo, it is a two-stage amplifier of U1 and U2 in cascade. The third IC is a +5V regulator which provides Vcc of 5V to U1 and +1.7V dc bias to the input of U2. Vcc for U2 is +12V. The amp pulls 200mA when idling. I tested the amp with my Rigol DSA-815 spectrum analyzer with built-in tracking generator. I first did a swept frequency response test up to 1.5 GHz to determine gain with Pin = -26dBm. Yes, it has gain, lots of it at low frequency, 54dB at 1 MHz Below 1 MHz the gain rolls off. The gain is definitely not flat with frequency. But all the way up to our 23cm band, it still has gain of 25dB. My next test was max. power output, again as a swept frequency test with the DSA-815 tracking generator set to 0 dBm output. I didn't quite get the spec. 2 Watts (+33dBm), but close up to our 70cm band. Still considerable power, about +29dBm, at 33cm. In a CW max. power out test, the amp pulls about 400 mA at +12Vdc. Because most of us are interested in digital ATV, I then tested the amplifier for DVB-T service. I tested it at 435, 915 and 1270 MHz with 6 MHz band-width, QPSK signal. I adjusted the rf drive level up until the spectrum shoulder break-points rose to about - 30dB. The results are in the table below. At 0 dBm input, output is +20dBm = 100mW at 70cm. Thus about -12 dB below the max. saturated output power. This amplifier could thus be used as a moderate "After-Burner" on the output of a DVB-T modulator for a tiny QRP-DATV rig.

Parameter	**1 MHz**	**10 MHz**	**100 MHz**	**150 MHz**	**450 MHz**	**900 MHz**	**1300 MHz**
S21 Gain	54 dB	52 dB	47 dB	45 dB	39 dB	33 dB	25 dB
Pout (sat)	32.1 dBm	32.4 dBm	32.5 dBm	32.6 dBm	31.7 dBm	28.6 dBm	21.2 dBm

	Pout (DATV) (*-30dB shoulders*)	
430 MHz (70cm)	**915 MHz (33cm)**	**1270 MHz (23cm)**
+20 dBm	+16 dBm	+11 dBm

…73 de Jim, KH6HTV, Boulder, Colorado

NEW ICOM SHF RADIO

ICOM IC-905 RADIO. Supposedly works OK for ATV.
Bands: 144/430/1200/2400/5600/10 GHz
Modes: SSB, CW, FM, AM, RTTY, DV/DD, ATV
10 GHz (with optional CX-10G head-end unit)

The IC-905 is compatible with ATV in **FM** mode. If an analog camera is connected, the IC-905 can transmit and receive video and also supports enlarged display of video.
https://www.youtube.com/watch?v=kzGQWmTKNzc

ATCO FALL EVENT IS BACK!

Our Fall Event will start again after a 2 year absence. We used to have it at the ABB cafeteria but now that their personnel changed, that facility is no longer available so the search is on. A few choices became available but it turned out the meeting room "A" in the Westerville Library was the best choice and is free. When I found they allow external food that nailed down the choice. The room is large and holds up to 50 with an overhead projector and amplified podium.

DIRECTIONS TO THE ATCO FALL EVENT

From I-70 WEST Bound:
Take I-270 Northbound around and turning to the west to SR 3 (State Street) exit and travel north about 2 miles to uptown Westerville just past Walnut Street. The library is on the right just past Walnut Street. Park in lot behind library. Enter thru rear door. Meeting room A is last room on right.

From I-70 EAST Bound:
Take I-270 Northbound around and turning to the east past SR 315 and past I-71 and past Cleveland Ave. Get off on State route 3 (State Street) and travel north about 2 miles to uptown Westerville. The library is on the right just past Walnut Street. Enter the drive just north of the library. Park in lot behind library. Enter thru rear door. Meeting room A is last room on right.

From I-71 NORTH bound toward Columbus:
Drive through Columbus on I-71 to I-270 on the north side. Take I-270 east to the second exit, State route 3 (State Street) and travel north about 2 miles to uptown Westerville. The library is on the right just past Walnut Street. Enter the drive just north of library. Park in lot behind library. Enter thru rear door. Meeting room A is last room on right.

From I-71 traveling SOUTH bound toward Columbus (North of I-270):
Exit the Polaris Ave exit and travel east about 2 miles to State route 3 (State Street). Turn right on State Street thru uptown Westerville and just past Park Street. Turn left into the driveway directly across the NorthStar café. Park in lot behind library. Enter thru rear door. Meeting room A is last room on right.

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.

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

12/03/2022 - FCARC WinterFest
Location: Archbold, OH
Type: ARRL Hamfest
Sponsor: Fulton County Amateur Radio Club
Website: https://k8bxq.org/hamfest

01/15/2023 - Sunday Creek Amateur Radio Federation Hamfest
Location: Shade, OH
Type: ARRL Hamfest
Sponsor: Sunday Creek Amateur Radio Federation
Website: QRZ KC8AAV

03/11/2023 - MOVARC Hamfest
Location: Bidwell, OH 45614, OH
Type: ARRL Hamfest
Sponsor: Mid-Ohio Valley Amateur Radio Club

05/13/2023 - 05/17/2023
RV Radio Network
Location: Berlin, Ohio, OH
Type: ARRL Convention
Sponsor: RV Radio Network

07/16/2023 - Van Wert Hamfest
Location: Van Wert, OH
Type: ARRL Hamfest
Sponsor: Van Wert Amateur Radio Club
Website: http://w8fy.org

08/12/2023 - Cincinnati Hamfest℠
Location: Owensville , OH
Type: ARRL Hamfest
Sponsor: Milford ARC
Website: https://CincinnatiHamfest.org

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, ATCO on Tue. and the DARA net on Wed. we'd like to have only one net on Wednesday, same time at 8 PM. We'll 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. We normally have 12-20 check-ins.

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 (07/22/22)	$ 3934.85
Receipts (dues)	$ 30.00
WB8CJW donations	$ 790.00
Funeral donation	$ 50.00
PayPal fee	$ (2.52)
Postage	$ (8.40)
CLOSING BALANCE (10/22/22)	$ 4793.93

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 October 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
WA8RR	Richard Robbins	10483 Cambridge Place	Powell	OH	43065
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
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.

Hi Richard,
Thanks for joining ATCO. That's a start toward building up our database. The latest ATCO Newsletter is attached.
Art.

On 8/18/2022 3:43 PM, Richard Robbins wrote: Thanks Art. I will look through the links. I am really looking for a simple getting started. Using dongles off my laptop for a starter. Maybe get into a listen mode off the repeater as a starter. Thanks again. The club is fortunate to have an individual with your expertise.

Richard Robbins
WA8RR

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.