

Boulder Amateur Television Club TV Repeater's REPEATER

March, 2021
2ed Edition

BATVC web site: www.kh6htv.com

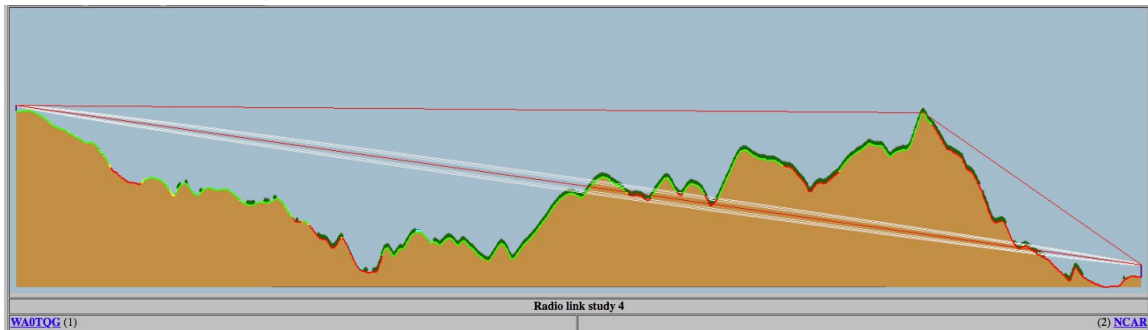
ATN web site: www.atn-tv.com

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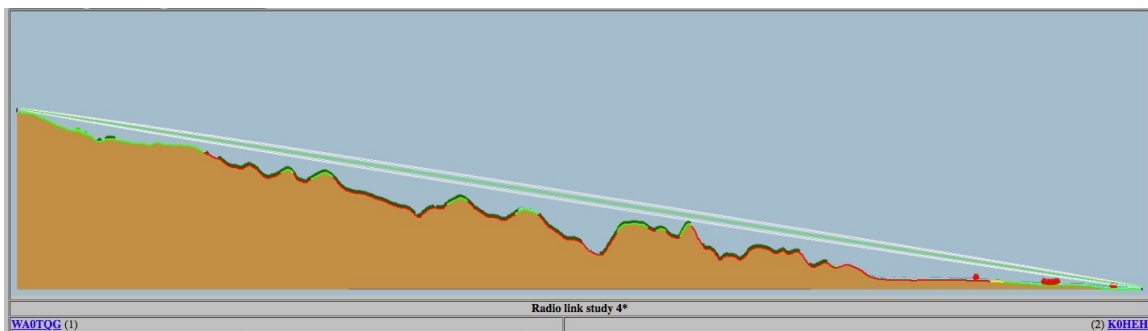


Ham Helps Ham by Repeating

Steve, WA0TQG, lives on Sugar Loaf mountain, west of the city of Boulder and in an impossible location to get into the Boulder ATV repeater, W0BTV. He is shielded by the Flatiron mountains blocking the direct RF path. But with the assistance of his ham friend, Jack, K0HEH, he is able to participate in our weekly ATV nets. From Jack's QTH in Boulder, there is a line-of-sight path to Steve's QTH, and also to the ATV repeater. So, each week, Jack relays Steve's 441 MHz, DVB-T signal into the W0BTV repeater on 1243 MHz. Then when Steve is not transmitting, Jack reconfigures his gear and then relays the repeater's 423MHz signal up to Steve on 1255 MHz. The above photo shows Steve sitting in his extremely well equipped ham shack with his relayed signal coming from our repeater.

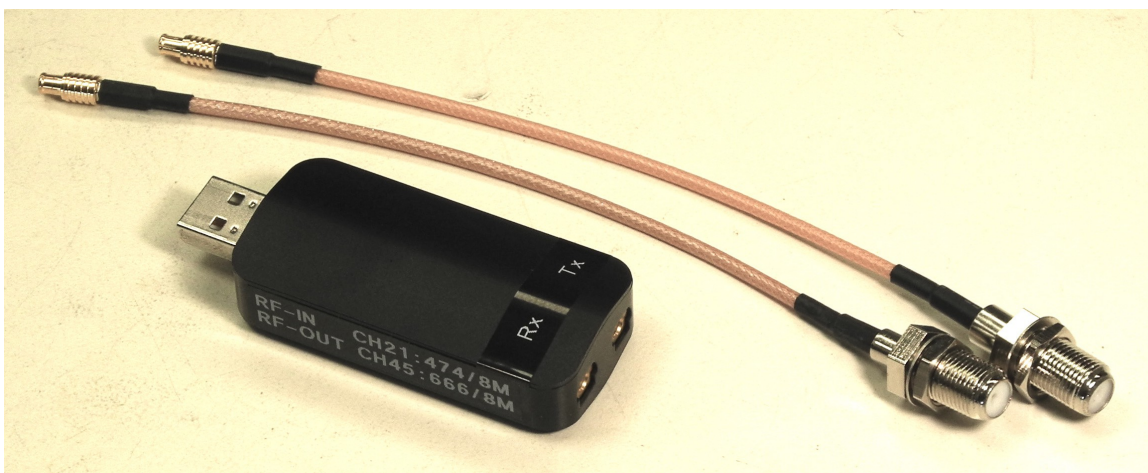


WA0TQG's impossible rf path to W0BTV-TV repeater



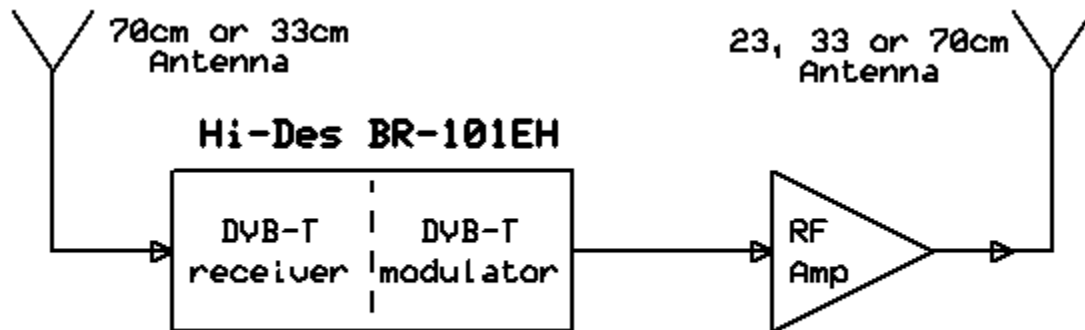
Steve, WA0TQG, at 7,720ft -- RF Path to -- Jack, K0HEH, at 5,312 ft

Cross-Band Repeating: A cross-band, DVB-T, repeater is extremely easy to put together on the fly. All it entails is to use an HDMI cable to patch from your receiver's HDMI output to your transmitter modulator's HDMI input. This is exactly what Jack is doing for Steve. Just make sure that your receiver's frequency is not on a harmonic of the transmitter's frequency.



For a more permanent DVB-T repeater, you might also consider using the Hi-Des model BR-101EH "Gap Filler" as the key element in a repeater. Here is the block diagram showing the minimal number of components required. Just two antennas, the BR-101 and a linear RF power amplifier. Or you could use a dual-band antenna with a duplexer. The BR-101 includes the ability to detect a valid incoming signal to turn on the repeater and then generates a brief, turn-off test pattern for ID purposes. For more details about

the BR-101, see the Nov. 2019 issues #24 & 26 of this newsletter. Also KH6HTV Video's application note, AN-54. An in-band, 70cm or 33cm repeater could also be built using the BR-101, but it would then require the addition of very good band-pass, channel filters.



Simple Cross-Band DVB-T Repeater

REPEATER BOOK: Thanks to Dan, KE7TBB, for alerting us to a **FREE**, on-line, amateur radio repeater directory. It is called Repeater Book (www.repeaterbook.com) It is a good replacement for what happened to the ARRL's repeater directory. They sold it off to RF Finder and now charge an arm & leg to use it. The printed directory from ARRL costs \$20 and RF Finder charges \$13/year to use their on-line directory. Repeater Book is FREE !

About that same time, ATV repeaters were dropped from the ARRL directory. I guess the ARRL felt ATV wasn't important enough. So, back in 2018, Art, WA8RMC, and I (KH6HTV) decided to put out our own ATV directory. It was first published in Jan. 2019, on my web site (www.kh6htv.com) as application note, AN-47. We tried to track down as many ATV repeaters as we could find. We found 41 active ATV repeaters across the USA. So, now with Dan's lead, I have researched the on-line listings at Repeater Book. I have now discovered about twenty more ATV repeaters listed. They are in the following states: AK, FL, ID, IN, IA, KN, KY, MD, MI, NJ, OH, PA, SC & TX. But are they real ??

I have thus followed up on this find. I have sent letters via e-mail, or USPS where no e-mail address existed, to the trustees of all of these new twenty repeaters. So far, the results have been disappointing. I have found only two new ATV repeaters.

K0ATV in Wichita, Kansas -- 439.35MHz in & 421.25MHz out, analog

N0MNB in New Brighton, MN -- 437.25 in & 910.25 & 1250MHz out, analog

I have received confirmation that K4KJQ, Lexington, KY, KB3POA, Philadelphia, PA, and K5CCL, Payne Springs, Texas are all off the air. I have gotten no replies from the

15 other ATV repeater trustees and thus must assume they are also no longer on the air. Thus the overall accuracy of the Repeater Book is suspect as many listings are obsolete.

I will wait until the end of the month for any late responses, and then update our ATV Repeater Directory with whatever new repeaters I find.

As an aside to all the ATV repeater trustees receiving this newsletter --- I encourage you to list your repeater on Repeater Book. No charge for listing and anyone can enter the data. It does not have to be the state frequency coordinator. I found that several of the repeaters Art and I had found to be active and on-the-air and we listed in AN-47 are not listed presently in Repeater Book.

Jim, KH6HTV



5.9 GHz Reception Report from Longmont, Colorado

Hi Jim -- I have gathered enough equipment to receive the W0BTV, 5.905 GHz beacon from Longmont. I could see ground clutter in the direction of the beacon. Picture quality was about P3. Aiming the dish was critical. Screen shots attached.

Equipment Used: L-Com HG5822EG dish on a camera tripod, similar to the one on the first page of TV Rptrs Rptr-67 on my balcony, just under 16' above ground level. 18" RG-58 pigtail, RC832 receiver and composite video adapter to VGA monitor

The receiver was a Christmas present. After Christmas, I tried to gather related pieces. The TX35 transmitter had been discontinued from the places I had seen it before. I got a TS832 and a compatible drone camera. The transmitter runs hot, even with reduced DC input voltage. I haven't dared to run it for more than a few minutes at a time. A TXPA58002W5 amplifier is on order from China via Ebay. I'll inspect the heat sink when it arrives.

73 de Lou, K0ANS



Rod, WB9KMO, of the Arizona ATN chapter has organized an ATN presentation for the 2021 Ham on-line Expo. (<https://www.qsotodayhamexpo.com/>) It is entitled "Introduction to Digital Amateur Television" Ron solicited assistance from Mike, WA6SVT, and Roland, KC6JPG of ATN - California and Jim, KH6HTV of ATN - Colorado in preparing the video to be shown at the expo. It is to be presented this coming weekend, on Saturday, March 13th in the 4-5pm (Pacific Time) slot. Rod's video runs for 32 minutes.

BARC MEETING

Tues, March 16th, 7pm

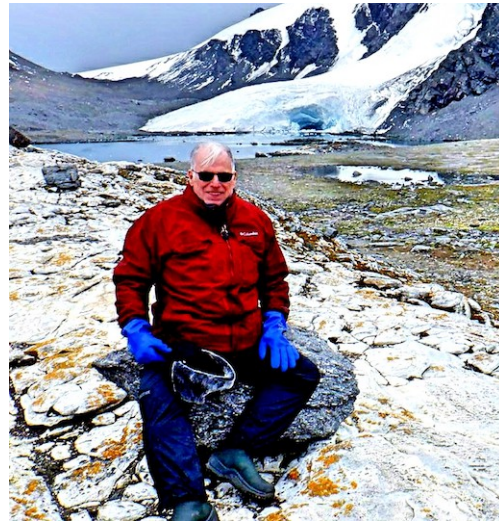
The Boulder Amateur Radio Club's March speaker will be Gene Spinelli (K5GS). Gene will share his 2020, VP8PJ DXpedition to the South Orkney Islands, northeast of the Antarctic Peninsula. Gene now lives in Tucson, Arizona, but was a BARC member in the 1980's.

Join BARC -- Zoom Meeting

<https://cuboulder.zoom.us/j/5134478178>

Meeting ID: 513 447 8178 -- no password.

Visitors are welcome.



DX Record on 241 GHz -- 64km !

New IARU R1 record on 241 GHz. QSO 6 March 2020, 17.10 UTC between: DK5NJ at JO50TI29JN 690m ASL Schwedenwache (DK0NA) and DB6NT at JO60GJ03MN 896m ASL Aschberg (Saxe). Distance 63.987 km. Reports 559/599. Temp -1C, RH 45%. Both receivers used a sub-harmonic mixer drive by a 120 GHz LO Transmit power 20 mW Both ends used 40 cm dishes with a gain of 57 dB and a beamwidth of less than 0.25 ° This was a line of sight path, and alignment was done using riflescopes Signal strength was around 30dB over noise, suggesting the possibility that 100 km could have been achieved under those conditions.



Watch the actual contact on You-Tube <https://www.youtube.com/watch?v=eVJC4lfpyuo>

FEEDBACK:

ADF-5355: Just a comment on the addition of the 1000 mFd caps: Tantalum electrolytic are available in the same size as the original. Without a reference these look like 1200 size (inch). The 1000 shown do have some lead length on them and aluminum caps generally have a higher ESR above 10 MHz. Tantalums go much higher. It also looks like there is a ceramic in parallel with the chip electrolytic for HF and up. It would be interesting to know what the capacitance is of the original caps and their type. 100 mFd/ 6.3V tantalums are available in that size and essentially no lead length for a SMD chip. tantalum caps have a very low ESR up into the VHF and up range. It might be interesting to swap the existing cap or solder a tantalum on top of the existing two and see what happens. Just a thought.

John, WB0CMC, Omaha, NE

ADF-5355: Hi Jim -- Thanks for update. There was also something in the Dec. 2017 Scatterpoint newsletter from the UK Microwave Group with a similar mod to the standalone ADF5355 boards. Have you ever measured the output power from your ADF5355 unit? I have one like it, but the 10 GHz output is very low, somewhere around -16 dBm

Paul, W1GHZ, Cabot, VT

KH6HTV comments to Paul's question about the 10 GHz power. I refer readers to the Oct. 2019, issue #21 of this newsletter where I first reviewed the ADF-5355. On page 7, I show plots of the rf power measured over the full range of the synthesizer. The RF

output B channel power (6.4 - 13.8GHz) ranged all over the place from a high of -2dBm to -14dBm. Yes, Paul, the worse case I saw was -14dBm at about 10.5 GHz.

NOTE: All past issues of the BATVC Newsletter are archived on the web site:
<https://kh6htv.com/newsletter/>

THOR Modulator: THOR is a well manufactured unit and we here in the San Diego County DATV Society area have been using their products and we've not had any issues with setting up and integrating the product with a well made and tested PA. Most members own these units {no HI-Des}. Great newsletter as always Jim...Mahalo!

Mario, KD6ILO, Oceanside, CA

DVB-S Modulator: Hi Jim --- The Express DVB Transmitter found at <https://www.datv-express.com/> will transmit a DVB-S signal using the Adam-Pluto SDR. It does require a computer to work, so it does not satisfy all your listed criteria. I have used it successfully to transmit a 2 MHz-wide DVB-S signal within my house (unamplified) and receive it using SDRANGEL software. I cannot vouch for how well this approach would work in the field.

73, Jim, KB7YSY, Tucson, AZ

GT Media V7 Pro - Combo Receiver: In the previous issue, we said the model V7 Pro would also work on DVB-T in addition to DVB-S. Well, we now say "**DO NOT BUY IT !**". Why? -- Mark, KC0PXT, originally purchased two of the units. I was able to program easily the first unit. But the second unit was DOA. No HDMI output and the front panel display locked up with the message "boot". Mark sent it back to Amazon and got a replacement. Well, I just put the new one on the bench and it too was DOA with the same behavior. Two strikes and the model V7 Pro is out ! We won't try for a third one. We so far, have had no issues with the GT Media model V7 Plus. We have programmed several of them successfully.

Jim, KH6HTV



The Ham Radio Joys of Owning a Bull-Dog ! --- Jim, KH6HTV & Ruby

Guess what my most recent ham project was ? -- Repairing several coax cables at the base of my 50ft tower. After repairing, I will now be putting a Ruby proof wire fence around the tower.

W0BTV Details: **Inputs:** 439.25MHz, analog NTSC, VUSB-TV; 441MHz/6MHz BW, DVB-T & 1243MHz/6MHz BW, DVB-T
Outputs: 423MHz/6MHz BW, DVB-T, or optional 421.25MHz, analog VUSB-TV. FM-TV output on 5.905 GHz (24/7).
Operational details in AN-51a Technical details in AN-53a. Available at: <https://kh6htv.com/application-notes/>

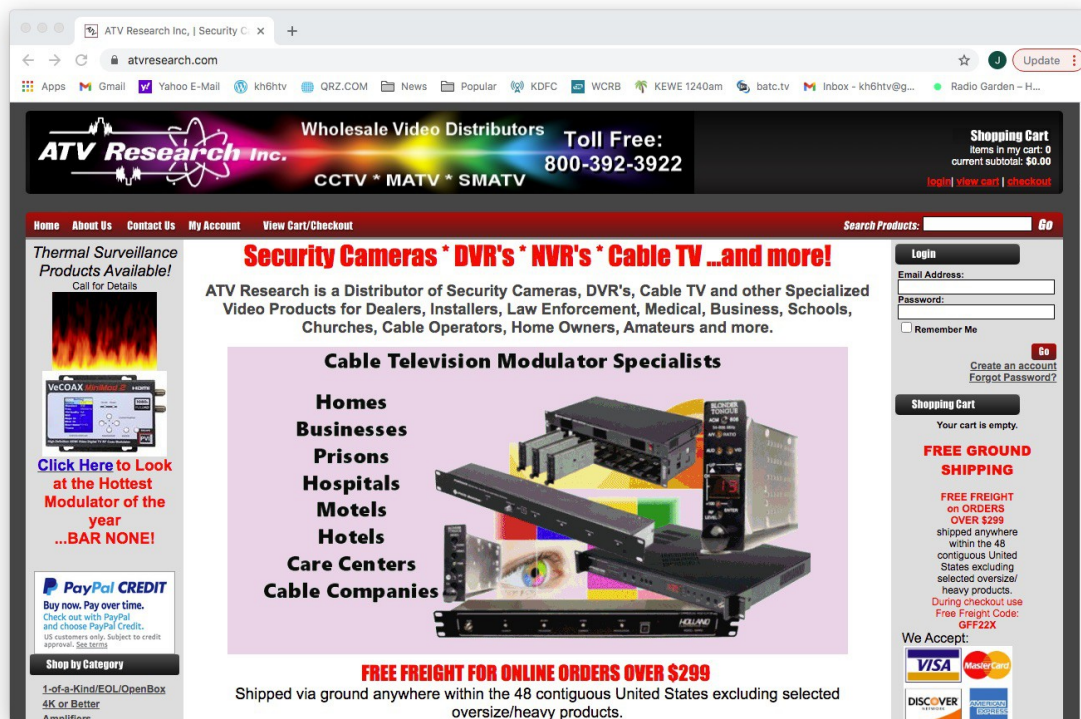
ATV Net: We hold a social ATV net on Thursday afternoon at 3 pm local Mountain time. The net typically runs for 1 to 1 1/2 hours. A DVD ham travelogue is usually played for about one hour before and 1/2 hour after the formal net. ATV nets are streamed live using the British Amateur TV Club's server, via: <https://batc.org.uk/live/kh6htvtvr> or n0ye. We use the Boulder ARES (BCARES) 2 meter FM voice repeater for intercom. 146.750 MHz (-600kHz, 100 Hz PL tone required to access).

Wednesday Evening Net Cancelled: This past winter, we started a second weekly net for the express purpose of serving those several new ham viewers who purchased the low cost (\$50) GT Media V7 Plus, DVB-T receiver. Several of the new hams worked during the daytime and thus were unable to watch our Thursday afternoon net. Recently, the number of viewers (only) has dropped to Zero. Plus the number of ATVers with the capability to transmit has dropped to only a couple. We took a poll on the Thursday, March 4th, ATV net and the consensus was to discontinue the Wednesday evening net. We still offer to any prospective ATV hams that we are willing to turn on the W0BTV repeater at anytime to provide them with a test signal. They simply need to call the trustee or asst. trustee, KH6HTV or N0YE. For those hams wanting to try 5 GHz FM-TV, a reminder that W0BTV is transmitting it's signal as a beacon 24/7. Frequency is 5.905 GHz.

Newsletter Details: This is a free newsletter distributed electronically via e-mail to ATV hams. The distribution list has now grown to over 400. 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 **For Sale - or - Want to Buy.**



ATV Research in Dakota City, Nebraska was a long time supporter of Mike, WA6SVT, and later Rod, WB9KMO's, ATV magazine called Amateur Television Quarterly (ATVQ for short). Thus, I felt it appropriate to include here a plug for them.

Check out their web site: www.atvresearch.com

Of particular interest for ATVers is the line of commercial grade, Modulators and Demodulators, both analog and digital, they offer. I, KH6HTV, have used them as the source of CATV, VUSB-TV modulators in my 70cm, VUSB-TV transmitters. We also use a Pico-Macom VUSB-TV demodulator (i.e. receiver) from ATV Research in our Boulder ATV repeater, W0BTv.

ATV Research was founded in 1964 by Mel Shadbolt, W0KYQ, and Richard Wright. At the time, they were both engineers for a local NBC TV station, KTIV, Ch 4. Their first product was a deflection coil kit so hobbyists could build their own vidicon TV camera. They soon followed with a complete transistorized TV camera kit. In the mid 70s, they developed an RF video modulator to be used with the earliest home computers so folks could avoid the high cost of a video monitor. By the late 70s, they were supporting the home satellite TV market. Today, ATV Research offers products from over 150 suppliers. The company is family owned with Mel still as the president.

Support Ham Radio Family Businesses !



ST. LOUIS AMATEUR TELEVISION SOCIETY

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(web site: http://www.slatsatn.net/?page_id=713)
Check it out. New items listed every week

Items such as: Flex Radio Amp, 2 meter transceiver,
Antenna Bridge, D104 Mic, RIGblaster, ATV ID-Maker,
NTSC Waveform Monitor, NTSC Vectorscope & More!