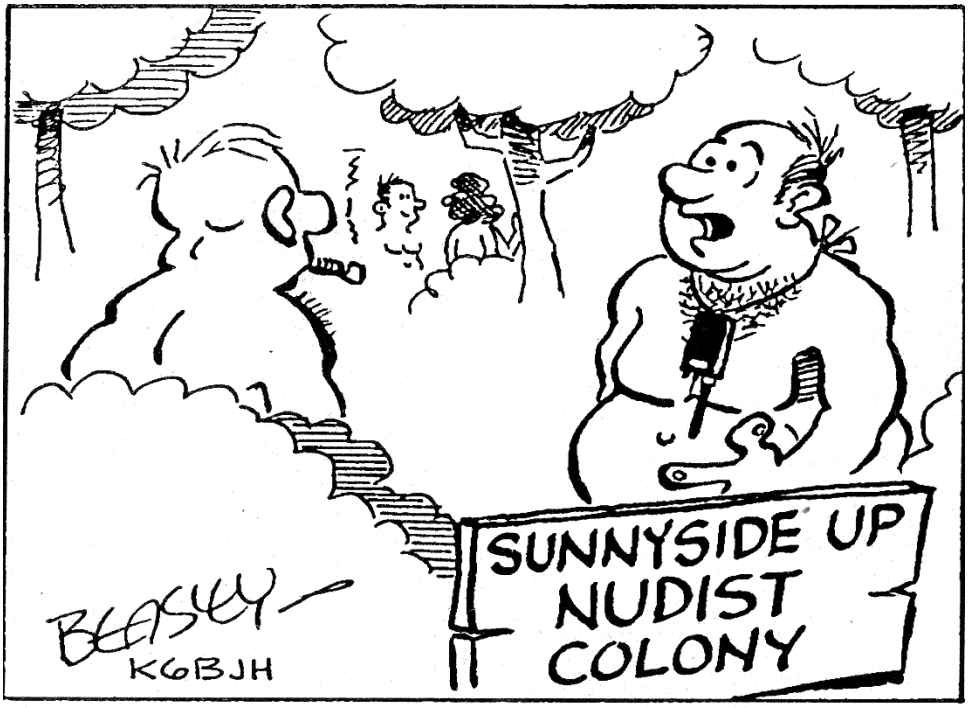
ATCO NEWSLETTER

VOLUME 41 NUMBER 3 **July 2024**

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



HAVE YOU FIGURED OUT A GOOD PLACE TO HANG YOUR HANDHELD?

ACTIVITIES ... from my Workbench

Hello everyone! Like this weather? Around here it has been near ideal weather wise. Now, to get excited about the lingering yard work is another matter. Went to buy fertilizer for the lawn yesterday. To my dismay, I found the store closed on Saturdays. Damn! Now I'll have to wait till Monday. Oh well, there's always "Ham stuff" that needs re-arranging and a Newsletter to finish.

Electronics wise, the ATCO repeater 147.48 analog input is still not as sensitive as it should be. The dual band antenna with 4 dB gain shares the 147.48 input with the 446.350 output using a band splitter module. I decided to add a single band 2M antenna with 6 dB gain and use it for the 147.48 input leaving the 446.350 output connected to the existing dual band antenna. I removed the dual band splitter and fed the 446.35 signal direct saving about a ½ dB or so attenuation. On the 147.48 side, I removed the dual cavity filter with a 146.76 notch filter in it with about 3 dB attenuation and replaced it with a large 12" diameter cavity filter with < ½ dB attenuation. Doing the math, I should have picked up ~ 4.5 dB of sensitivity. NOPE! I actually got 2 dB **less** sensitivity. I must re-visit this because there is a mistake somewhere.

There are a number of miscellaneous other items that need attention. Most pressing now is the recognition that a random flaw in the HiDes HV-100E modulator software causes it to stop sending video when it receives bad video occasionally. It's been that way for a long time but with an unknown cause. It still has a valid DVB-T signal output but with blank video. The only way to restore normal operation is to re-cycle AC power. Fortunately, I can do that remotely. However, the way to prevent this is to make sure the modulator video input is always valid, signal or not. That is accomplished with a QC video recorder. That unit sends a blank but valid signal with no video input. (I removed that unit some time ago because I didn't think it did any good.) Now it must go back!

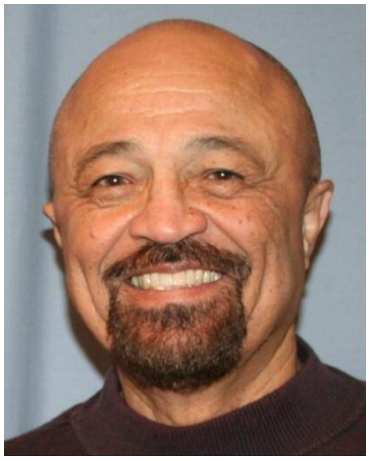
My "VersaTune" stand alone DVB-S / DVB-T receiver project is still in process. Bob found another software routine that produced marginal results causing him to completely re-write parts of it. That change took some time but now, the receiver performance is rock solid. Some timing issues remain but I now believe the "light at the end of the tunnel" is NOT a train this time!

That's it for this time guys.

Note: I was trying to get renewed interest in a Saturday morning breakfast get-together like we once had. There seems there is no interest at this time. I'll put it on the back burner for now and ask the question again sometime this fall. In the meantime, if any of you would like to meet sooner, let me know and I'll set it up. ATCO has enough money in the treasury account so I could be convinced to buy breakfast for everyone on occasion.
…Art.

SILENT KEY

Very sad news...7/3/24
I regret to inform you that Reuben Meeks Jr. passed away on 7/3/24. A bedrock to the local amateur radio community and DARA, Reuben, W8GUC, was a long-term volunteer for a wide spectrum of DARA activities, including volunteering many hours during many Hamventions. Reuben served as an Elmer for many Sacramento-based and local hams. He will be sorely missed.



Reuben Meeks, Jr. (W8GUC), a beloved husband, father, grandfather, and friend, passed away on July 3, 2024, at his home, in Huber Heights, Ohio. He was surrounded by his loving family and cherished dogs during his final moments. He was preceded in death by his parents: Reuben Cephas Meeks Sr and Henrietta Meeks.

Born on February 27, 1941, in Bakersfield, California, Reuben led a fulfilling life marked by dedication to his work and a deep love for his family. For more than 25 years, he served an Electrical Engineer and Civil Servant at WPAFB before transitioning to roles at Select Tech, Trimble, Channel 7, and Hollywood Gaming. Despite the demands of his career, Reuben found joy in connecting with others through his hobbies and interests.

Rest in peace, Dear Friend.
…Dave P.

2024 HAMVENTION WRAP UP

Hamvention 2024 is now history! This year's Hamvention likely broke a new record for attendance (see actual number below). The figure has not come in yet, but every indication points to a record crowd. The ATV hobby was well represented at the two booth spaces (1003 & 1004) with WA8RMC Art, KC3AM Dave, WA6SVT Mike, KK4LW Rick, K8FIX Bruce, and AH2AR Dave providing top-cover. A large number of hams visited the booth and the exhibitors were very busy answering a whole slew of questions. The exhibit had a number of ATV related displays, along with Art's display of the VersaTune-Express receiver project that is currently in the works. Just like last year, we set up a live 23cm/70cm DVB-T crosslink as a demonstration. For once, the latency that was occurring from the round trip of the cross-linked ATV signal back to the fairgrounds ended up being quite a novelty. Folks passing in front of the camera at the booths were treated to seeing themselves on the TV monitor with the video delay. Their wave at the camera was followed by a delayed wave back... the kids loved it!
…AH2AR

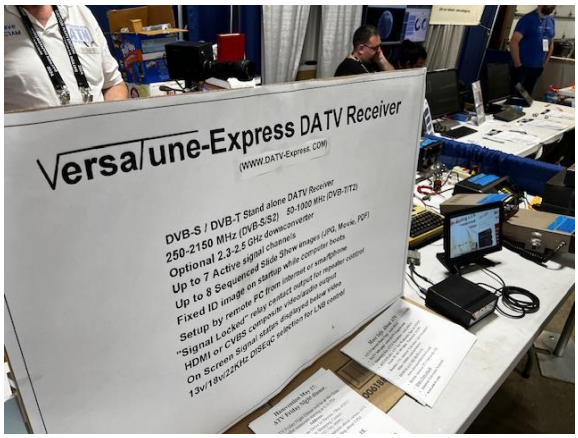
Left to right are Rick KK4LW, Bruce K8FIX, Art WA8RMC, Mike WA6SVT and KC3AM.

Hamvention General Chairman, Jim Storms, says, “I’m proud to announce the 2024 event had a record setting official attendance of 35,877. We thank everyone that attended and hope you had a wonderful time. Friday morning’s rain appeared to not put a damper on attendance. Saturday and Sunday weather was outstanding. There was a lot of activity all across the event. People attended from all around the world and others from close by. You are the ones why we work to provide this event. Hopefully, you found the hardware/software and forums you desired.

Again, I want to thank my hard-working Committee Chairs and their Assistant Chairs along with the approximately 700 volunteers. There are several functions that occur before and after the show. However, a large number work during the show for a minimum of six hours, and some individuals work much more than that. In some cases, they work so much that they do not have a chance to see much of the event. I am especially appreciative of those efforts.
We thank the American Radio Relay League (ARRL) for holding their National Convention in conjunction with Hamvention."

Left: Dave, KC3AM, is taking a well-deserved break.

Right: Some of the traffic at our 1003-1004 booths on Friday.



Right: Closeup of the sign I posted detailing the VersaTune features. The actual working prototype receiver is at the lower right. Software refinements are in progress and if no further issues are found, we should have units to sell by the first of 2025.

ATV Friday Night dinner.
The ATV Friday Night Dinner was held at the China Garden Buffet restaurant on Woodman Drive in Fairborn. We had dinner then presentations about various ATV topics and door prizes concluding about 9 PM. This year we had about 13 attendees, better than last year but because of Hamvention procedures, they only announced our event on their web page. Next year we will pass out flyers in advance and at our ATV booth in hopes of a better showing. (I remember when we had almost a 100 people attend). The lucky door prize winner of the HV110 DVB-T receiver was Earl King, WB9EZL.

INVENTOR OF ZILOG MICROPROCESSOR CHIP CALLS IT QUITS

After 48 years, Zilog is killing the classic standalone Z80 microprocessor chip. Z80 powered game consoles, ZX Spectrum, Pac-Man, and a 1970s PC standard based on CP/M.

Benj Edwards - 4/22/2024, 12:48 PM

A cropped portion of a ca. 1980 ad for the Microsoft Z80 SoftCard, which allowed Apple II users to run the CP/M operating system.

Last week, chip manufacturer Zilog announced that after 48 years on the market, its line of standalone DIP (dual inline package) Z80 CPUs is coming to an end, ceasing sales on June 14, 2024. The 8-bit Z80 architecture debuted in 1976 and powered a small-business-PC revolution in conjunction with CP/M, also serving as the heart of the Nintendo Game Boy, Sinclair ZX Spectrum, the Radio Shack TRS-80, the *Pac-Man* arcade game, and the TI-83 graphing calculator in various forms.

Further Reading

Happy 30th B-Day, Game Boy: Here are six reasons why you're #1

In a letter to customers dated April 15, 2024, Zilog wrote, "Please be advised that our Wafer Foundry Manufacturer will be discontinuing support for the Z80 product and other product lines. Refer to the attached list of the Z84C00 Z80 products affected."

Designers typically use the Z84C00 chips because of familiarity with the Z80 architecture or to allow legacy system upgrades without needing significant system redesigns. And while many other embedded chip architectures have superseded these Z80 chips in speed, processing power, and capability, they remained go-to solutions for decades in products that didn't need any extra horsepower.

Zilog will continue to manufacture the eZ80 microcontroller family, which was introduced in 2001 as a faster version of the Z80 series and comes in different physical package configurations (pin layouts).

Powering a microcomputer revolution

The Tandy Radio Shack TRS-80 (1977), used the Zilog Z80. SSPL/Getty Images

The 8-bit Z80 microprocessor was designed in 1974 by Federico Faggin as a binary-compatible, improved version of the Intel 8080 with a higher clock speed, a built-in DRAM refresh controller, and an extended instruction set. It was extensively used in desktop computers of the late 1970s and early 1980s, arcade video game machines, and embedded systems, and it became a cornerstone of several gaming consoles, like the Sega Master System.

During the mid-late 1970s, the Z80 became a popular CPU for S-100 bus machines, which were early personal computers with a 100-pin modular bus system that allowed swapping cards to build systems based on parts from various manufacturers. Digital Research targeted the Z80 as a key platform for its CP/M operating system, and the association between Z80 and CP/M stuck, powering dozens of small business computers until the mid-1980s, when IBM PC clones running Microsoft's MS-DOS became the new industry standard.

Interestingly, Microsoft's first hardware product, the Z80 SoftCard for the Apple II in 1980, added the famous Zilog CPU to the classic personal computer and allowed users to run CP/M on that machine. In 1982, Bill Gates claimed that SoftCard installations represented the largest single user base of CP/M machines.

Last call in June 2024

Zilog is notably discontinuing several Z84C00 chips that are still available in classic 40-pin DIP packages resembling the classic Z80 CPU chips of the 1970s. (These standalone chips include a CPU and nothing else, unlike a microcontroller, which can include RAM and other accessory devices.) The DIP design features two rows of 20 pins with a plastic package in between that contains the actual embedded silicon chip, resembling the classic Z80 CPU chips of the 1970s.

After June 14, Zilog will stop taking orders, manufacture whatever orders are available if they are sufficient in quantity, then ship the last runs of the chips to resellers like Mouser Electronics and Digikey.

Enlarge / A classic dual inline package (DIP) version of the Z80 from the 1970s. It features two rows of 20 pins in a ceramic package.

The discontinuation list provided by Zilog in its letter includes 13 products from the Z84C00 series, which are chips in the Z80 family that run at clock speeds from 6 to 20 MHz and maintain compatibility with the original Z80 architecture. Here's the full list of part numbers that will be discontinued:

- Z84C0006VEG
- Z84C0006PEG
- Z84C0010PEG
- Z84C0008AEG
- Z84C0020VEG
- Z84C0008PEG
- Z84C0010AEG
- Z84C0008VEG
- Z84C0010VEG
- Z84C0010VEG00TR
- Z84C0020AEG
- Z84C0020PEG
- Z84C0006AEG

So, while the Z80 architecture will stick around in eZ80 form, it appears that this is the last call for newly manufactured standalone 8-bit Z80 CPU chips in the classic DIP form factor. We reached out to Zilog for clarification about its plans for the future of the Z80 platform but did not receive a response by press time.

MFJ CEASING ON-SITE PRODUCTION
04/26/2024

MFJ Enterprises, Inc founder Martin F. Jue, K5FLU, announced that as of May 17, 2024, the company will cease on-site production at their Starkville, Mississippi, facility. Ameritron, Hy-Gain, Cushcraft, Mirage, and Vectronics brand products will be affected by the shutdown.

In a letter posted to social media, Jue said he is looking forward to retiring.

Times have changed since I started this business 52 years ago. Our product line grew and grew and prospered. Covid changed everything [for] businesses, including ours. It was the hardest hit that we have ever had, and we never fully recovered.

I turned 80 this year. I had never really considered retirement, but life is so short, and my time with my family is so precious.

Jue founded MFJ Enterprises in 1972, after building a CW filter kit that sold for less than $10. Since 1990, the company has acquired several other legacy brands within the amateur radio market. Jue shared that the company will remain open to sell existing inventory because they have “a lot of stock on hand.” They will also continue to offer repair services for the foreseeable future.

Jue expressed gratitude to the many longtime employees of MFJ, some of whom have been with the company for 40 years. He also thanked MFJ dealers and radio amateurs for their patronage over the decades.

He also sent a special message to ARRL Members, and loyal *QST* readers:

"I give my deepest heartfelt thank you to my fellow hams all over the world and especially to ARRL members and QST readers. In my youth, I was given a second-hand set of 1958 QSTs. I read them over and over until I practically memorized every word. This gave seed to MFJ.

MFJ became a worldwide ham radio leader only because of you. As I turned 80, I cannot thank you all enough for 52 wonderful ham radio years.
Thank you, 73s . . . Martin F. Jue, k5flu"

GOOGLE “AI” REFERENCE ERRORS

Well, here we go again. I’m including an article clearly not related to Amateur Television. Or am I? Well, if I stretch it a bit, AI (artificial Intelligence) touches our conversation on every topic we hear so, why not here? Besides, we all need a little humor in our lives so whether it relates to ATV or not doesn’t really matter. Sit back and enjoy this short burst of attempted humor.
…WA8RMC

Last week, at its yearly I/O conference, Google doubled down on its AI-powered vision for the future of search, a vision that, as it stands, basically involves embedding an AI-paraphrased regurgitation of search results at the top of a user's results page.

"Sometimes you want a quick answer, but you don’t have time to piece together all the information you need," the company's Head of Search Liz Reid wrote in an I/O-accompanying blog post. "Search will do the work for you with AI Overviews."

But Google's AI Overviews, previously known as Search Generative Experience, are still far from reliable.

Case in point: as one X-formerly Twitter user pointed out over the weekend, AI Overview will respond to the search entry "blinker not making sound" — which would ideally return helpful, expert-penned posts or videos that help Googlers figure out why their car's blinker isn't working — The advice was, **"replace blinker fluid."** Which, again, is not a real thing. Google's AI search wants you to change your car's "blinker fluid." No, dear reader: blinker fluid does not exist. When we tested the search query for ourselves, we got the same terrible advice.

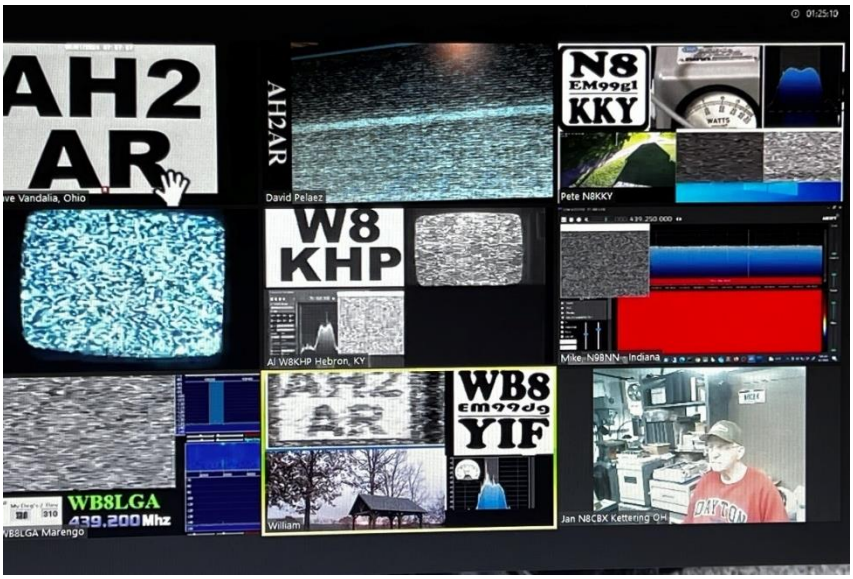
Blunder Road

The “blinker fluid” advice is one of many instances of AI Overview failing to provide correct information, often due to terrible sourcing. To wit: recently, Redditors prompting the feature with the search "food names end with um" noticed that the AI search function will return the woefully incorrect response of "Applum, Bananum, Strawberrum, Tomatum, and Coconut" — which was stolen from an obviously ironic answer to the same question posted years ago in a Quora forum.

When we just tested the similar query "fruits that end with um" for kicks, AI Overview told us that the Japanese fruit "Umeboshi" ends with "um," troublingly citing an incorrect AI-generated answer to the same response *from another AI chatbot*, Poe.

Speaking of bad sourcing, as *Jalopnik* points out, Google's blinker fluid gaffe is actually derived from a common joke. Those who know their way around vehicles are well aware that blinker fluid doesn't exist, so telling a less-car-savvy person that they need to "replace blinker fluid" is an old inside quip. You can even buy empty blinker fluid bottles as a joke; indeed, the "source" that AI Overview cites is a comment in a wildly random travelers' forum in which the commenter includes a clearly ironic photo of one of these empty bottle gag gifts with the phony advice that one "should replace" the fake fluid "every 2 years or so....."

ATV EARLY MORNING DX CONTACTS



Here is a snapshot of the ATV DX participants on Zoom for 1 June 2024. At one point, there were a total of 12 check-ins from Ohio, Indiana and Kentucky. The results were in for the morning with multiple successful contacts using analog ATV, with two-way links on A5 out to as far as 235 miles on A5, to include two-way links on DVB-T at 90 miles, all via simplex operation.

This DX ATV Net occurs daily around 07:30 EST and runs for about 1-2 hours. Anyone can join through a Zoom call. It's an informal net where initial contacts are achieved on A5, and if the A5 signal is around P3, the participants try to close the link on DVB-T (2 MHz bandwidth using QPSK).

It's not uncommon to have other ATVers that may be well out of range in other parts of the country who may want to see the activity or join in on the discussions about amplifiers, antennas, EME, and other shared items of interest.

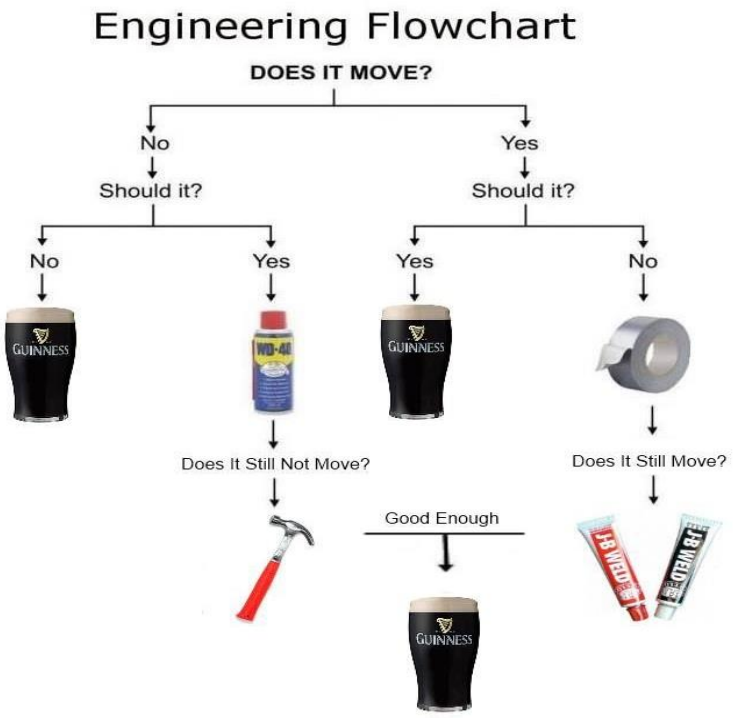
The ATV DX Net Zoom session uses the log-in number 9670918666 with passcode 191593. It's the same numbers used every Wednesday night: ATN/ATCO/DARA ATV net at 8:00 pm EST.

A5 is alive and well!
Good A5 ATV DX!
…Dave AH2AR

SUGGESTION TREE FOR ENGINEERS

The flowchart at the right seems appropriate for many of my projects. How about you?

I always like decisions that end with a beer!
…WA8RMC



DATV IN SD, HD, 4K or now 8K????

OK guys, here it comes! First SD (standard definition), then HD (high definition) and finally 4K (4000 pixels). But wait, here comes 8K. The 8K resolution comes into play when screen sizes generally exceed 64 inches. However, when video zooming is needed (sports activity) or for "Ring doorbell" applications (zoom in to identify subject), the extra zooming ability without loss of resolution, 8K is going to take more center stage. I've compared the 1080P, 4K and 8K resolutions below to give you an idea.

The main difference between 4K and 8K lies in the number of pixels counted in the horizontal resolution. 4K has 3840 pixels, and 8K has 7680 pixels. As the vertical resolution also doubles, 8K has four times the pixels of 4K. Here's a table comparing 4K, 8K, and 1080p.

Resolution	*4K*	*8K*	*1080p*
*Horizontal*vertical Pixels*	*3840*2160*	*7680*4320*	*1920*1080*
Total pixels	*8,294,400*	*33,177,600*	*2,073,600*
Other Names	*Ultra High Definition (UHD)*	*8K Ultra HD, UHD-2, Super Hi-vision*	*High Definition (HD)*
Applications	*Modern TVs, cameras, video streaming*	*High-end TVs; cameras, movies, gaming*	*Old and small TVs; cameras*

…WA8RMC

Hisense Bullish on 8K

By Tom Butts (from TV Tech Magazine)
World's second largest TV maker joins 8K Association

(Image credit: 8K Association)

SUWANEE, Ga.—Hisense, the second largest maker of TV sets in the world announced today that it has joined the 8K Association (8KA), a cross-industry group promoting the growth of the 8K ecosystem.

"Hisense's membership in the 8K Association marks a significant step in our ongoing mission to enhance the home entertainment experience," said David Gold, President of Hisense Americas and Hisense USA. "We are eager to contribute to the 8K ecosystem and collaborate with other industry leaders to accelerate the integration of 8K technology into the home entertainment experience."

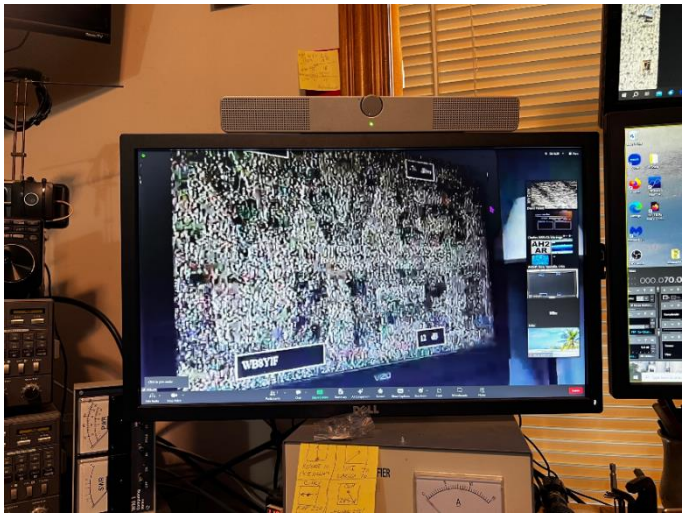
Hisense says it has been investing in R&D to improve the resolution and image quality of its televisions and that its membership in the 8K Association "will further strengthen Hisense's position as a leader in the television industry and will allow the company to have a more significant influence on the development and deployment of 8K technology."

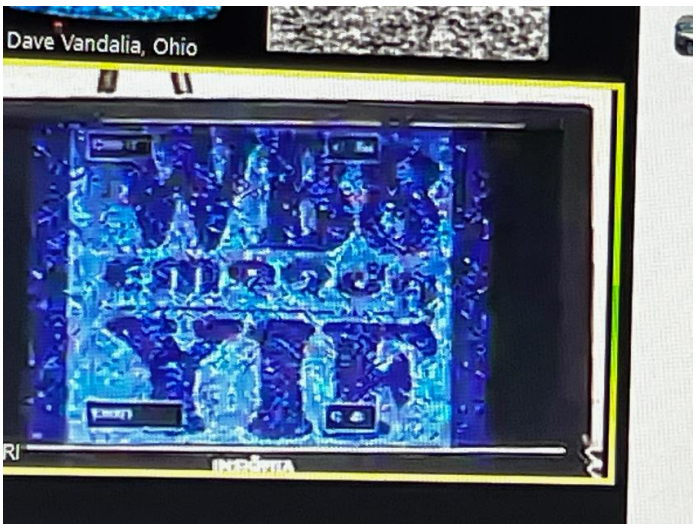
Currently, the only 8K Hisense TV on the U.S. market is the U800GR Roku TV.

"Hisense's addition to the 8K Association expands our collective of industry leaders," said Mike Fidler, Executive Director of the 8KA. "Their dedication to innovation and excellence in consumer electronics will be instrumental in our shared efforts to promote 8K technology and its benefits."

70 CM ATV BAND OPENING SATURDAY 22 JUNE 2024

The first photo is the ATCO repeater signal being received by WB8YIF in Little Hocking. He is receiving Bill W8URI who is transmitting from Mt Giliad, Ohio a repeated distance of 110 miles.





The second photo of the ATCO repeater is being received by W8URI in Mt Giliad, of William WB8YIF located in Little Hocking, Ohio, a repeated distance of 110 miles.

The third photo is W8KHP transmitting into the W8BI ATV repeater in Dayton, with an analog P-5 picture. Al is located 60 miles from Dayton, in Hebron Kentucky.

Note that both repeaters repeat both digital and analog signals through their digital outputs.
…AH2AR

LET'S TEST YOUR THINKING

Here's mind bender. Let's see if you can figure it out without looking at the answer at the end of this Newsletter.
…WA8RMC

Question: An ant marks its starting point, walks two inches, turns 90 degrees right, walks two inches, turns 90 degrees right, walks two inches, and is amazed to find itself back at its starting point. Where is the ant?

ATV PALLET AMPLIFIER PROJECT - GENERAL OBSERVATIONS

Commercially manufactured surplus pallet amplifier PCBs have become widely available. With the decommissioning of broadcast TV transmitters around the country, many have been taken out of service. These circuit boards have been appearing in-mass on e-Bay and at hamfests for pennies on the dollar. One such amplifier shown here is a 360-watt amplifier that uses two Freescale MRF-372 N-Channel Enhancement Mode Lateral MOSFETs. The circuit board is manufactured by Larcan, and it provides 15 dB gain. N8KKY and WB8YIF steered me to the E-bay seller that has been offering these circuit boards for about $10 (5 for $55).

Completed pallet amp in operation at W8CWM's QTH

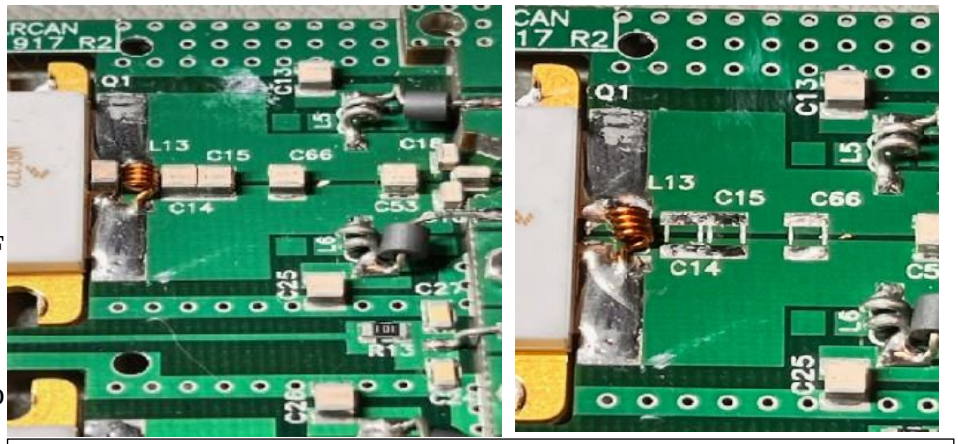
ATVers within the Midwest region have been experimenting with a number of different pallet amplifiers. W8URI (Bill), WB8LGA (Charles), N8KKY (Pete) and WB8YIF (William) have been employing different pallets that incorporate dual BLF-888 LDMOS MOSFETs and are running up to 1 KW power output on 70 cm and all have achieved excellent results. Oher local hams within this region such as N9BNN near Indianapolis has built up high-power pallets using combiners. Recently, N8CBX, Jan, has opted to build a 1 KW W6PQL pallet. His metal work in fabricating the chassis for his latest project is quite remarkable.

To that end, I checked with a local ATVer (W8CWM) in the Dayton area to see if he was interested in being the owner and beta tester for one of the **--smaller--** pallet boards that I wanted to experiment with to see what kind of results could be achieved at the lower output power level. His ATV system was ideal for running this particular amplifier, since the Larcan pallet I had in mind would allow for 5 watts drive (37 dBm) and would provide about 160 watts output (52 dBm), once the circuit was modified for its best operating efficiency. Inclusion of this pallet at W8CWM's station will provide an additional 3 dB and along with his antenna upgrades he had been working on, the additional gain will further enhance his ATV DX success.
For this project I ended up using the following components/materials:

Larcan pallet circuit board
W6PQL 4 event timer
W6PQL High Current Switch
Primary muffin fan with 60 Degrees Centigrade thermistor
2 Secondary muffin fans
2 Tohatsu T/R relays
1 SSB Elektronics Mini-70 preamp
28 VDC to 12 vdc converter
28 vdc 20 amp power supply
Hall Effect Current and voltage display/meter
aluminum heatsinks
SMA style T/R relay (for preamp/isolation protection)
copper spreader
Hammond chassis
Nuts, bolts, panel lights, switches wiring,
SMA RF cabling.

Larcan 360 Watt Pallet Amlifier prior to capacitor removal

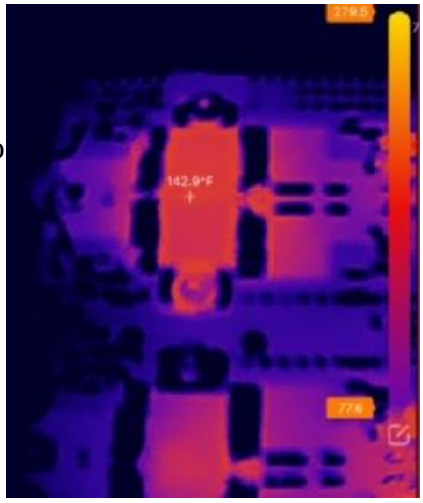
After purchasing some Larcan circuit pallets, I proceeded to see if I could raise the efficiency of the Larcan pallet, as the circuit board was designed to operate within the 470 – 890 MHz TV commercial broadcast range. After conferring with WB8YIF and N8KKY, their focus had mainly been on working with the larger amplifiers, so I ended up making some changes ad-hoc, and was able to bring the circuit board's efficiency to within its acceptable specification range. Prior to the circuit board changes, I was only able to achieve about 10 dB gain. With some experimentation, I removed four of the SMD capacitors on each the MRF-372s' output stage. These changes brought the total current level down and alternately brought up the pallet's output gain to 15 dB.



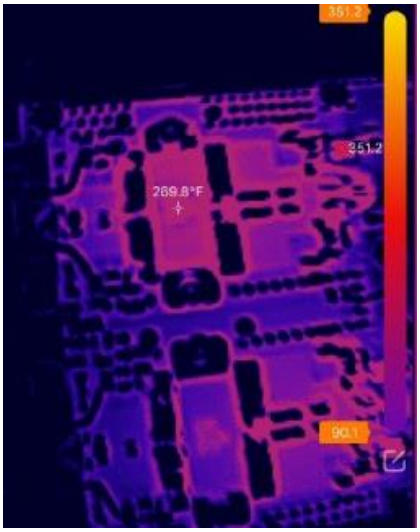
SMD Capacitors prior to removal (above left). NOTE: Both transistors had 4 SMDs that were removed.

HEATSINK ISSUES:

The Larcan pallet circuit board has a somewhat unusual geometry on the bottom of the board that initially made it challenging to come up with a method for mounting the circuit board and transistors to a heatsink. I ended up opting to use a copper spreader that required extensive milling to conform to the unusual board design. Knowing that K8FIX Bruce had a milling machine, I showed the circuit board and copper spreader to Bruce and he volunteered to employ his older Harbor Freight machine to mill the copper spreader. In Bruce's own words, the Harbor Freight mill was actually too small for the job, and it also had some play in its worktable that could potentially become problematic.



After we milled the spreader, I mounted the circuit board to the spreader and the aluminum heatsink, powered up the circuit board and quickly noticed that the spreader was not efficiently transferring the heat from one of the transistors to the aluminum heatsink, as a thermal camera indicated unacceptable heating. I remounted the circuit board to the spreader after changing to a different heatsink compound but still had a heat transfer issue. Bruce was correct… the worktable tolerance issue came back to haunt me! Instead of re-milling the spreader, I opted to purchase some graphene material and placed it between the circuit board and the copper spreader. (If you have a chance, try Googling the term "graphene": the material is truly amazing!) The graphene fix immediately resolved the heat transfer issue and both transistors are now happy!



After resolving the heatsink issues, the amplifier delivers 15 dB gain and at 174 watts output, draws 11.7 amperes at 27.5 vdc. It's now under permanent-long-term test at W8CWM's QTH!

E-Bay Link for the Larcan Pallet board:

On E-bay, use the following search term: **"Lot of 5 LARCAN 21B1917 Modules"**

Transistor Specification Data for the Larcan Transistors:

https://www.nxp.com/docs/en/data-sheet/MRF372.pdf

HISTORY OF THE CAR RADIO

I'm sure you've heard this at one time or the other but I'm also sure you will get a chuckle out of it by hearing it again. Forgive me if you're bored of it this time around.
…WA8RMC

Seems like cars have always had radios, but they didn't.

Here's the story:

One evening, in 1929, two young men named William Lear and Elmer Wavering drove their girlfriends to a lookout point high above the Mississippi River town of Quincy, Illinois, to watch the sunset.

It was a romantic night to be sure, but one of the women observed that it would be even nicer if they could listen to music in the car.

Lear and Wavering liked the idea. Both men had tinkered with radios (Lear served as a radio operator in the U.S. Navy during World War I) so it wasn't long before they were taking apart a home radio and trying to get it to work in a car.

But it wasn't easy: automobiles have ignition switches, generators, spark plugs, and other electrical equipment that generate noisy static interference, making it nearly impossible to listen to the radio when the engine was running.

One by one, Lear and Wavering identified and eliminated each source of electrical interference. When they finally got their radio to work, they took it to a radio convention in Chicago. There they met Paul Galvin, owner of Galvin Manufacturing Corporation. He made a product called a "battery eliminator", a device that allowed battery-powered radios to run on household AC current. But as more homes were wired for electricity, more radio manufacturers made AC-powered radios.

Galvin needed a new product to manufacture. When he met Lear and Wavering at the radio convention, he found it. He believed that mass-produced, affordable car radios had the potential to become a huge business.

Lear and Wavering set up shop in Galvin's factory, and when they perfected their first radio, they installed it in his Studebaker.

Then Galvin went to a local banker to apply for a loan. Thinking it might sweeten the deal, he had his men install a radio in the banker's Packard. Good idea, but it didn't work.

Half an hour after the installation, the banker's Packard caught fire. (They didn't get the loan.)

Galvin didn't give up. He drove his Studebaker nearly 800 miles to Atlantic City to show off the radio at the 1930 Radio Manufacturers Association convention.

Too broke to afford a booth, he parked the car outside the convention hall and cranked up the radio so that passing conventioneers could hear it. That idea worked. He got enough orders to put the radio into production.

WHAT'S IN A NAME

That first production model was called the 5T71. Galvin decided he needed to come up with something a little catchier. In those days many companies in the phonograph and radio businesses used the suffix "ola" for their names. *Radiola, Columbiola, and Victrola w*ere three of the biggest.

Galvin decided to do the same thing, and since his radio was intended for use in a motor vehicle, he decided to call it the *Motorola*.

But even with the name change, the radio still had problems: When Motorola went on sale in 1930, it cost about $110 uninstalled, at a time when you could buy a brand-new car for $650, and the country was sliding into the Great Depression. (By that measure, a radio for a new car would cost about $3,000 today.)

In 1930, it took two men several days to put in a car radio. The dashboard had to be taken apart so that the receiver and a single speaker could be installed, and the ceiling had to be cut open to install the antenna. These early radios ran on their own batteries, not on the car battery, so holes had to be cut into the floorboard to accommodate them. The installation manual had eight complete diagrams and 28 pages of instructions. Selling complicated car radios that cost 20 percent of the price of a brand-new car wouldn't have been easy in the best of times, let alone during the Great Depression.

Galvin lost money in 1930 and struggled for a couple of years after that. But things picked up in 1933 when Ford began offering Motorola's pre-installed at the factory.

In 1934 they got another boost when Galvin struck a deal with B.F. Goodrich tire company to sell and install them in its chain of tire stores. By then the price of the radio, with installation included, had dropped to $55. The Motorola car radio was off and running. (The company name officially changed from Galvin Manufacturing to "Motorola" in 1947.)

In the meantime, Galvin continued to develop new uses for car radios. In 1936, the same year that it introduced push-button tuning, it also introduced the Motorola Police Cruiser, a standard car radio that was factory preset to a single frequency to pick up police broadcasts.

In 1940 he developed the first handheld two-way radio-- The Handy-Talkie for the U. S. Army.
A lot of the communications technologies that we take for granted today were born in Motorola labs in the years that followed World War II.
In 1947 they came out with the first television for under $200.
In 1956 the company introduced the world's first pager
In 1969 came the radio & tv equipment that was used to televise Neil Armstrong's first steps on the Moon.

In 1973 it invented the world's first handheld cellular phone.
Today Motorola is one of the largest cell phone manufacturers in the world. And it all started with the car radio.
Whatever happened to **t**he two men who installed the first radio in Paul Galvin's car?
Elmer Wavering and William Lear, ended up taking very different paths in life.

Wavering stayed with Motorola. In the 1950's he helped change the automobile experience again when he developed the first automotive alternator, replacing inefficient and unreliable generators. The invention led to such luxuries as power windows, power seats, and, eventually, air-conditioning.

Lear also continued inventing. He holds more than 150 patents. Remember eight-track tape players? Lear invented that. But what he's really famous for are his contributions to the field of aviation. He invented radio direction finders for planes, aided in the invention of the autopilot, designed the first fully automatic aircraft landing system, and in 1963 introduced his most famous invention of all, the Lear Jet, the world's first mass-produced, affordable business jet. (Not bad for a guy who dropped out of school after the eighth grade.)

Sometimes it is fun to find out how some of the many things that we take for granted actually came into being AND it all started with a woman's suggestion!!

USA ATV REPEATER DIRECTORY April 2024

NOTES:

1. All repeaters are NTSC, VUSB-TV, 6 MHz channel, unless otherwise noted. Some repeaters use non-standard lower sideband inputs VLSB to reduce interference with FM repeaters in upper portion of band. 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(s)	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	421.25 1289.25 dt	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
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 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 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/

Location	Call Sign	Output	Input(s)	Modes	Web Site & Contact for info
KANSAS					
Wichita	KA0TV	421.25	439.25	VUSB	k0wws@arrl.net
KENTUCKY					
Bowling Green	KY4TV	421.25 423.0 /2	439.25 1280 fm	VUSB FM DVB-T	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, LSB	VUSB	KC8LMI@hotmail.com
Grand Rapids	K8DMR	421.25	439.25	VUSB	ron_fredricks@att.net
Flushing	KC8KCG	1253.25	439.25 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 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 1280 dt	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 LSB	VLSB 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,
April 2023 – re-configured most listings, added 1280 for W8BI

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.

08/03/2024 - 2024 Columbus Hamfest
Location: Grove City, OH
Type: ARRL Hamfest
Sponsor: Aladdin Shrine Audio Unit
Website: http://www.columbushamfest.com

08/10/2024 - Cincinnati Hamfest
Location: Owensville, OH
Type: ARRL Hamfest
Sponsor: Milford ARC
Website: https://CincinnatiHamfest.org

08/18/2024 - Warren Hamfest
Location: Cortland, OH
Type: ARRL Hamfest
Sponsor: Warren Amateur Radio Association
Website: https://www.w8vtd.com/

09/08/2024 - Findlay Hamfest
Location: Findlay, OH
Type: ARRL Hamfest
Sponsor: Findlay Radio Club
Website: http://w8ft.org

09/22/2024 - Cleveland Hamfest
Location: Berea, OH
Type: ARRL Hamfest
Sponsor: Hamfest Association of Cleveland
Website: https://www.hac.org

10/05/2024 - Northwest Ohio Amateur Radio Club (NWOARC) Hamfest
Location: Lima, OH
Type: ARRL Hamfest
Sponsor: Northwest Ohio Amateur Radio Club, Inc.
Website: http://www.nwoarc.com

WEDNESDAY NITE ZOOM NET

Every Tuesday night @ 8:00 PM WA8RMC **used to** host a net for ATV topic discussion. However, in order to consolidate the two nets, ATCO on Tue. and the DARA 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 (04/20/24)…….$ 4984.48
CLOSING BALANCE (07/20/24) ……... $ 4984.48

ATCO CLUB OFFICERS

President: Art Towslee WA8RMC
V. President: Ken Morris W8RUT
Treasurer: Bob Tournoux N8NT

Repeater trustees: Art Towslee WA8RMC
Ken Morris W8RUT
Secretary: Mark Cring N8COO
Newsletter editor: Art Towslee WA8RMC

Corporate trustees: Same as officers

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. It is now a free publication.

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.

Your support of ATCO is welcomed and encouraged.

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, 10W FEC=7/8, Guard=1/32, Const=QPSK, FFT=2K, BW=2 MHz, PMT=4095, PCR=256, Vid=256, Aud=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 SR=3.125MS, FEC=3/4, PMT=32, Video=162, Teletext=304, PCR=133, Audio=88, Service =5004) **Two video channels on this output:** Channel 1 is fed from all receivers. Channel 2 is fed from 439.25 analog receiver.
	2397 MHz Mesh Net transceiver 600 mw output (channel 1 minus 2). ID is WR8ATV-2
	10.350 GHz: 1W continuous analog FM
Link transmitter:	446.350 MHz: 5W NBFM 5 kHz audio. This output used for control signals & to repeat 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 - Single slot rib cage horizontally polarized 3 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, Upper sideband. (Input here = output on all TV transmitters & also direct output 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, Vid=33, Aud=49 (In here=out on all Trans.)
	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 analog)	00* then 1 for Ch. 1	Select 439.25 analog /439 digital receiver (if video present on digital, it is selected. Otherwise,
Functions:	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 analog/439 digital rcvr. scan enable (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 Newsletter
c/o Art Towslee -WA8RMC
438 Maplebrooke Dr. West
Westerville, Ohio 43082

The ant travel solution: It is on a tennis ball with a circumference of 8 inches.
