

Boulder Amateur Television Club TV Repeater's REPEATER

November, 2019

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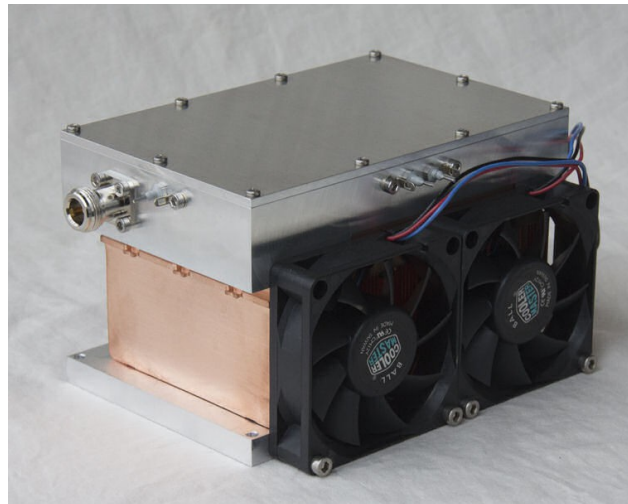
Future Newsletters: If you have contributions for future newsletters, please send them to me. We love to include news from other ATV groups. Jim Andrews, KH6HTV, email = kh6htv@arrl.net

Free Distribution: The BATVC newsletter is being circulated widely to other ATV hams and repeater groups throughout the US and to CQ-DATV. Feel free to pass it on to your other ATV ham buddies. If reprinted, in whole or part, we do ask that you include an acknowledgement of us as the source.

PE1RKI

Another Microwave Supplier

Following up on a lead in the BATC CQ-TV magazine, I have found another supplier of high power amplifiers. Bert, PE1RKI, in Holland offers amps from 250 watts for 23cm up to 8 watts for 10 GHz band. He offers a lot of other products, including preamps, filters and antennas. However, his web site (www.pe1rki.com) is very skimpy on details. .



NEW APPLICATION NOTES AVAILABLE:

I have recently posted on my web site some new, up-dated and re-written application notes. They are available at: <https://kh6htv.com/application-notes/> In addition, I have also deleted old, obsolete app. notes.

AN-18c "Notes on Setting Up Hi-Des DVB-T Modulators & Receivers", 16 pages --- This is a totally **NEW** re-formatted and re-written app. note and is focused to the first time user of the Hi-Des gear.

AN-36a "Microwave TV Transmitters & Receivers", 13 pages --- This app. note has been updated to now include the AD-5355, 13.6 GHz frequency synthesizer which was featured in the previous issue of our newsletter. It also now includes photos of Don, N0YE's, 10GHz transverter rigs.

AN-51 "W0BTV, Boulder, Colorado - DATV Repeater, **NEW** -- with operational details about the newly rebuilt repeater, includes coverage maps. 11 pages

AN-52 "Boulder, Colorado ATV Repeater - History", from the mid 70s to today. -- extracted from the deleted AN-43. 5 pages

AN-53 "W0BTV, Boulder, Colorado Digital ATV Repeater - Technical Details", **NEW** - Contains detailed description of the design and construction of the repeater, includes block and schematic diagrams. 23 pages

The following obsolete App. Notes have been deleted from the web site: AN-7, AN-30, AN-31, AN-32, AN-34, AN-35, AN-37, AN-43 & AN-44. They now are available, only on special request.



Jack, K0HEH, (left) -- Bill, AB0MY, & Jack, K0HEH, (right) setting up a pair of 3cm, DATV rigs on Legionnaire's Hill, east of Boulder.

--- 3 cm, 10 GHz DATV Activity ---

10 GHz DVB-T Contacts on October 16, 2019 from 9 - 10am: Jim, KH6HTV, was on Flagstaff Mtn. at Panoramic Point above Boulder. Bill, AB0MY, Jack, K0HEH, and I, N0YE were on Legion Hill Park east of Boulder. We were 5 1/2 miles apart with excellent line of sight. The first 3cm, DATV tests were run with transmitter and receiver dish antennas pointed at each other.

Jim had a 10 GHz signal output of about 23 dBm. The transmitter loaned to Bill had a signal output around 17.5 dBm initially when I put my modulator on it. When Bill put his modulator on the 10 GHz rig the power output was less by some unknown amount.

Jim and Bill used the 10 GHz rigs for transmit and receive. These rigs transmitted and received correctly. I used two receivers. One receiver used the Down East Microwave (DEM) transverter. The other receiver was a simple LO and mixer. These receivers both worked.

The DEM on transmit was not received by Jim, if I am recalling correctly. The LO and mixer arrangement was not tested on transmit. The DEM transmit test was run using the 13 inch dish with a homebrew feed. The feed was placed at the presumed focal point of 4.4 inches. This may have been done correctly or not and could possibly be why the DEM transmission did not work.



KH6HTV, 3cm rig on Flagstaff Mtn.



Bill, Jack & Don's DVB-T signal - P5 !



The most interesting part of the exercise was when Jim pointed his rig away from us and up at Green Mountain. We received his signal with a S/N level at 14 dB and a received power level of -66 dBm as displayed on Bill's HV-110 receiver. This compared to a S/N level at 23 dB and a received power level of -37 dBm when Jim pointed his rig directly at us. The point of this exercise was to test and demonstrate that a 6 MHz bandwidth DVB-T 10 GHz signal bounced off Green Mt was received elsewhere. The loss in signal strength was obvious and significant -- BUT the bounced signal contained lots of multi-path and was still successfully received.

73 de Don, N0YE

----- NEWS from Other ATV Groups -----

Colorado Springs, CO -- KE7TBB

We now have a transmitter on cable 59 (433.25 MHz) here in Colorado Springs. A bit more permanent than our field day setup. 15 watts clean carrier into a 4 element vertically polarized antenna covers the town solid. I had an input on 2434 fm, but receiver is having issues so just a test pattern for now. Unit is under manual control right now. I leave it transmitting most of the time at 1 watt carrier. Will have DTMF and input squelch control in the future. Anyone can call me 702-985-2171 to bump it up to high power. If you know anyone has any decent 2.4 GHz receivers, or filters let me know. -- 73 de Dan

Adams County, CO -- ARES

We have 70 cm and 23 cm ATV equipment here at Adams County ARES. We haven't used or trained on it in 5+ years. We can get digital receivers cheap for DVB-T, but digital TX would be a few years out. I redistribute your newsletter to Adams County ARES for training. Hope to try your TV repeater sometime with our analog equipment.

73 de Derek, KC0LCD

Dayton, Ohio -- DARA -- W8BI-TV

GOOD NEWS!!! Two more hams in the local area are in the process of purchasing HV310 transmitters so we should see some additional activity on digital ATV really soon.

The DARA ATV NET that is on Wed. @ 8:00 PM Dayton Time. Check-ins on 146.94 FM DARA Repeater. This net is also live streamed on YouTube To find the live stream on YouTube, go to the YouTube main page and type in the words: W8BI DARA ATV Repeater NET Live Stream and look for the resulting youtube live stream 15 minutes before the net begins. Click on the live stream and you are there! All ATV repeater transmissions with audio are streamed on youtube during the net. Note that if you miss the ATV net, did you know that you can watch the ATV net via the posted recording after the net is over? The recording of the ATV net stays on youtube for four days, and at any time during the four day period you can play back and watch this recorded session. NET CONTROL, Reuben W8GUC is also streamed on BATC: <https://batc.org.uk/live/w8guc>

Cheers ! de Dave P. AH2AR

St. Louis, MO -- SLATS -- WD0FCH

We are working on a new logo here to represent our newly form club, SLATS (St Louis Amateur Television Society). We do want to get our repeater on the network. Presently, we are doing streaming here for the locals but it is not what eventually we want to have available for everyone.

73 de Mel, K0PRX

San Diego, CA -- KD6ILO

We recently held a meeting for veteran and new hams on DATV as it has drawn new interest in this mode of image communications. So we re-transmitted the SLATS program on 23cm DVB-S locally for the viewers to enjoy and they did indeed. When it was over questions were answered and maybe new operators will emerge. When we conduct our group repeater business its' transmitted and received to all member stations involved full-duplex along with video/audio from our AREDN conference transmissions, but we don't stream it because its internal to our group. But we do share training topics and events. Also when we support EMCOMM, transmissions are within our system area of operation during the exercise and training. No further expansion outside our area of operation is planned since most of us live along the coast. We have a membership of 18, in which 12 are active.

A new modulator is being sent to me from Europe for me to evaluate from Norway and should be in this week. I still have the two others from Singapore on the bench under bench test evaluation. I like the video support simultaneous output functions for HDMI, Ethernet and WiFi on them. We are having fun with this and will have plans for an upgrade soon. The modulators from Singapore are from a test project for a RPA coastal surveillance program that got scrapped and they had no use for the items so I asked for them in exchange for services I provided them in the past. Great stuff and well made. Trying to get the rest sent once removed from aircraft fleet. The Lime SDR modulators I've tested for DATV work but they really get too warm for my use, some DC spikes on spectrum study. Since the US doesn't have a Geo-Stationary satellite like Europe, Africa, SE Asia and the Middle East with Es'Hail. IP TV liking will have to do, streaming being one method. with these modulators from Singapore and its' ability to simultaneously output video and audio on to HDMI, Ethernet and WIFI gives a system great flexibility full-time. The other modulator from Norway is more robust and flexible for US Ham TV use.

We have to use a heavy lift drone to carry a small cross-band, DATV repeater 70cm in/ 23cm out to support mobile operations in our two counties. So no more, blue screens and lost video transmissions with a 35 minute flight time with weight and balance calculated for payload and flight time from take-off and landing. It came in handy on a coastal rescue that happened last month in La Jolla, CA.

We've also pulled out an older AM/FM cross-band analog repeater I put together over 15 years ago that is still operational and soon to be upgraded. The unit, in a portable configuration, was built with Tom, W6ORG's help when I lived in Washington State. It's in a medium size Palican case. My plan for this unit was to send it to my old home in Hilo, Hawaii for the Big Island ARC.

Okay that's my 2 cents worth, take care and 73 de Mario

Cape Coral, FL -- W1RP

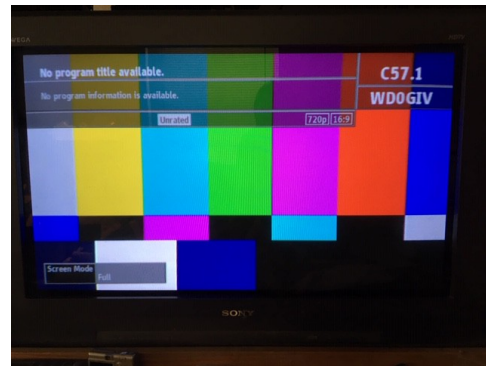
This is a Radar picture transmitted locally with DVB-T on 23 cm. Courtesy of NBC-2
This view shows a part of the hurricane that destroyed the Bahamas

Thanks, Paul Ramsden W1RP

paul@cardlink.com



New Orleans, LA -- WD0GIV



An update from New Orleans. First is a pic of my home station. Next is more testing of the WD0GIV 8VSB ATV repeater transmit chain. I just received the last board needed for the conversion electronics and routing system. Shown in pic 3 is the back of the Evertz 7800QT frame with its new 16 x 16 HD router installed.(the tiny gold coax connectors.)?? I did not need that much of a router but it came up cheap on ebay. The router will switch either an up-converted analog SD Tektronix DS1001G with ghost busting receiver or a QAM DVBT Contemporary Research receiver into the Contemporary Research 8VSB exciter/ transmitter. Also room for other inputs such as a site cam, test signals etc. All signals at the site will be in 720P except the sub-channel that will be 525 59.9.?? The sub-channel will be SD and contain repeater info and other info

related things on a loop. Construction is a bit slow as this is a one man band. All that is left is a control system and some receiver mods.

To be honest I have no idea if anyone is going to join me on ATV since most of the gang moved out of New Orleans after hurricane Katrina. It maybe an expensive toy :-)

73 de Richard, WD0GIV

BARC-Fest 2019 The Boulder Amateur Radio Club (BARC) has held an annual amateur radio flea market for many, many years now. It is held at the Boulder County fair grounds in Longmont on the first Sunday in October. There were lots of tables offering all sorts of stuff, from classic "Boat Anchors", to new modern ham gear and lots of miscellaneous electronic parts, etc. BARCfest draws hams from all over the front range of Colorado from south-east Wyoming down to Pueblo in the south and out onto the eastern plains towards Kansas. The attendance this year was a bit over 300.

Our ATV group had a display table at BARCfest advertising our TV repeater. We used the nice banner prepared by Roger, K0IHx, and Naomi, KD0PDZ as our backdrop. Unfortunately, we forgot to take any photos of our display table. This year we did something new and different. We actually showed reception of live video from the Boulder ATV repeater. This was a big hit with swap fest attendees. Don, N0YE, set up a 6 element, Yagi antenna on a 10 ft. mast on the west side of the exhibition hall pointing towards Boulder. He also added a mast mounted, 70cm pre-amp. He then ran a long run of coax inside the exhibit hall to our display table. I ran a continuous looping DVD video at my home QTH and transmitted it to the repeater on 70cm for re-broadcast. The video was appropriate for the season. It was of the Halloween celebration in Lahaina, Maui and it featured a lot of unique costumes. This provided our "live feed" for the demo and was a definite attention getter. We also set up at the display table, an example of a typical DATV station. We had a Canon camcorder on a tripod, a Hi-Des HV-320E modulator and a KH6HTV Video 70-7B, 3 watt, 70cm amplifier feeding a rubber duck antenna mounted on the camera tripod. For a receiver, we used a Hi-Des HV-110 driving a 21", hi-def, flat screen monitor. Having the display of actual repeater video worked wonders for us. We had a lot more foot traffic than years past of interested hams stopping by the table to inquire about ATV. We had a brochure prepared as a hand-out with the key details about the repeater, including an rf coverage map. We also had small business cards for the repeater as a hand-out.

The distance from the Boulder repeater to the Longmont fairgrounds was about 14 miles. We received a very strong signal there. The HV-110 on screen display of rf power was showing about -65dBm with a S/N of 23dB. We also tested the ability to tone the repeater on the 2 meter control frequency from the fairgrounds. Using a simple hand-held radio with a rubber duck antenna, outside the metal building, we found that we were able to successfully tone the repeater into it's various functions.

SHACK IMPROVEMENTS: Joe, AD0I, has a "new" TV camera for his 70cm, analog, VUSB-TV station. He now has a relatively new (i.e. 2005 vintage), hand-me-down, Sony camcorder. It replaces his older (much older 1985 vintage) Panasonic

camera. The quality of Joe's pictures now into the repeater show a 100% improvement in lighting and quality.

ATV - TRAVELOGES: We have been really enjoying the improvement in the quality of the video programs being aired on our TV repeater for our weekly, Thursday afternoon nets. We also have ATV ham viewers elsewhere that watch our nets via our BATC stream. They have commented about the great programs. Debbie, WB2DVT, and Pete, WB2DVS, seem to be constantly on the go traveling all over the US and Europe. Pete takes lots of photos and Debbie has a lot of fun making up slide shows to document their travels. When they are home and not traveling, they share their photos and stories with us via W0BTV-TV. Another frequent traveler duo is Ed, K0JOY, and his YL, Pat. Ed also does a great job of sharing his travel stories with maps, photos, etc. Keep it up !! Plus, this should be an incentive to other BATVC members to dream up some additional interesting programs. It is great to visit your shacks each week and hear about your activities for the past week. Now spice up your video presentations.

REMEMBER WHEN ? Here are some photos of our old analog ATV repeater back in 2012 when it was located in Chautauqua Park. The ATV hams hard at work were Bill, K0RZ, & Don, N0YE. Thanks to Jack, K0HEH, for the photos.

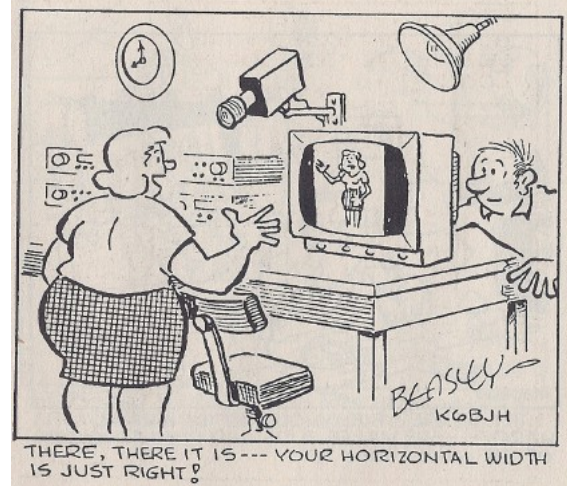




Joe, AD0I, was our NASA TV guy !



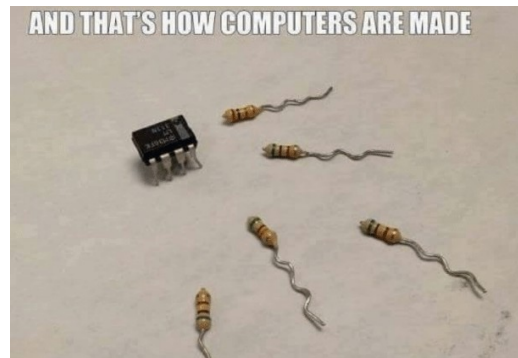
Remember Joe's great pin-ups ?



Aw the "good old days" of analog TV. We could always adjust the picture to make it look good. Now with digital, it shows us the truth of how ugly most of us are.



An Ordinary Ham out for a hike





New Hi-Def, 11" Monitor: I recently had a failure of the HDMI input on the small, 13" video monitor which I used with my ATV transmitters. It also ran on 12Vdc, so I used it when going mobile ATV. I use a separate, much larger monitor to display incoming ATV video. So, I needed to replace the 13". I wanted a small (13" or less), hi-def, and 12Vdc with HDMI input. I went on-line and google searched for a new monitor. I was amazed at the really large number available today. The prices were quite low, with many well under \$100. In years past, it was very hard to find any small, 12Vdc TV/monitors. Many of those offered now do not include a TV receiver, but are monitors only. But they include many inputs including analog composite video (+stereo audio), USB, VGA and HDMI. I suspect why there are so many now available is a lot of people are now retro-fitting older cars with video back-up cameras and want a small, 12Vdc monitor to hang on their dash boards.

What I found on the inter-net and decided to order from Amazon Prime was an 11", TFT, LCD color monitor which featured true high definition resolution of 1920 x 1080. The price was \$100. The brand was ATian, from China (naturally !). I was totally blown away by the quality of the picture. It had really vivid colors and the resolution was truly great. To test the resolution, I connected it to my Dell computer's HDMI output and put on the screen the image from www.qrz.com I was even able to read clearly the tiny lettering in QRZ's solar propagation forecast. (see above photo). In addition to the A/V, USB, VGA, & HDMI inputs, there was also a BNC input. Upon testing this, I found that it was also a composite video input.

--- HAM ADS ---

Any BATVC members having ham radio gear for sale are invited to list it here - no charge.

For Sale - 13", 12Vdc, TV Receiver/Monitor \$25

Works, except for HDMI input. SuperSonic model SC-1311, sells new for \$95 on Amazon Prime. LED-HDTV. includes TV tuners for NTSC analog & ATSC digital, 1366 x 768, 16:9 resolution. Inputs for: Composite Video + stereo audio, VGA, USB, & HDMI (not working). works on 12Vdc @ 600mA. Includes, car DC power cable, AC power adapter, remote control, manual & original packing carton. --- Interested ? -- call Jim, KH6HTV, 303-594-2547 or kh6htv@arrl.net

For Sale - 7", 12Vdc, TV Receiver/Monitor \$15

Works, except has some bad pixels with vertical streaks on right side of screen. Haier model HLT-71, LCD-TV. includes TV tuners for NTSC analog & ATSC digital, 16:9, 7" color screen. Inputs for: Composite Video + stereo audio works on 12Vdc, includes an internal, re-chargeable battery. Includes, car DC power cable, AC power adapter, remote control, telescoping antenna & original packing carton. --- Interested ? -- call Jim, KH6HTV, 303-594-2547 or kh6htv@arrl.net



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