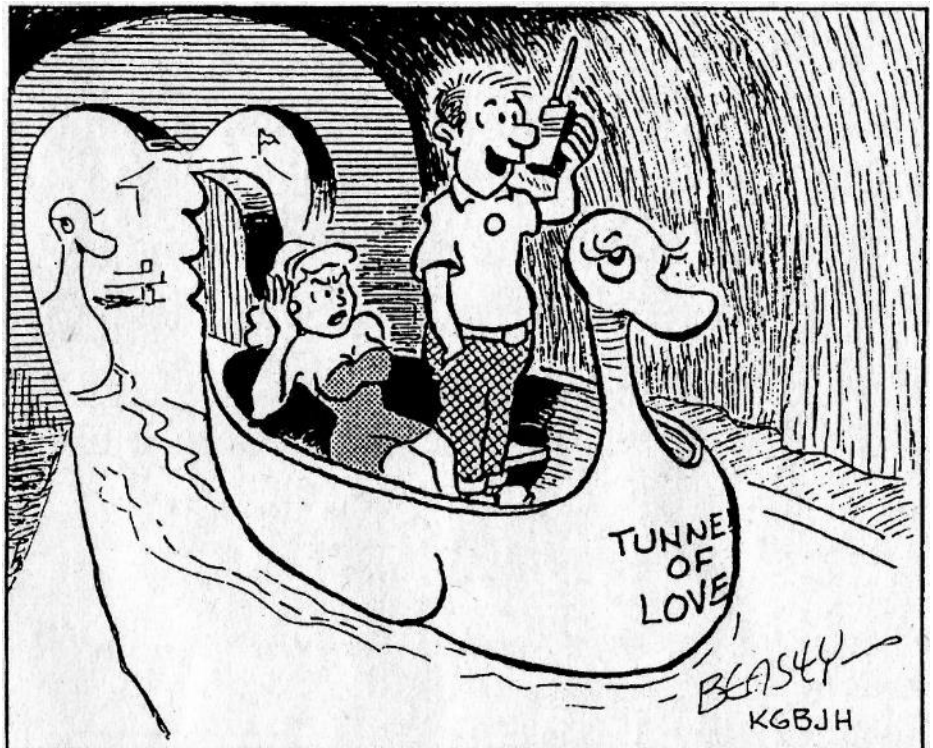
ATCO NEWSLETTER

VOLUME 42 NUMBER 1 **January 2025**

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

Well, here we go again! Beautiful day, sun's out, temp. in mid 70's, grass is cut!... Wait a minute, … they're not going to buy that one! Switch gears! Truth is, that DAMN snow won't go away. BRRRRR…It's cold out there! How's that? Let's see now, I hate to make you feel bad but want to let you know the wife and I are headed to southern Florida soon for a week or so. While there, I plan to sit poolside and ponder Ham things I ***might*** do when we return. Ok, 'nuff of that.

I only have one ATCO repeater suggestion at this time. Roger, WB8DZW, suggested we add an FM audio only 2-meter frequency to the repeater input to make more people aware of our repeater. The people on the 2-meter channel would be encouraged to listen to our 446.350 MHz output to hear weak 2-m signals.

Problem is…. What input frequency? The national 2-meter simplex channel is 146.52 MHz. Should we use that? Adding 146.52 would not interfere with anything else so there is no interference issue. However, it could be an interference for **us** with increased traffic on 446.350 but I've listened to 146.52 for a couple of weeks lately and hear very little. A few times last weekend I heard someone calling "CQ contest". Other than that, there's been almost no activity. So, is there harm adding that? We most certainly have enough rack space for an added receiver and a spare omni antenna with coax is already in place. I don't think there is any FCC or ARRL band plan issue so if anyone can come up with a valid reason why not, we should consider it. Also, if we decide to implement this, what frequency? Is 146.52 best or should we pick another off channel? To me, the national calling frequency is good because that's where the most activity is. The ATCO repeater 2-m antenna is high and able to pick up weak signals that a lower-level antenna at your QTH would not hear thereby revealing activity not heard because of antenna positioning. Then, we could monitor 446.350 MHz for possible activity on 146.52 instead of rotating the 2-m antenna scanning for it.

So, is this a good idea? Let me know pro or con. My ears are now **ON!**

Beyond that, there is no local ATV activity and the repeater is not presently in need of repair or enhancement. We need more presence on our Wednesday night ZOOM session at 8 PM. Presently we have about 10-15 check-ins from around the country so join us if you can. The ID is 967 091 8666 password is 191593. More detail in this Newsletter.

That's about it folks.

Regards,
WA8RMC

Silent Key….W4HTB

Henry “Hank” Cantrell, 87, of Bowling Green, KY passed away on Tuesday, December 24, 2024, at Sky Rehabilitation in Bowling Green. The Greensburg, KY native was a son of the late Henry L. Cantrell and Ruth W. Workman Cantrell.
Mr. Cantrell was a member of Grace Community Church and a graduate of the University of Kentucky. He worked at Fruit of the Loom as an engineer. Henry was a retired airplane pilot, a member of the Amateur Radio Club, “Ham Radio” and the DX Club.

He is survived by his wife, Gloria Simmons Cantrell; one daughter, Charlene Weaver; one son, Charles Kivett; one sister, Tillie Ransdell; one niece, Nancy Magnine and one nephew, Stephen Ransdell.

Hank was first licensed as a novice WN4HTB in 1954. He worked as an electronic engineer until retirement in 1998 doing consulting as a Professional Engineer. Primarily interested in Amateur Fast Scan Television and Digital Slow Scan. His most interesting project in amateur radio was the design and construction of the controller used on the MIR space craft which sent SSTV pictures via 2-meters.

Hank says in his QRZ post,
“My latest and probably last adventure is EME (earth-moon- earth) with limited setup. I'm amazed how easy it is to make contacts off the moon using a single beam (> 21 el and 100 watts) in my case on 70-cm. I also have a small 1.8m mesh dish that I've used to make QSOs on 23-cm with larger stations. All my EME contacts have been digital mode using wsjt-x. Presently on 70-cm I use my horizontal polarized stacked k1fo's (2) on moon rise. My first contact was with DL7APV Bernd (now sk) on Feb 3, 2023. His system was quite large, 128 - 8 el. beam array, I was running just 100 watts!”

AMATEUR RADIO CONNECTS ASTRONAUTS WITH EARTH KIDS

By Leonard David (from www.space.com)
(Image credit: NASA) Nov 24, 2024.

"Amateur radio has launched and operated more satellites than most countries have."

Consider this: It is now four decades ago that astronaut Owen Garriott, callsign W5LFL, pioneered amateur radio communication from space. He was a crewmember on the space shuttle program's STS-9 mission. During that space shuttle flight in 1983, Garriott became the first-ever person in space to communicate with amateur radio operators on the ground. He was also the first person to be heard directly from space by members of the public using simple radio receivers and scanners.

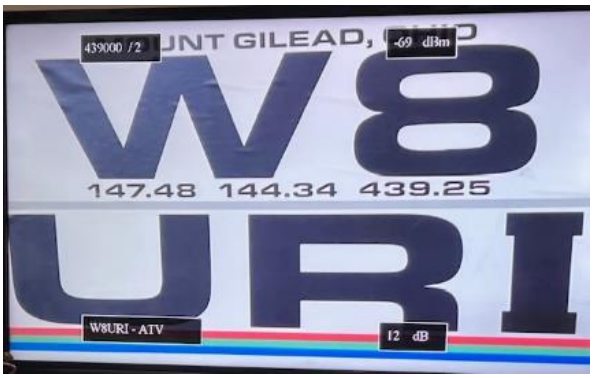
That event transformed astronaut communications from space forever, allowing amateur radio operators and the public to communicate with people in space. But don't change that dial! Much more is coming in terms of amateur radio and the International Space Station.

ATV FROM "AFAR" ….

Excellent Dx occurrences happened during last Wednesday's ATV Zoom Net! (11-13-2024)

On 13 November 2024, several unexpected ATV-related events aligned during the 8:00 PM DARA/ATCO/ATN Zoom Net. The ATV net started at 8:00 pm and W8URI (Bill Heiden) checked in to try to see if there might possibly be a 70 cm band opening. His hopes were granted with a 90 mile path that allowed a two-way link between Bill (Mt Gilead Ohio) and W8CWM, Bill McCoy located in Englewood Ohio. Their two-way contacts were highly successful on separate DVB-T and A5 ATV modes. Fifteen minutes later, Doc Schwab KE8DOC mentioned there was going to be an International Space Station pass as the ISS was celebrating 40 years of amateur radio in Space and would be transmitting some commemorative frames via SSTV on 2 meters. Fifteen net participants were treated to three frames of video from the ISS received by KE8DOC in Tipp City Ohio. Unfortunately, Bruce Kobe K8FIX forgot to buy the Wednesday Night Lottery tickets for everybody. Maybe I will have some more good news after next week's ATV net!
…AH2AR.

W8URI's Excellent DVB-T signal from 90+ miles



Yes, I know this photo is confusing, but I snapped the picture off of the "zoom multi-screen" during the Zoom session. What is showing is W8CWM's in-shack power supply while he was transmitting to Bill W8URI. W8URI was streaming this received video to show everyone on Zoom he was receiving W8CWM's DVBT video, a 90+ mile path. I told you the photo is confusing!

Below are the SSTV Commemorative ISS frames that the space station was transmitting as it made a pass over the Continental U.S. on 2 meters FM. Thanks to Doc Schwab for his impeccable timing!

FCC OPENS 6-GHZ BAND TO VERY LOW POWER DEVICE OPERATION

BY GEORGE WINSLOW

The move, which the agency says will spur innovation, had been opposed by the NAB for its potential impact on newsgathering.

FCC chair Jessica Rosenworcel
(Image credit: Ting Shen/Bloomberg via Getty Images)

WASHINGTON—The FCC has unanimously adopted new rules to expand very-low-power device operations across all 1,200 megahertz of the 6-GHz band alongside other unlicensed and Wi-Fi-enabled devices.

Despite opposition from the NAB and other parties who have argued that opening up the spectrum would create problems for fixed microwave links, satellite uplinks and broadcast auxiliary services that use this spectrum, the FCC has in recent years been opening up parts of the 6-GHz band.

Prior to the Dec. 11 vote to open up all 1,200 megahertz for very-low-power devices, the FCC expanded unlicensed use between 5.925 and 7.125 GHz, helping to usher in Wi-Fi 6E, set the stage for Wi-Fi 7 and support the growth of the Internet of Things.

In October of 2024, FCC chair Jessica Rosenworcel called for further expansion, which the NAB opposed. “As broadcasters’ extraordinary efforts to help the many communities impacted by Hurricane Helene demonstrate, it is critical for the commission to ensure that broadcasters have access to spectrum that will allow them to provide these essential services in times of crisis and without interference,” the NAB said in October.

In a Nov. 14 letter to the FCC, the NAB said it "has no objection to sharing spectrum used by broadcasters for critical electronic newsgathering with unlicensed operations if it can be shown that such operations will not cause harmful interference. But the record in this proceeding does not support that conclusion. We again urge the commission to avoid the risk to licensed uses of spectrum by accepting a measured compromise approach by reserving just 55 MHz of the 6-GHz band for licensed mobile use until real-world data are available to justify the removal of this reservation.”

In adopting the new rules, the FCC noted that they will bolster cutting-edge applications like wearable technologies and augmented and virtual reality, which will enhance learning opportunities, improve healthcare outcomes and bring new entertainment experiences.

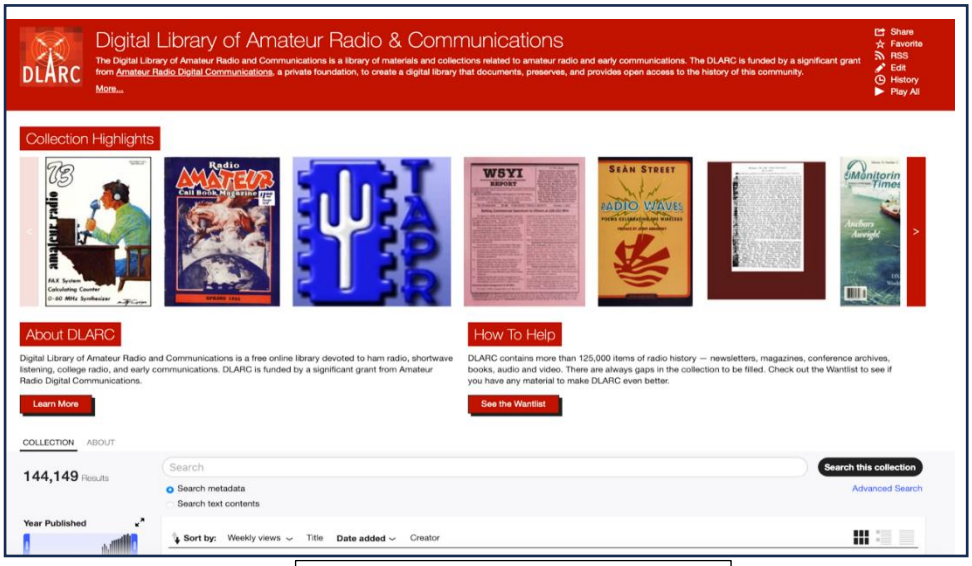
The Report and Order permits the very-low-power (VLP) class of unlicensed devices to operate across 350 MHz of spectrum in the U-NII-6 (6.425-6.525 GHz) and U-NII-8 (6.875-7.125 GHz) portions of the 6 GHz band at the same power levels and technical/operational protections as recently approved for the U-NII-5 (5.925-6.425 GHz) and U-NII-7 (6.525-6.875 GHz) bands while protecting incumbent licensed services that also operate in the band.

HAM RADIO / ATV INTERNET ARCHIVE

Below is a compilation of past Amateur Radio and Television articles and magazines. I stumbled across it while searching for something else. They found me while searching for ATV activity for their archive. Their main archive is huge including much more than just Ham stuff but there is a "Ham only" section too. I suggest they create just an exclusive ***Ham Television*** *page in order to separate ATV subject matter from the rest of the Ham material. Hopefully, with your cooperation, we can compile an even more comprehensive and impressive collection of just Ham Television material. The web site is* https://archive.org/details/dlarc.

K6KJN continues with his description as follows:
Amateur Television in the Digital Library of Amateur Radio and Communications By Kay Savetz K6KJN

"I am the curator of the Digital Library of Amateur Radio and Communications, known to its friends as DLARC. DLARC is a free online ham radio library. It's a project of The Internet Archive, the non-profit library that's best known for The Wayback Machine.

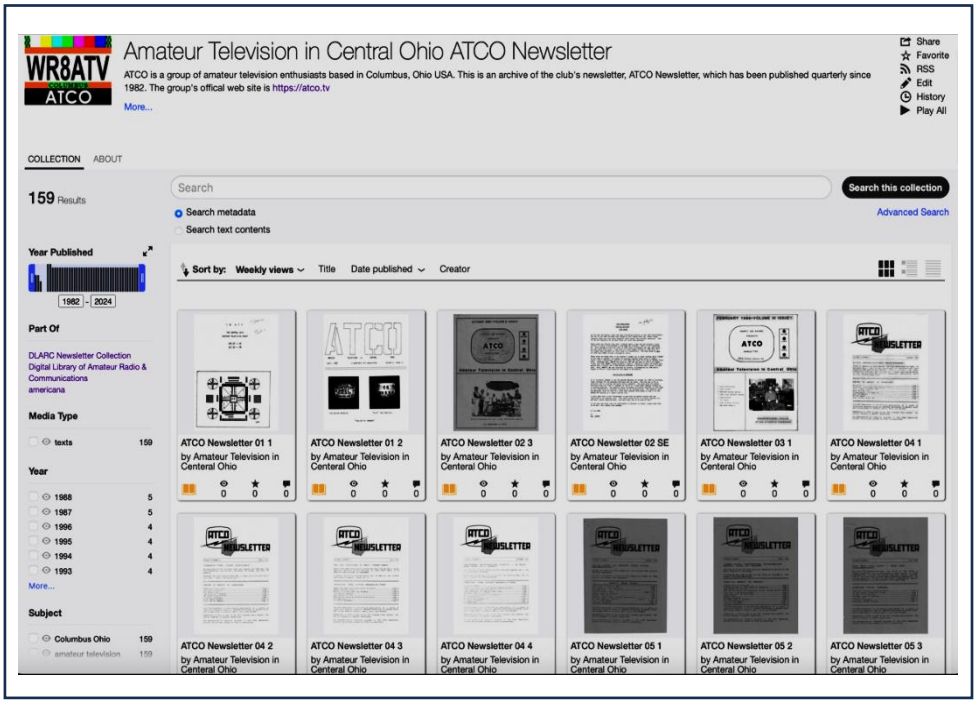


Amateur Radio main page.

DLARC is home to more than 140,000 items — 16.7 terabytes — spanning the entire history of the radio hobby, including magazines, books, newsletters from ham groups around the world, podcasts, callbooks, and more. In 2024, we scanned more than 1.1 million pages of material".

Let's talk about Amateur Television at DLARC. With Art Towslee's, WA8RMC, gracious permission, we recently added almost every ATCO Newsletter issue, going back to 1982. Everything in DLARC is full-text searchable, so if you vaguely remember something you read years ago, click "Search text contents" and you'll find that article in an instant.

DLARC hosts a whole lot of other current and historical ATV information as well, including British Amateur Television Club's CQ-TV magazine; the defunct CQ-DATV magazine, which was published from February 2013 through February 2022; and Boulder Amateur Television Club's Amateur Television Journal (formerly titled REPEATER.)



ATCO Newsletter collection page.

But wait, there's more — DLARC is also home to VHF-UHF Digest, the Worldwide TV-FM DX Association's magazine going back to 1968. And the Community Antenna Television Journal, which began in 1974 as the journal of the Community Antenna Television Association of Oklahoma City as a service to the American CATV/MATV industries. (We have every issue through number 62 June 1979, then only some issues after that date. Let me know if you have missing issues?)

And, we have 60 issues of American Ionospheric Propagation Association TV-DX newsletter. This was a club for TV & FM DXers - enthusiasts who tried to receive television and radio signals from as far away as possible. The group was founded in 1953 until 1963. I think we have every issue published, but it's hard to know for sure.

And again, all of these are full-text searchable. You can read them online, or download PDF versions to keep for yourself offline.

There's even more amateur television goodness to come in DLARC: I just received a towering stack of A5 Amateur Television magazines direct from the publisher Henry Ruh. They'll be scanned and online in the next few weeks, making many of these historical ATV journals available in digital format for the first time. (But we're missing many issues, especially the first nine years of A5. Do you have them? The DLARC Want List document has a list of what we need.)

I've focused on amateur television material here — there are also newsletters, magazines, and other resources about DXing, packet radio, CW, EME, numbers stations ... whatever radio thing you want to research, I bet you'll find it. You can explore DLARC at https://archive.org/details/dlarc. If you have questions about the project or material to contribute to the library, please email me at kay@archive.org."
(control click on the purple items above to go directly to that location)
...Kay Savetz K6KJN. Curator of DLARC. Web site is www.savetz.com.

Hi-Des BR-101 vs. UT-100A UPDATE

HiDes Dongle limitations. This article was previously published in the Amateur Television Journal (Repeater).

Hi-Des BR-101 vs. UT-100A Don't Make the Same Mistake I Did!!! Back in 2019, Dave, AH2AR, and I evaluated the Hi-Des USB dongle model BR-101EH for possible use as the heart of a DVB-T repeater. Hi-Des had managed to package in one small USB dongle a complete receiver and also a modulator for DVB-T. Plus they included the ability for it to function as an automatic repeater. When it detected a valid incoming DVB-T signal, it would then automatically turn on the modulator to rebroadcast the signal on a different frequency. It also included the ability to attach an ID trailer on the turn-off of the modulator. Great! Perfect for use in a repeater. Dave and I published our results in a KH6HTV Video application note, AN-54. Subsequently the DARA & ATCO folks used one for an intermediate relay repeater to tie their two DATV repeaters together.

Fast forward to 2024. The local Boulder, Colorado ARES group BCARES recently received a large grant of money from Boulder County to enhance their communications network, including ATV. BCARES was planning on a new DATV repeater and perhaps some remote receive sites. It looked like the BR-101 was just the gadget we needed for these. Well, the BR-101 was no longer advertised on the Hi-Des E-Bay web site. Instead, I found the UT-100A. On the surface, it's specs. seemed to be similar to the BR-101, so I ordered one at $199 from Hi-Des.

The UT-100A recently arrived in the mail from Taiwan. I proceeded to hook it up to my HP-PC and try to program it, like I had done in 2019 with the BR-101. Nope, not the same dongle. It came with different software. With the software provided by Hi-Des on a data CD I was able to get it to receive a DVB-T signal and display it on the PC's monitor screen. I was also able to get its modulator to generate a DVB-T signal. But nowhere could I find to make it work as a repeater. With the BR-101, the instructions said to open the enclosure and move a jumper to the programming mode. Well, opening the UT-100A revealed it to be a totally different pc board from the BR-101.

What to do? Always in issues with Hi-Des, it means sending an email to their service rep, Calvin Yang. Calvin replied "Hi Jim --- I am sorry BR-101 was phased out and we no longer have similar products now. We are forced to stop BR-101 because the main chip of BR-101 was phased out. Hopefully, we can find an alternate for a new digital no-loss repeater. UT-100A can’t be used as a BR-101 repeater. It’s for the small head-end application. It can’t transmit the signal received from the tuner."

So, there you have the answer. No BR-101 DVB-T repeater anymore. The UT-100 series of USB dongles are strictly for receive and/or transmit.

I did not go any further checking out the UT-100A as it didn't do what I needed -- plus I have absolutely no desire to have an ATV station which requires me to use a PC computer permanently connected to my receiver or transmitter. Other hams feel differently and love to use their PCs as an intimate part of the station. If any of you ATVers out their own any of the UT-100 USB dongles and would like to share your experiences with our readers, I welcome your contribution of articles on the subject. In the meantime, because the BR-101 is no longer available, I will be pulling AN-54 off my web site.
73 de Jim, KH6HTV, Boulder, Colorado

UT-100 FEEDBACK

Hi Jim -Just some quick comments on the UT-100A. A number of folks in this region had purchased the UT-100B around the 2014 time-frame. Since we use 2 MHz bandwidth in the Midwest region, the UT-100B was the dongle of choice: the "B" model operates on 2/3/4 MHz bandwidth, whereas the UT-100A operates on 5/6/7 MHz bandwidth. Yes, it does require a laptop or computer to operate. Software required to run it on the laptop is needed and is provided on a CD with the dongle: Two necessary executables are the "BDA Viewer" for receiving, and the

"TS-player" for transmitting. Interestingly enough, once everything is set up, you can transmit and receive simultaneously (full duplex), so it's possible to check your transmit parameters by receiving the DVB-T signal on the same computer that is running the UT-100B. Years back, a number of hams in this region had set up the UT-100B using an intermediate amplifier to boost 0 dBm power output enough to drive a larger amplifier. Transmit coverage is 50 - 950 MHz & 1200-1350 MHz, while receive coverage is 50 to 950 MHz.

The vast majority of hams in this area only transmitted MPEG video files with the UT100B. At the time, some of the hams found the software a little buggy, but for the most part, my UT-100B worked very well. As you also have indicated, I much prefer not having to depend upon a computer to receive and transmit DVB-T.
… Cheers, Dave Pelaez AH2AR, Dayton, Ohio

Hi David --- Nice to hear from you in the journal topic concerning the Hi-Des product and integration applications. The UT-100A does MHz. I [we] work with our STEM students with multiple electrics projects to include small RF transceiver applications, one using the single board computer the famous Raspberry Pi-5, dongle transceiver module {not Hi-Des} and all this running under control of Linux to run the Pi-5, transceiver module and controller board Tx<>Rec, Band selection and configuration]. To Tx and Rec. We programmed it to work with Bluetooth and a simple small remote to access the PTT [1]to transmit and [2] disengage to receive, [3] change frequency and turn [on/off] 12V power sources all in a 6" x 6" x 2" enclosure to include the 2W PA. Just add an HDMI device, duplexer, 70cm/23cm antenna, coax. Great backpack/portable.
… Mario, KD6ILO, San Diego, California

I don't want to give out bad info but the UT-100A that we have used in the past did not work on 2 MHz receive, but would work on 2 MHz transmit. Maybe there has been a change to the firmware to allow the receiver to work on the narrower bandwidth? The Hides site also reflects what I am mentioning here. Someone needs to be aware of this before purchasing, maybe an email to Calvin before making the purchase can clear this issue up.
… Cheers, Dave AH2AR

I will confirm, that as purchased the UT-100A Will NOT receive 2 MHz bandwidth, but will Transmit it. All the UT-100 dongles use the same ITI modulator chip that will modulate 1-8 MHz bandwidth out of the box. But the receive bandwidth is dependent on the firmware loaded.

I purchased a UT-100A some time ago when I first started playing with DVB-T at 6 MHz but decided we would need to start using 2 MHz bandwidth here in the Baltimore area. I had Calvin load the UT-100B firmware on the dongle and it then received 2 MHz bandwidth. So, if you have any UT-100A dongles in your parts bin, it can be converted to a UT-100B

I have been using this dongle on a remote base for several years now in Transmit only mode using their TS-Player software on a windows micropc. While it has done the job for the most part, the included TS-Player software is very unstable and can't handle errors in the video stream very well. While it works OK with a simple talking head camera shot, if switching between multiple videos (Using OBS) it will shut down at random times and need to be restarted. HiDes has unfortunately given up on that software and moved on without a solution. Calvin suggested using Linux and alternate software, but I am stuck in the Windows world. I'm interested to find out if anyone else has found a solution for the TS-Player software issue.

BTW, I have several older Chinese Desktop modulators in my parts bin that are set up to use 6-8 MHz bandwidth (with a dropdown menu), but they use the same ITI modulator chip as the UT-100 series.

Therefore, if told to transmit 2 MHz bandwidth, they should do it. Unfortunately, I am not versed enough in modifying the firmware to accomplish this. Any suggestions?
…John Kozak, K0ZAK, Reisterstown, MD

PITCAIRN ISLAND RETREAT FOR WA6SVT (NOW ALSO VP6MC)

Back in June 2023 my wife Laura KJ6GFI our son Ryan and I decided to take a nice long vacation as the last big one was to Hawaii in July 2010. We were deciding on either Fiji or Tahiti. After some checking into both, we decided on Tahiti. Now, upon deciding what resort to stay in, I contacted my friend Meralda, VP6MW, as the Pitcairn Islanders go there and they would know a reasonably priced but good place to stay. Meralda said they use the Royal Tahitian. Our plan was to stay about five days to perhaps a week. Meralda said we will likely see a few of the islanders there at the resort as this was the time of the year for some to go for medical and dental treatment. I said that would be great. Then she said that while in Tahiti, if you have time, come out to Pitcairn Island to meet the rest of us. After talking with the family, we added Pitcairn to our itinerary.

In the process of planning our "once in a lifetime" vacation, I was reading about an old 5-watt analog TV transmitter the Adventest pastor had installed to provide his churches Hope Channel via C band satellite. I found the transmitter was hit by lightning. The pastor was no longer there who installed the transmitter and the satellite dish was a rusted old mesh dish. The island had installed a new 4.5-meter commercial dish but ran out of funds to finish the project and fix the transmitter. I offered to try and fix the transmitter when we came out for vacation.

After receiving some photos of what was left of the old system, I decided I would build up a new digital TV transmitter. Investigating where the Pitcairners were purchasing TV sets or the newer flat screen TVs, the answer was New Zealand where they receive most of their supplies. Checking the New Zealand TV UHF band, they start digital TV on channel 25, 506 MHz with 8 MHz wide channels. They use DVB-T format and that was great as most of our UHF ATV gear is DVB-T. I used my spare HiDes HV-320 exciter and then decided to build up a driver and PA stage. It turns out the Mitsubishi RA45H4452M RF power module has adequate gain to work with the HV-320 when its output is set at -5 dB. This was great as I would only need the RF power module. This module is the brother to the RA45H4070M used in the 70-cm band. The module I chose is the next band of frequencies up at 440-520 MHz range. I chose to use the diecast box with heat sink and fan that we commonly use on ATV 70 cm ATV amplifiers.

The output was up to a maximum of 10 watts average but I chose to set the drive for 8 watts to be conservative. This gave me 34 to 35 dB shoulders thus a clean signal. I did find in testing that using the New Zealand transmission parameters work with a HiDes HV-110 receiver if you set the receiver for USA type output.

With all three of us bringing back packs as our personal items for air travel, Ryan brought out my SS-30, 12 volt power supply, Laura the TV transmitter and I brought out my Icom IC-706 MK II and AH-4 tuner. I obtained my Pitcairn Island callsign and VP6MC license, which cost $100 NZD.

Tahiti was great and we stayed 5 days then off to Mangareva Island via Air Tahiti. While on Mangareva, it is far east of French Polynesia, we had about an hour's time to get our passports stamped and a stop at the local pearl shop (best pearl prices are at the source of the pearls. Mangareva has lots of pearl farms due to their large lagoon. I had prior permission to install my HF rig on board and was able to operate maritime mobile. DX was great. After arriving at Pitcairn Island, I was able to set up my rig in Brenda Christan's sewing room.

This was a family vacation so after setting up the station, we toured Pitcairn Island with our host Brenda Christian. Her husband Mike was away at the time of our visit but he is also a great host. Kerry Young, one of the Island's counsellors at the time said he would stop by in a couple of days to take me to the old TV station or what was left of it. Two days later, I was taken to an underground radio vault the USGS contracted the islanders to build for earthquake monitoring for the Eastern Pacific in the Southern Hemisphere. The old antenna had fallen over as the skinny mast's guy wires had failed a couple of months before I arrived. The antenna laid over which allowed water to enter and corrosion to start. I had to fully disassemble the antenna for a complete rebuild and sealing job. The antenna is four dipoles with a reflector plate. Similar to an old collinear curtain array.

The restored antenna has a 1.06:1 VSWR over the lower UHF band. The feedline was 200 ft of LMR-400 with water damage the last 30 feet. I cut the coax back and installed a new connector. At least the foil was intact but slightly dusty. With a 160 ft of not so good LMR-400 cable we had good VSWR and with 7 dB of loss, and 1.2 watts to the antenna.

We found the new satellite dish electronics and feed horn assembly and set it up for IS-18 and we obtained permission to retransmit ABC Australia's Pacific Island feed. Now the Island has a TV station

What to call the TV station, the old HF radio station the Pitcairn Island set up in 1947 and now no longer in use was station ZBP. ZB being the ITU call sign for commercial stations assigned to Pitcairn. Prior to our family coming out, I recommended the TV format frequency etc. The Island Council approved my recommendations as well as my suggestion of ZBTV as its callsign. ZB for Pitcairn and TV because it is Television. Although you can get an amateur license, the island has no experience issuing commercial licenses. I came up with a license format that was approved.

We came to like the island a lot and now that I'm retired, my family and I have settlement visas. There are no property taxes, income taxes or sale taxes. Migrants can apply for a lot to build a home and there is no cost as they are trying to get more residents at the present time. I have an application out for Middle hill that is about 25 feet higher than the old HF station and would be the highest elevation home on Pitcairn Island. The latest project is adding a marine band channel 80 repeater at Highest Point to greatly improve channel 16 and 14 simplex.

PITCAIRN ISLANDS COUNCIL
FOR PITCAIRN, HENDERSON, DUCIE AND OENO ISLANDS
Adamstown
PCRN 1ZZ
PITCAIRN ISLAND
Phone: +64-9-9840136
E-mail: mayor@pitcairn.gov.pn

Mike Collis
P.O. Box 1594, Crestline,
CA 92325 USA

2 July 2023

Dear Mike,

Restoration of TV services – Pitcairn Island

On behalf of the Pitcairn Island Community, I would like to express our sincere gratitude for your generous contributions, being your time and resources, in restoring TV service to Pitcairn.

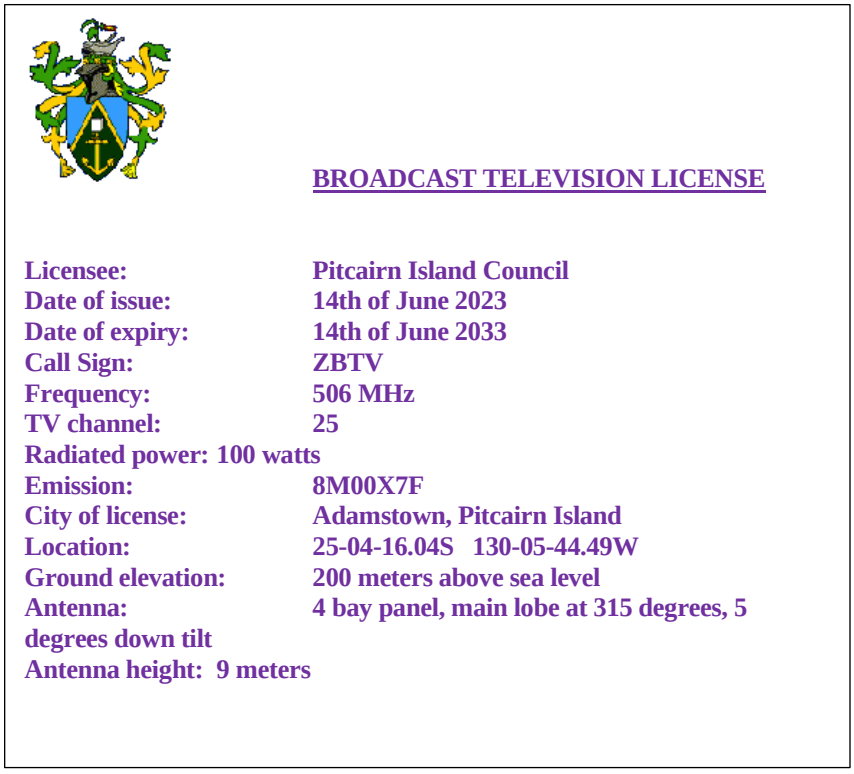
Without your input and expertise, this service would have remained out of reach for our island.

As you will appreciate, TV service provides an opportunity for members of our community to link with events and news from the broader world.

Thank you once again for your time and service to Pitcairn, and from the grateful recipients on our island.

Simon Young

Kindest Regards
Simon Young
Mayor Pitcairn Islands



BROADCAST TELEVISION LICENSE

Licensee: Pitcairn Island Council
Date of issue: 14th of June 2023
Date of expiry: 14th of June 2033
Call Sign: ZBTV
Frequency: 506 MHz
TV channel: 25
Radiated power: 100 watts
Emission: 8M00X7F
City of license: Adamstown, Pitcairn Island
Location: 25-04-16.04S 130-05-44.49W
Ground elevation: 200 meters above sea level
Antenna: 4 bay panel, main lobe at 315 degrees, 5 degrees down tilt
Antenna height: 9 meters

This is "work in progress" and the electronics are done and today, I dug the foundation hole for a 30 ft steel mast for the antenna. Yesterday, the island council approved the location for the project. The callsign is ZBP for the repeater that will bring ZBP back in use as a call sign. The Island's Governor will be here in three weeks so we are working for completion next week. It is summer time down here and we have the longer hours and rain and humidity this time of the year.

The repeater should allow full island coverage with an HT as well as out to sea for at least 70 miles to an HT or about 90+ for a 25-watt marine radio and large antenna as used on sailboats and support ships. That's all for now. It has cooled off and I need to get back to the repeater project.

…Mike VP6MC AKA WA6SVT

HF 10 METER NARROW BAND TELEVISION

As this transmission system is very much at the cutting edge of technology, it will highlight the importance of Ham radio in today's world. Where the Narrow Band Television (NBTV), is made two parts for transmitter and the receiver, the encoding & decoding software Graphical User Interface (GUI), with the modulator & demodulator section (GNU Radio). Where the encoder / decoder uses User Datagram Protocol (UDP) to communicate with GUN Radio that is used for the modulator / demodulator part.

The way the video works is the video frames split in their parts R-Y, B-Y and Y, where Y image then split into two more parts using Wavelet processing, to encode the detail missing from the key that is sent. Video compression software is used to process Key(K) and Motion(M) frames, to work as KMK or KMMK configuration. With analog video there are a number of limitations to overcame to get this all to work, such as the information from each K frame is all I have to work with, to rebuild the missing M frames. This places a limit on the maximin number of M frames possible between the K frames.

Making a number of transmission modes possible such as:

1.
2. 240x192x12.5 KWMM
3. 120x96x12.5H KMM
4. 120x96x12.5L KMM
5. 120x96x8,1/3 KK

Mode 4 has the highest noise reduction and as you move down the higher the picture quality will become.

The modulator and demodulator testing with 192 carriers with OFDM different noise levels and the performance carrier to noise performance has a lot in common with AM-VSB. The OFDM-QAM works, but by these simulations it is only 10 dB better than AM at a picture 5 level, where the wavelets are only any good between P4 to P5 levels.

The OFDM is made up of sub-bands, where each is one is a 12 kHz block made up with:

1. Chrominance
2. Luminance
3. Luminance
4. Wavelets
5. Motion
6. Motion
7. Sound
8. Sound

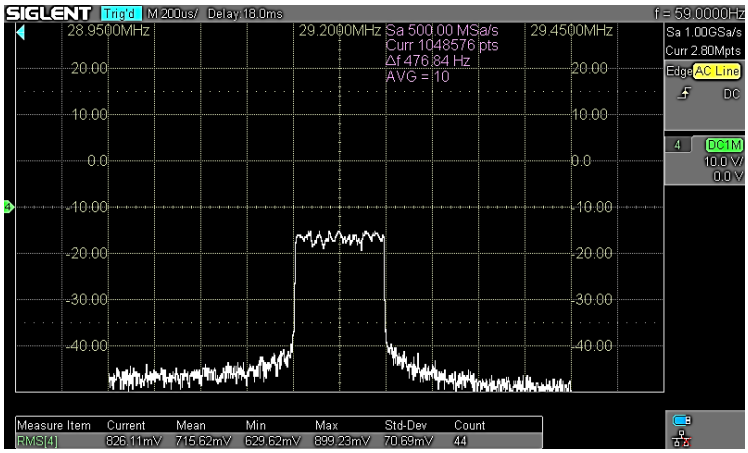
The digital audio works with the hybrid NBTV system. It was based on technology to send audio down phone lines to radio transmission sites where each phone line has frequency response of 300 Hz to 3 kHz and where you require 15 kHz of audio for example. In this case you will have 5 sub-bands. Therefore 5 phone circuits are used for these sub-bands and the transmitter site these sub-bands are stacked to rebuild 15 kHz, with EQ circuits. This is a very simple overview of the way I am encoding the audio over OFDM, with 500 Hz sub-bands for data to be sent across. By doing this the RF bandwidth is the same as SSB, making the radio 1:1 again 100% efficient use of spectrum. By

taking this approach sending data without error correction, you will get noise coming through, but with noise reduction and the use of OFDM, the noise levels are low.

This is why I have been playing around with this system for voice communications, using 64 carriers to fit into a SSB channel, as the audio frequency response is the same as SSB, but having very good signal to noise performance. When there is noise it sounds like FM background noise, so you get FM sound quality, with good carrier to noise coming into the receiver. I'm not that interested in doing much with voice communication at this stage so I need to spend my time on the NBTV developments, making every possible improvement.

The Code Division Multiple Access (CDMA) modulator and demodulator together that will take up the same bandwidth as the OFDM using Pseudo-Random-Noise (PN codes). By doing this I will be using a spread spectrum approach where the 192 carriers will be multiplexed across full bandwidth. Since I am going with code spreading this should get me around the issues with the time domain that I was getting TDM experiments, as there are so many unknowns to test and work through at this stage.

The unknowns are the impact of selective fading and channel interference and noise. As far as I can tell CDMA will reject any unwanted signals if there is no correlation with PN codes. From the research I have done on this topic, CDMA is very good at combating multipathing, which is very useful in this application. Both the CDMA and the OFDM are generated using Software Defined Radio (SDR) using GNU Radio making advanced modulation systems possible. To do anything with CDMA a fast computer is a must as there is a lot of processing steps that are required for both CDMA and OFDM.



The photos show the output spectrum going out on 29.15 MHz from the HackRF, the top section is flat as there was sound modulation sent. Most of the RF spectrum was used up for the video information as you can see.

The design for a 1 kW RF power amplifier for 10m, I see a lot of the parts are available on E-bay, case, amplifier models and filter boards. As I have commented before the peak to average ratio is around 50:1, giving me 20 W of total RF to work with, that works out to a little over 100 mW per carrier, so transmit power is very low. The important part is to have good linearity, well above what you need for SSB, therefore I need a big antenna gain to get my NBTV signal across to the UK and the EU.

On the software side I made a change to Mode 4 in the way that the video encoding works, as well as working on the signal recovery, like most other NBTV systems there is no sync information sent. This is to save on bandwidth usage. Therefore, as with the Con ZL2AFP NBTV systems, you need to manually set the start point of the incoming data frame for the demodulator. Once this is done it stays in sync without readjusting. So, keep an eye on GitHub as I have uploaded version 3.4 to try out: https://github.com/GrantXTV/NBTV-Project

The GUI NBTV software has only been tested with Ubuntu Linux and there may be a few issues installing into Windows 10 and 11, it should work with other Linux operating systems as well.
…Grant VE3XTV (ZL1WTT)

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.

03/09/2025 - Northern Ohio Amateur Radio Society Winter Hamfest

Location: Elyria, OH
Type: ARRL Hamfest
Sponsor: Northern Ohio Amateur Radio Society
Website: https://www.noars.net/hamfests/winter-hamfes

03/16/2025 - Toledo Mobile Radio Association Hamfest and Computer Fair

Location: Perrysburg, OH
Type: ARRL Hamfest
Sponsor: Toledo Mobile Radio Association
Website: http://www.w8hhf.org

04/05/2025 - Cuyahoga Falls Amateur Radio Club 69th Hamfest

Location: Cuyahoga Falls , OH
Type: ARRL Hamfest
Sponsor: Cuyahoga Falls Amateur Radio Club, Inc.
Website: https://www.cfarc-hamfest.org

04/12/2025 - Rio Grande Ohio Hamfest

Location: Bidwell, OH
Type: ARRL Hamfest
Sponsor: Mid-Ohio Valley Amateur Radio Club
Website: https://www.facebook.com/KC8ZAB

05/10/2025 - 05/15/2025 RV Radio Network Rally

Location: Navarre, OH
Type: ARRL Convention
Sponsor: RV Radio Network

05/15/2025 - 05/18/2025 Four Days In May

Location: Fairborn , OH
Type: ARRL Convention
Sponsor: QRP Amateur Radio Club International
Website: http://qrparci.org/fdim

05/16/2025 - 05/18/2025 Dayton Hamvention

Location: Xenia, Ohio
Type: ARRL Convention
Sponsor: Dayton Amateur Radio Association
Website: https://www.daytonlocal.com/

07/20/2025 - Van Wert Hamfest

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

08/09/2025 - Cincinnati Hamfest℠

Location: Owensville, OH
Type: ARRL Hamfest
Sponsor: Milford Amateur Radio Club
Website: https://CincinnatiHamfest.org

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 around USA & sometimes from international participants. Normally there's 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 (10/20/24) ……..……$ 4984.48
CLOSING BALANCE (01/20/25) ……... $ 4984.48

ATCO CLUB OFFICERS

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

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 so all people on my Email list are automatically either members or guests).

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