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BATVC web site: www.kh6htv.com

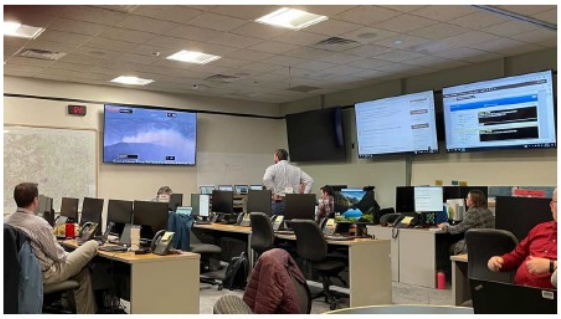
ATN web site: www.atn-tv.com

Jim Andrews, KH6HTV, editor - kh6htv@arrl.net www.kh6htv.com

Rick Palm, K1CE, k1ce@arrl.net

Public Service

The ATV and ARES Connection in Boulder, Colorado



EOC staff watching a BCARES live video feed of a Boulder County forest fire in 2022. [Allen Bishop, KØARK, photo]

In 1976, a massive downpour flooded the Big Thompson Canyon in Colorado, with more than 150 fatalities recorded. Agency staff had very few radios, so hams provided emergency communications on an ad hoc basis. In the aftermath, the Boulder County Sheriff's Office Civil Section called on the three ham clubs in the area to organize the Boulder County Amateur Radio Emergency Services® (BCARES) as a joint ARES®/Radio Amateur Civil Emergency Service (RACES) program. There was an amateur radio tele-

gave handheld TV camcorders to ARES operators. The major supplier of ATV equipment during that era (up to 2014) was Tom O'Hara's, W6ORG, PC Electronics (**www.hamtv.com**).

Over the years, camcorders were deployed for many holidays and events that required major police activity, including Halloween, political events, riots, etc. Officials wanted ATV cameras placed on rooftops for use during these times.

ATV Featured in QST ! -- check out the July issue, pages 73 & 74 for the complete article. It was written by Rick Palm, QST's public service editor.

Excellent 70cm ATV band conditions on 1 June 2025

The MidWest ATV DX group experienced an excellent 70cm band opening on 1 June that coincided with the severe G4 geomagnetic storm that was occurring. I went ahead and took a couple of snapshots of W8URI's received point-to-point video to mark the occasion. He is located in Mt Giliad Ohio, at a distance of ninety miles from my location in Vandalia, Ohio. 73 de Dave, AH2AR

ATV NEWS from across the Big Atlantic Pond

as reported by French, ON4VVV

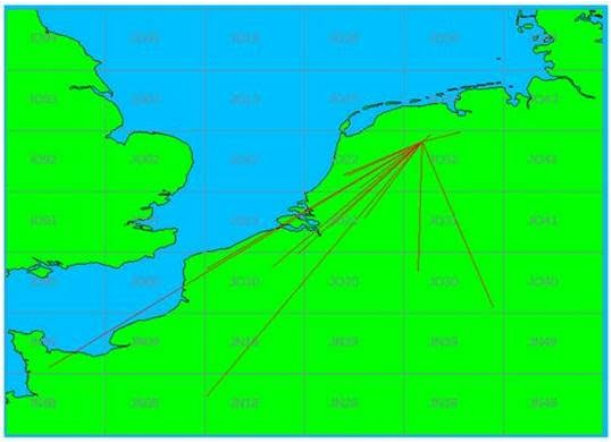
THE DWINGELO TELESCOPE: The activation during the previous ATV contest of the Dwingelo telescope by Jaap PA0T, Jan PA3FXB and Erik PA1ET was a great success. Here follows the message I received from Jaap PA0T.

"It was nice to see you from the Dwingeloo telescope. Your signal came in hard and in no time we had decoded your picture. See the pictures. It was a great success. Besides you also ON1AFB, F5ZRC, F3YX and F9ZG. The last one was a distance of no less than 667 km (unfortunately the picture failed, grrr). F3YX (554 km) also tried it analog, a signal from B4.

In 4.5 hours we saw 14 stations, with an average of 251 kilometers. We looked with both the Minitiouner and SDRAngel. What was noticeable was that the MT had a hard time decoding. Possibly due to a lot of gain of the preamps and the strong signals. We are still investigating that.

Information about the Dwingeloo telescope can be found at Radiotelescope Dwingeloo | CAMRAS – Radiotelescope Dwingeloo | PI9RD I have added some photos. On the “company photo” above sitting from left to right Jan, PA3FXB, busy with Airscout, Jaap, PA0T with the receivers and Erik PA1ET for the dish control.

Unfortunately we did not succeed in crossing the North Sea, remains a difficult route. We have made several attempts with M0DTS/p.



We plan to repeat this activity sometime, but it may take a while. We'll let you know.

Jaap PA0T

Despite the success achieved with the Dwingelo telescope, the small number of participating stations from Belgium was a great disappointment to me. Very unfortunate because knowing that even with only 2W (measured at the bottom of the amplifier with another +- 40m cable to the antenna) I still came across generously at a distance of 267 km this means that anyone who wanted to try had a very high chance of success. Here is an overview map of the connections made and some photos:

F5RZC Jeff, 382 km F3XY Marn, near Versailles, 555 km ON1AFB Guido 310 km

The record however was F9ZG from Normandy with 667km, the photo of which unfortunately failed.

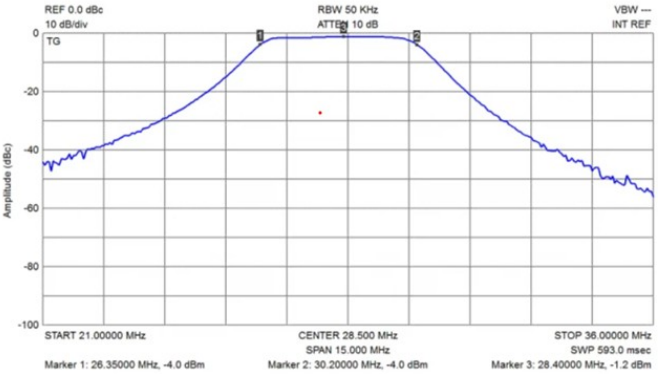
VERON ATV CONTEST: The next activity is an IARU ATV contest during the weekend of June 14-15. This continues on 6m, 70cm and all frequency bands above in all possible ATV modes

Besides the limitations that can exist per frequency band, there is no maximum bandwidth provided this time, in this way stations with old AM ATV transmitters on 70cm can also participate again. (get that stuff out from under the dust!)

This is a unique opportunity to try something out on 6m. This band is very suitable for OMs with low antennas somewhere in a valley, or even for receiving and transmitting with wire antennas, because of the wide and very flexible Fresnel zone. Excellent results can also be achieved with a simple home-

made dipole. Furthermore, the attenuation for 6m is almost 20dB lower at a distance than on 70cm, which of course means that the gain of an antenna on 70cm can easily be 10dB more than an antenna on 6m. But this still leaves a gain of the order of magnitude of 10dB in favor of the 6m band. With 10W on 6m you can therefore achieve at least similar results as with 100W on 70cm. So definitely give it a try, even if you can only receive.

EXPERIMENTS WITH D-ATV ON 10M: My up-converter that I made to be able to receive signals with my MT in addition to my SDR-PLY with SDR-ANGEL works very well, only on 10m I have a small reduction in sensitivity due to the input filter that is a bit too wide as you can see on the display curve. I use two of these filters in series from “mini kits” in Australia, but some signals on and around 27MHz (M1) are sometimes up to 30dB stronger than weak signals on 29.4 or 29.5 MHz (M2).

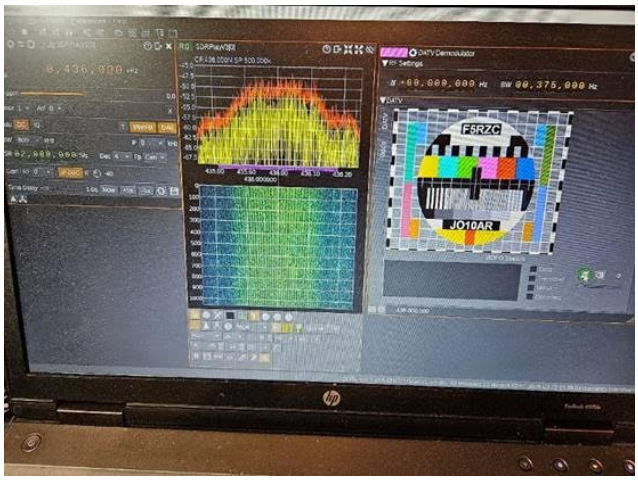


So I ordered a smaller filter 1MHz@3dB with 3 adjustable coils from “SV1AFN” in Greece for finishing/improvement, which should be a solution for my problem. According to the specifications I found, I would obtain a sufficient attenuation at 27 MHz of the order of 30dB with 2 such filters in series. For 10m the result is 29.5MHz + 860MHz or 889.515MHz, this signal still passes my filter perfectly with the same good spurious and mirror suppression. With the above information, building a converter is super easy and accessible to everyone. The details for building this can be found in my previous newsletter. I have received some very small ceramic filters in the vicinity of 900MHz that could replace the large cavities and allow me to fit the whole thing into a small box, but I still have to test this (to be continued)

By adding a passive splitter after the LNA I can now of course also receive the 6 and 10m signals directly with the SDR-PLAY without going through the up-converter. I also connect a spectrum analyzer to it with an amplitude setting of 2dB per division so that I can already see the weakest signal and judge with which FEC it will be decodable. See adjusted block diagram above.

In the meantime I have contacts with an OM from Sicily and one from Canada to do a few DX attempts on 10m in RB D-ATV. For that I have a PA that can make me a D-ATV signal of over 300W and a 4 el monoband beam. For information for those who might be interested, the company Sirio from Italy offers very favorable 3 and 4 element beams for 10m.

ON0TVO our East Flemish ATV repeater: A few weeks ago a new output was added on 3cm, the transmitter works for now as a test on +- 10280MHz with a SR of 4000ks and in 8PSK, full HD. This new output is a lot stronger than the analog output on 10180MHz. In the meantime, the transmitting antenna for 6cm (5710MHz) has also been placed perfectly vertical again, so that the signal strength has improved significantly in a number of directions.



Testing with a new RX on 70cm (made by Kenneth ON5KR) that can receive both DVB-S and S2 and that also with an automatic SR of 250, 333, 500 and 1000ks as well as H262, H264 or H265 is in progress. I come from Wetteren with barely 2mWatt over with an SR of 500ks. Also ON1AFB Guido from +- 40 km comes over brilliantly with only a few Watts. On the image of this new RX you can read the strength with which you come over as well as how many dB surplus you have.

A new mosaic with 16 images and all peripheral equipment donated by Guy ON4BHM will be fully installed by Kenneth ON5KR assisted by Roger ON5ROG. The new facility will gradually come into service very soon. Beware soon the 6cm D-ATV will be switched from DVB-S to S2 and from H262 to H264, so you may need another receiver to receive those. The output on 23cm will not change for the time being.

ATV round: please note the adjustment of the start time. For a few weeks now, the ATV round starts at 8:30 PM instead of 8:00 PM. Every Wednesday evening at 20:30 we meet on 144.5625MHz for a small round, do you have, or do you want information about an ATV related subject, or do you want to try something then that is the perfect moment to let us hear from you. If you are too far to reach us via 2m then you can also call us on the Zello channel "ATV Belgium" or register via the chat of ON0TVO on the BATC. https://batc.org.uk/live/onl12658

73's, French ON4VVV

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DATV Demo at SeaPac

We ran a DVB-T on-the-air demo at the SeaPac convention with lots of interest. Using the HiDes gear with a 4mW signal, a camera with the transmitter mounted on the tripod, and a monitor and the receiver sitting on the front desk, as the folks walked by their picture showed up on the screen. I would quickly tell them that it was a 'broadcast' quality picture that came across on ham radio (70cm). Had an info sheet on the desk with a QR code to send them to the ATN website for more information. We were set up in the QCWA booth and it helped show that there was more to QCWA than just 'boat anchors and CW'... The few that had seen slow-scan, old analog ATV, etc., commented they never expected to see

such clear, snowless pictures. A good time was had by all! Also had a TinySA running on the desk showing the BartsHead on the entire 70cm band.

Jim W6US
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BATVC ATV Hams on 10 GHz

On Wed, June 11th, the Boulder, Colorado hams once again were out in the field exchanging simplex TV pictures on the 3cm (10 GHz) band. We were transmitting on 10.380 GHz using DVB-T modulation and 6 MHz bandwidth. All were using unique, home-brew rigs with various antennas, etc. We set up at various locations around Boulder County. The locations used were: Legionaire's Hill (Chris, K0CJG), Rabbit Mtn. (Bill E, AB0MY), NREL Windmills (Pete, WB2DVS & Debbie, WB2DVT), Erie / County Line Road (Don, N0YE), and Flagstaff Mtn. (Jim, KH6HTV) plus Bill, K0RZ, operated from his home QTH on Davidson Mesa. The longest distance over which a successful video was transmitted was 37.8km (23.5 miles) from NOYE at Erie/County Line Rd to WB2DVS at the NREL windmills. The following are reports from the various hams who participated.

Bill, K0RZ: Here are photos of my home VHF/UHF/microwave station and antennas. I am located on Davidson Mesa at DM79jx. I have a home-brew 10 GHz transverter with a low noise preamp and Hughes TWT amplifier. The antenna is a 32" dish mounted on a rotator at 30 ft with waveguide feedline. I received signals from all locations.

Pete & Debbie, WB2DVS & WB2DVT: We only received Don. We didn't record the signal strength but the SNR was bouncing between 6 and 20dB. It's ironic that although Don was the most far away (37.8 km) he was the only one we could receive. It must have been a terrain issue for us.

As a side note, our location was very acoustically noisy location due to road construction. There was a continuous flow of heavy construction trucks. I believe Jim, Don and Bill (K0RZ) received our transmissions. It was surprising that we could not receive several stations who could hear us. Another interesting thing was although we have a fairly narrow beam antenna (1ft diameter dish), when we aimed at Bill (AB0MY) he did not receive us but stations that were off axis from us did!
We did not have photos this time. We were too busy trying to determine why we were not hearing anyone. Overall, a great day. 73 de Pete and Debbie

Chris, K0CJG: I operated from Legion Hill overlook, east of Boulder, DN70ja. I had two solid DVB-T contacts with Bill, K0RZ and Jim, KH6HTV. I also was able to receive a signal from Bill, AB0MY.

Antenna: 23" on-axis parabolic dish, splash plate illuminator fed by ¾" copper pipe tuned waveguide, excited by ¼ wave SMA-connected probe. H-pol.

Receiver: Edision SL-2 LNB feeding a GTMedia V7 DVB-T receiver, using a steel can containing a ½ wave dipole as an SMA adapter. The GTMedia signal and SNR indicators are not really useful beyond go-no go indicators. So my signal reports are limited to solid or freeze framing (FF) based on monitor picture quality.

Transmitter: LO: Magnum Microwave Brick at 10784.9 GHz, Passive lower sideband microwave modulator: Anaren90340, Power amplifier: Harris 076-101932, DVB-T modulator: Hi-Des 310E at 404.9 MHz Power meter measurements at the antenna input port suggest 6dBm at 10380MHz with a DBV-T signal. A setting of -8 dB on the internal output attenuator of the Hi-Des modulator was found to produce a ~30 dB signal peak-to-skirt DVB-T SNR measured on a Rigol spectrum analyzer using the (highly attenuated) Edision LNB to pick up and down-convert the transmitted signal. ~20dB input attenuation was achieved by slipping an unmodified steel can over the LNB (very repeatable!) .

Observations: It was exceedingly difficult to point the antenna accurately enough to receive even the strongest signals. One degree rotation off boresight meant the difference between solid signals and no signal above threshold for DVB-T reception. I believe the digital demodulation threshold effect exacerbated the pointing difficulty compared to analog FM-TV searching where hints of a signal can be seen in changes in the noise pattern making it easier to climb the signal strength hill. Sensitivity to terrain obstruction was also much greater than observed in previous outing at 5.8GHz. Contacts that were easily made at the lower frequency were unsuccessful at 10380 MHz along the same lines-of-sight.

Interesting side note: while I was operating, FCC and FAA observers showed up on the site for an unrelated project. They were interested in what we were doing. and the FCC observer noted he was unaware that radio amateurs engaged in digital TV operations!

Planned Improvements: Definitely need to add some accurate azimuth and elevation angle readout and control to the antenna support.

I was pleased with the performance of the steel can SMA to LNB adapter in this first coupling experiment, but it could probably use some optimization. I have ordered another LNB (Amazon: $19, free shipping!) that I will disassemble to see if I can improve on the SMA coupling architecture. Every dB counts!

I have on order a 2W final amplifier module that is expected to yield a few 100 mW's DVB-T output power for longer range outings. 73, Chris K0CJG

Bill, AB0MY: I had my local home receiver for the repeater feeding OBS, so the output of the repeater was streamed this morning. I also set OBS up to record from 0945 to 1215. The recording also has all the 2 meter audio. The recorded video showed the following: for Bill K0RZ, anytime he was pointed towards the repeater, it keyed up, as was expected. Pete WB2DVS & Deb WB2DVT, the whole time they transmitted they keyed up the repeater. Their signal strength varied as they moved the antenna but copy was solid all the time. Don N0YE, brought it up for a couple of seconds when he was transmitting to Pete & Deb.

Don, N0YE: For me, the 10 GHz DVB-T outing on June 11 was a comedy of errors. To start the two 2m radios on board were a poor choice for this outing. I will spare the details. Second the intended operating position I chose was a great place if I operated from inside the car only as I had done back in the day when USB was the communication mode.

Each participant went to their operating location of choosing. I chose to go to a road near and north of Longmont, Yellowstone Road, where I had worked 10 GHz USB voice contacts years before. My remembrance of this location was that it had a great view to the south where most all other participants were operating. What I did not remember was that there as no place to park. Back then I was able to pull to the side of the road, stay in the car and operate. I had a 10 GHz horn on a rotator then and could function staying inside the car. Now I have to set up out of the back of my car and operate outside.

So I drove east on Yellowstone and reached US 287 where I turned south. All this while, I searched for another place to stop set up and operate. Very soon while driving south, I found a cemetery. Let's give it a try. There was an open spot way at the back of the cemetery with a good view to the south. In short I heard nothing there. I came to the conclusion that I was in, forgive the expression, a dead zone.

So I drove to a well known and successfully used high spot directly east of the cemetery on County Line Road. Here I successfully operated transmitting and receiving. Setting up and operating at this high spot, I discovered my HV110 receiver was set to receive 2 MHz BW signals and not 6 MHz BW signals. This is probably why the cemetery location was a failure. My fault.

My transmissions were heard from this location. And I did receive signals from some of the other participants. I just did not bother to record anything. WB2DVS and WB2DVT had a very good signal and displayed a professionally done placard with their call signs and location details – well done.

My assessment of the outing was that it was worthwhile and demonstrated that I and some others need to do another shake down outing. At some point I want to revisit the cemetery because of the great view to the south and bring it to life, so to speak. Don, N0YE

Jim, KH6HTV: I set up my 10 GHz gear on Flagstaff mountain at the Panorama Point lookout. It is an excellent location for seeing almost all of the eastern prairie half of Boulder County. It is 600 ft. above the city of Boulder. My setup was a bit unique compared to all of the other participants. They were all using high gain, narrow beam-width, dish antennas. I opted to use lower gain, but wider beam-width antennas. See the above photo. For transmit, I use an X band waveguide horn antenna with +17dBi gain. I mount my rf power amplifier directly on the antenna. Note the black heatsink module hanging below the antenna. For receive, I use a Bulls Eye LNB. It is the black antenna with the red radome. It's circular waveguide is the receive antenna. I mounted both antennas on a mounting plate on a small camera tripod. I found it extremely easy to use these antennas due to their wider beam-widths. I only had to point in the approximate direction of the other stations to receive their signals. In comparison, it was interesting listening on 2 meters to their difficulties in aligning their extremely narrow beam-width dish antennas.

Upcoming Ham Conferences

July 24-27 **Central States VHF Conference** -- Lincoln Nebraska, https://2025csvhfs.org

Sept 8-12 **GNU Radio Conference** -- Everett, Washington, https://event.gunradio.org/event/26/

Sept 13 **Zero Retries Digital Conference** -- Everett, Washington, https://zeroretries.org/p/conference

Oct 16-18 **Microwave Update** -- Tuscon, Arizona, https://microwaveupdate.org/MUD2025

W0BTV Details:

Inputs: 23 cm Primary (CCARC co-ordinated) + 70 cm & 3 cm secondary all digital using European Broadcast TV standard, DVB-T with standard 6 MHz wide TV channels. Frequencies listed are the center frequency of the TV channel.
23 cm = 1243 MHz (primary), 70 cm = 441 MHz & 3 cm = 10.380 GHz
Outputs: 70 cm Primary (CCARC co-ordinated), Channel 57 -- 423 MHz with 6 MHz BW, DVB-T
Also, secondary analog, NTSC, FM-TV output on 5.905 GHz (24/7 microwave beacon).
Operational details in AN-51d Technical details in AN-53d. Available at: *https://kh6htv.com/application-notes/*

W0BTV ATV Net:

We hold a social ATV net on Thursday afternoon at 3 pm local Mountain time (22:00 UTC). The net typically runs for 1 to 1 1/2 hours. ATV nets are streamed live using the British Amateur TV Club's server, via: ***https://batc.org.uk/live/*** Select ***ab0my or n0ye***. We use the Boulder ARES (BCARES) 2 meter FM voice repeater for intercom. 146.760 MHz *(-600 kHz, 100 Hz PL tone required to access*).

Newsletter Details:

This newsletter was started in 2018 and originally published under the title "*Boulder Amateur Television Club - TV Repeater's REPEATER*" Starting with issue #166, July, 2024, we have changed the title to "*Amateur Television Journal.*" This reflects the fact that it has grown from being simply a local club's newsletter to become the "de-facto" ATV newsletter for the USA and overseas hams. This is a free ATV newsletter distributed electronically via e-mail to ATV hams. The distribution list has now grown to over 800+, both in the USA and overseas. News and articles from other ATV groups are welcomed. Permission is granted to re-distribute it and also to re-print articles, as long as you acknowledge the source. All past issues are archived at: https://kh6htv.com/newsletter/

ATV HAM ADS -- *Free advertising space is offered here to ATV hams, ham clubs or ARES groups. List here amateur radio & TV gear*

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