

Boulder Amateur Television Club TV Repeater's REPEATER

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BATVC web site: www.kh6htv.com

ATN web site: www.atn-tv.com

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Another ATV Ham's Fire Story



The QTH of Roger, K0IHX, & Naomi, KD0PDZ, before the fire, and afterwards



Our son, David, a Sergeant in the Boulder County Sheriff was operating the command center at the middle of the blaze, directing 150 officers from surrounding agencies getting all people in the more than 1000 houses destroyed to evacuate. Only 2 people died in the

fire. David called us and said we had 10 minutes to get out which we did, taking only legal documents and our Nissan car...no clothes, computers, phones...the house and everything in it was burnt to ashes in this fire fueled by 125 mph winds. The fire was traveling 1 mile per minute.

Roger, K0IHX, Boulder, CO

Editor's Note: Roger and Naomi built their lovely home on the top of Davidson Mesa themselves in the early 60s. It has been their life long Boulder home. For many years, they have been regular participants in our Boulder ATV net. They started out using analog VUSB-TV. When we transitioned over to digital TV, they were one of the first to adopt DVB-T. This photo of them was taken off the air and was published in the 2ed issue of our ATV newsletter in August, 2018.



Roger has had a life long involvement with television. It started when he was a teenager in the late 1940s building and selling to neighbors TV receivers and then working for the first TV station in Connecticut operating a relay station picking up TV broadcasts from New York City. After college, Roger moved to Boulder, Colorado and worked for NBS on HF radio propagation research. In later years, Roger worked for the White House directing a group researching and writing federal govt. telecommunications policies. Roger's stories about his background were featured in our ATV newsletters, issue #3, 31



K0DVB - ATV

Matt, K0DVB, was another Boulder ATVer and fire victim. He lived in old town Superior, close to the Target store. His whole neighborhood was wiped out.

Matt was the technical guru behind the Boulder County ARES group (BCARES) achievements using modern digital TV

technology. You could tell where his interest was by just looking at his vanity call sign "DVB" (digital video broadcasting). Matt formerly served as a BCARES volunteer on the Boulder County Sheriff's SWAT team providing video coverage of SWAT operations for the swat commander in the ICV (Incident Command Vehicle). The above photo shows Matt operating a BCARES video camera and DVB-T transmitter at a CU football game. His video was being viewed in the CU police chief's command post. Matt also built a lot of the specialized DATV gear used by BCARES and SWAT, including a portable DVB-T repeater.

I recommend you check out Matt's web site at www.k0dvb.org for a lot of interesting ATV posts. Especially interesting are the Power-Point slide shows that Matt put together for training BCARES members in how to operate the DATV equipment.

As a result of the disastrous fire, Matt has decided to pull up stakes and move back to the Dallas, Texas area. We will definitely miss Matt, but wish him well.

Jim, KH6HTV



A 24 GHz, DVB-T TRANSCEIVER

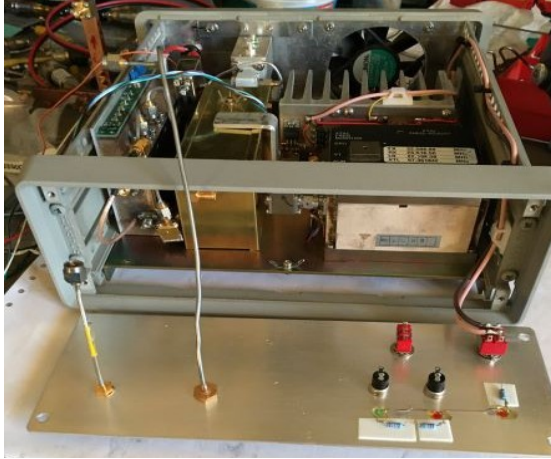
Hello Lads ---- I finally completed the construction of two RTX ATVs for DVB-T, strongly desired by Rudi.

This was his idea almost 2 years ago. The input is at 1300MHz on one prototype and on the other at 1301 MHz in DVB-T. Inside there is the transceiver for 24 GHz, the local PLL oscillator, a 1300 MHz - 845 MHz down converter, two band filters, a preamplifier for 24 GHz and a coaxial relay for TX-RX switching. Each circuit is powered by different strictly stabilized voltages, all cooled by a fan which is always active.

I tested the two RTXs by entering at 1300 MHz digitally and always receiving on the other device, to then cross the transmission and reception between devices. The result, even by greatly attenuating the reception to simulate the distance, was an excellent MER value which is around 25-26dB. I am attaching some photos.

73 see you soon, Mauro, IV3WSJ, Trieste, Italy





NEW BOULDER ATVer is ON THE AIR !



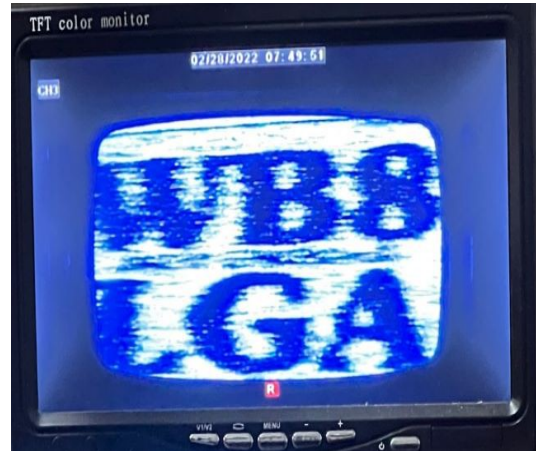
Congratulations to Clyde, KB0AMJ, for getting on the air with a fine DVB-T signal. Clyde first heard about our Boulder ATV repeater in the December issue of the Denver Ham Club's newsletter, the Round-Table. His home QTH in Arvada is in a poor location to hit the Boulder ATV repeater. But this didn't deter Clyde. So he built his ATV station instead for portable operation. Once the Colorado winter weather finally abated, as least for a few days, Clyde set up operations for a test on Wed. March 2ed, on Rocky Flats near the NRL giant windmills where he had a clear line-of-sight path to W0BTV - DATV repeater. The above photo was taken by Jim, KH6HTV, showing Clyde's perfect (s/n = 23dB) signal on 23cm relayed via W0BTV out on 70cm.

ATV BAND-OPENING in Ohio & Kentucky

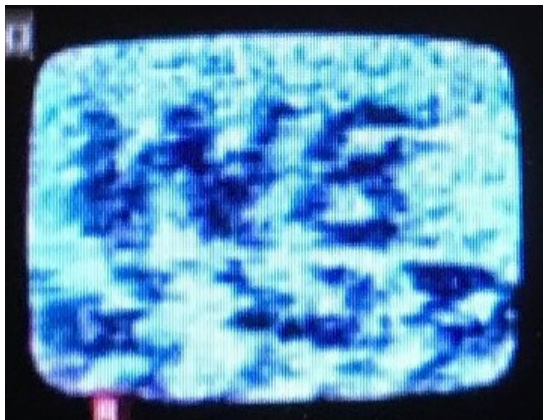
Dave, AH2AR, reports they had a good ATV DX band-opening on Monday, Feb. 28th during their Midwest ATV DX Net. He has sent us some photos taken by various stations involved. Thanks Dave.



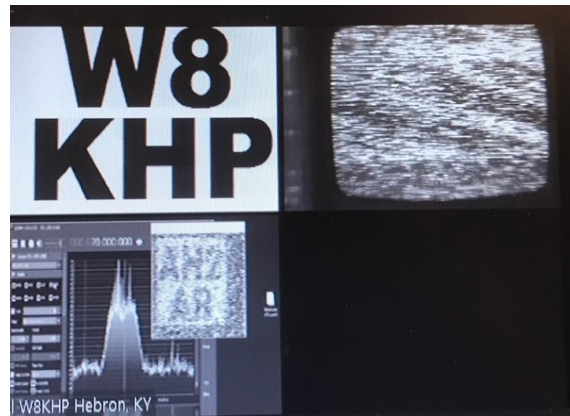
W0ZCF (Cincinnati, OH) rcvd by AH2AR (Vandalia, OH) - 67 miles



WB8LGA (Morrow County, OH) rcvd by AH2AR -- 87 miles



W8KHP (Hebron, KY) rcvd by AH2AR -- 72 miles



AH2AR (Vandalia, OH) as seen in Hebron KY by W8KHP -- 72 miles

ATN - Arizona Activities

The Amateur TV Network group in Arizona sponsors a Mesh Networking workshop and a mini swap fest every month. They are held on the first Saturday of each month. The location is Rod, WB9KMO's QTH in Mesa. For more info, contact Rod at wb9kmo@gmail.com



A recent meeting of the San Diego, California, ATV group



San Diego ATV group's very well equipped lab in Carlsbad, California

Hi-Des HV-122A EVALUATION

In December, Clyde, KB0AMJ, purchased a new HV-122A DVB-T receiver. He loaned it to me to evaluate. I had previously evaluated the models HV-110, HV-120A & HV-122 and reported the results in my application note, AN-57. I did the evaluation just a few days before the disastrous 30 Dec. Fire Storm. I have now updated and posted to my web site (www.kh6htv.com) a revised AN-57c.

The key difference between the 122 and 122A models is frequency coverage. The 122 only covers the 70cm band. The 122A covers the 70cm, 33cm, 23cm and 13cm bands. However, it's measured sensitivity varied dramatically for the various bands. Here are my measured results: 70cm = -88dBm, 33cm = -96dBm, 23cm = -94dBm, and 13cm = -86dBm. If you do purchase a 122A for use on 70 cms, then you really need to put a good, low noise pre-amplifier in front of it.

73 de Jim, KH6HTV, Boulder, CO

What is in your HDMI Cable ?

HDMI stands for **H**igh **D**efinition **M**ultimedia **I**nterface. It is used as a serial interface to carry digital video & audio from one product to another. It has become the "de-facto" standard for consumer electronics.

Technically, the standard supports three differential serial data channels that carry the uncompressed video and audio. The protocol is called transition minimized differential signaling (TMDS), developed by Silicon Image. An 8B/10B coding scheme converts bytes into 10-bit codes for error detection and correction. Video is transferred as 24-bit pixels in synchronization with a separate clock channel. Ten bits are transferred per pixel clock period. The standard supports up to 48 bits of pixel data. Pixel clock rates can be any value within the 25-MHz to 340-MHz range. This allows 720p and 1080p resolution video with a 60-Hz refresh rate to be accommodated. The overall maximum possible composite data rate is 10.46 Gbits/s.

As for audio, HDMI uses linear pulse code modulation (LPCM). Support is provided for most popular digital audio formats like Dolby Digital, DVD and super CD audio, and DTS HD audio. The audio capability supports up to eight channels. HDMI also includes the audio return channel (ARC), which carries the audio from your TV set to an AV receiver without a separate audio connection as is common in some systems.

HDMI also incorporates High-bandwidth Digital Copy Protection (HDCP) to encrypt copyrighted video and audio material. It prevents protected material from being played or copied during transmission over the interface.

A separate display data channel (DDC) link provides a two-way communications capability between the transmitting source and the receiver. It is based on the popular I2C interface. DDC is used to notify the transmitter about the receiver configuration and features. Another separate consumer electronics control (CEC) channel provides control of multiple devices from a single source. Up to 15 devices are supported, so a single remote control can handle all HDMI-connected products.

These multi-wire bundles include four shielded twisted-pair lines (100-Ω impedance) for the data and clock plus individual data lines for the DDC and CEC connections as well as ground and power lines.

There are four defined connectors for different applications. The most familiar is the A type with 19 pins that is used on most consumer electronic products. The B type connector uses 29 pins and doubles the data connections to six channels to provide a higher pixel rate to carry higher-definition formats. The type C connector is a mini version of the type A with the same 19 pins. A micro type D connector is also available for even smaller devices. It too has 19 pins, but the pin-out is different from the other connectors.

An interesting feature of the latest version of HDMI is the HDMI Ethernet Channel (HEC). By using two pins in the standard connector plus a special cable, a single 100-Mbit/s Ethernet channel is implemented. HEC is used primarily for audio control.

HDMI was first introduced in 2003. Manufacturers wanting to use it have to pay a royalty on every product sold.

Editor's Note: This information about HDMI came directly from an on-line article posted by Electronic Design magazine. Thanks to Ken, KV5Y, for finding the article and passing it on to us.

ARRL Position on Voice vs. CW -- 100 Years Ago

Jim, KH6HTV

I have been reading the "1926 Radio Amateur's Handbook -- A Manual of Amateur Short-Wave Radiotelegraphic Communication" (80th anniversary reprint - 2006). I was surprised by their position regarding voice vs. CW. Here is what they had to say in 1926 on page 66 of the handbook.

*"The sets we show here are for telegraph work. A radiophone transmitter is not nearly as practical and useful. A telephone set will be more expensive, it will create interference, it will take more power to cover any distance, static will interfere more with reception, the power supply equipment and circuits must be more complex in order that our radiophone be decently good. If you **must** experiment with voice work, you can use any of the sets described with a few changes to give a pure direct current plate supply and means for voice modulation, However, why turn a good telegraph set with a range of one to ten thousand miles into a mediocre radiophone outfit which will seldom reach points more distant than fifty mile? Less than one out of hundred stations on the amateur bands is interested in two way voice transmission."*



Unfortunately, this cartoon has way too much truth in it !

Tnx to Ken, KV5Y, for forwarding it to us.

W0BTV Details: Inputs: 439.25 MHz, analog NTSC, VUSB-TV; 441MHz/6MHz BW, DVB-T & 1243 MHz/6MHz BW, DVB-T
Outputs: Channel 57 --- 423 MHz/6MHz BW, DVB-T, or optional 421.25 MHz, analog VUSB-TV. Also, secondary transmitter, 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/>

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. 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. 146.760 MHz (-600 kHz, 100 Hz PL tone required to access).

Newsletter Details: This is a free newsletter distributed electronically via e-mail to ATV hams. The distribution list has now grown to about 500. 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.**



Quality Products & Application Notes for the Amateur Radio/TV market www.kh6htv.com

STATUS UPDATE: I am making progress on restarting. After being burned out in the Marshall Fire Storm on Dec. 30th, Janet and I have found a new QTH. With insurance money, I have purchased most of the test equipment needed. I am now in the process of getting in an inventory of the many, miscellaneous, electronic components required to build product again. However, I am encountering the same issues faced by GM, Ford, Toyota, etc. Dramatic price increases and parts shortages with long lead times. Some of my older products used obsolete semiconductors of which I had a "life-time" inventory (now gone !). As a result, I may be forced to discontinue some products. I do hope to be able to resume production on a limited basis by April of my LNAs and RF Linear Power Amplifiers.

Jim, KH6HTV, Boulder, Colorado

MISSING DVD --- HELP PLEASE

In May, 2020, I gave a talk to the Micro-Hams Digital Conference in Seattle, Washington. My talk was entitled "Amateur, High-Definition Digital TV". I recorded the talk on a DVD. Since then I have been giving out free copies of the DVD. Several ham clubs have used it as their evening's program. Unfortunately, I lost the master disc in the recent fire storm which destroyed my QTH. I am thus sending out a general plea for help. Is there any ATV ham out there who might still have a copy of the DVD? If so, I would really appreciate it if you would make a copy of it and mail it to me. Or if you can't copy it, then send it to me, I will make a copy and return the other disc back to you. If you have the DVD, please contact me at: kh6htv@gmail.com

Sincerely, Jim, KH6HTV



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