

Amateur Television Journal

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issue #205

BATVC web site: www.kh6htv.com

ATN web site: www.atn-tv.com



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



Western Washington Amateur Television Society

www.qsl.net/ww7ats

Club Call Sign: **WW7ATS** --- The Western Washington Amateur Television Society (WWATS) is an ARRL affiliated ham radio club in the Puget Sound area with a focus on digital amateur television (DATV). We use DVB-T modulation. We transmit and receive digital video using our DATV repeater on Cougar Mountain east of Seattle. The output is on the 23cm band at 1255 MHz with 6 MHz band-width, vertical polarization. We have two inputs on the 70cm band at 435.25 MHz and 437.75 MHz with 2 MHz band-width, horizontal polarization. The DATV repeater output is automatically turned on during when detecting a DVB-T signal on the input frequency or a RTMP authenticated stream, and produces wonderful HD signals on the output frequency.

We hold our ATV nets on Wednesday and Saturday evenings at 20:00 Pacific. We use our 2m voice repeater WW7ATS on 147.08 MHz (+ , 103.5 PL) to coordinate the net. Visitors are welcome. We would be delighted to have you join our Wednesday and Saturday evening nets. For those who have a hard time receiving our over the air video broadcasts, we also live stream our nets. Check the streaming page! WWATS email address: info@wwats.net



Welcome to SLATS --- This is our growing website where we share all kinds of great information about the exciting hobby of Amateur Radio. The emphasis, here, however, will be the world of Amateur High Definition Digital Broadcasting, specifically, DVB-T. Digital Video Broadcast – Terrestrial.

SLATS owns and operates an open repeater located in Maryland Heights, MO., under the call sign WØATN. The input frequency is 440.00 MHz and the output is 426.00 MHz. We regularly meet on air every Wednesday evening at 7 pm on 144.34 MHz. Everyone is invited to check in and check us out!

Our 426 MHz transmitter puts out 25 Watts average power on DVB-T with 16QAM and 4 MHz band-width. Our receiver is on 440 MHz again with 4 MHz band-width for 16QAM. We have two New-Tronics Hustler Spirits antennas with 9dB gain. Vertical polarization. They are mounted on a 90 ft. Rohn tower at 671 ft. ASL.

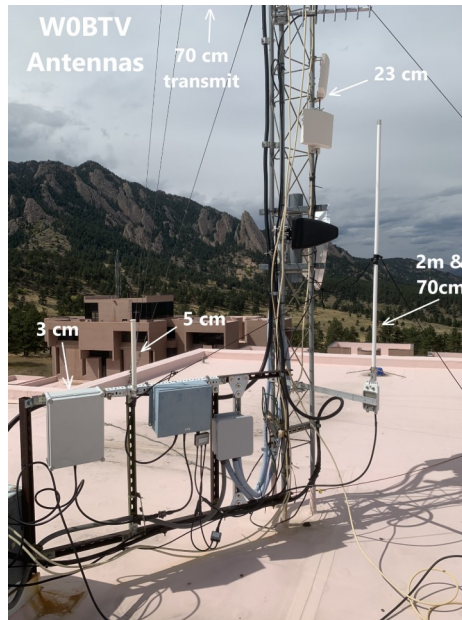


SLATS president, Mel Whitten, K0PFX, has given talks about DATV at several ham conventions.



Boulder Colorado Amateur Television Club

Boulder, Colorado has a long history of ATV dating back to the 1970s. We had an ATV repeater by 1979. The current repeater has been in service since 1991. It has gone through many modifications over the years, transitioning from analog to digital TV.



The Boulder Amateur TV Club (BATVC) has an “open” TV repeater. The repeater is tri-band (70, 23 & 3cm) DVB-T, digital. Input frequencies are primary, 1243 MHz, 6 MHz BW, and secondary 441 MHz and 10.380 GHz. The repeater automatically switches to any incoming TV signal, but 23cm has priority. The 70 cm digital output is on 423 MHz, 6 MHz BW. The DVB-T signals are in 1080P high-definition. We also have a 24/7 beacon transmitter on 5.905 GHz (FM-TV). The repeater has a wide coverage area, extending from the Wyoming border on the north, DEN airport to the east and to south-east metro Denver. BATVC holds a weekly ATV net every Thursday afternoon starting at 3 pm (local Mtn. time). The net typically runs for about 1 1/2 hours. The ATV net is streamed over the British TV Club’s server, <https://batc.org.uk/live/> (click on AB0MY or N0YE).

The Boulder W0BTv - ATV repeater supports the local ARES (BCARES). It is used to provide TV coverage of major public safety events such as forest fires, etc. BCARES is in the process of acquiring additional 70cm DVB-T repeaters to enhance ATV coverage of Boulder County, especially in the western, mountainous half of the county. These new repeaters will be linked to the W0BTv repeater.



Boulder ATV net – being re-broadcast in San Diego
batc.org.uk/live/kd6ilor

**SAN DIEGO
 DIGITAL TELEVISION
 BROADCAST
 SOCIETY**



This is an amazing technology group. We are moving Amateur Communications to the next generation to go beyond terrestrial boundaries. Education and Innovation are the keys to success. We are still in the experimental and demonstration phase of FSO in LEO.

Free Space Optical Communications, is a technology that the ITG Team uses to modulate beams of light (lasers) to transmit data wireless through the atmosphere and in space offering very high-bandwidth (50 GHz spacing), 80-90 channels. It is a license-free communications transporting reliable voice, data and HD video. (DWDM Network). 50 GHz CS| 34.5 Channels | ITU CH. 1549.72nm| Freq. 193.30 THz.

LOTNR 6U, is a compact laser optical communication system for high-speed data transmissions. This terminal takes up 3U on this 6U CubeSat. It enables Tb-class data, Gbps-level inter-satellite links (ISL), and secure, low-latency communications, transporting voice, data and video. The system uses infrared laser and (PAT) precise pointing, acquisition, and tracking to overcome the limitations of RF systems, enabling efficient data transfer over long distances.

Our four FSOC LEO CubeSats near-earth network demonstrations have achieved 200 Gbps downlink speeds in a single pass and 2 Tbit/s transmission rates. Modulation used is (PPM) Pulse-Position Modulation. We use Commercial-Off-The-Shelf (COTS) components which is cost effective to our research group.

LEOIN, Sat-27 LOTNR is scheduled to enter lunar orbit with other experimental CubeSats in early 2027. NASA STPSat-6 (LCRD) Satellite, serves as a long-term technology demonstration platform for optical communications and relay operations in a geosynchronous orbit approximately 22,000 miles (35,000 km above Earth). It was launched on December 7, 2021 and is currently active relaying experimental data communications.

BCARES ACTIVATION

Allen Bishop, K0ARK, is the E.C. for the Boulder, Colorado ARES (BCARES). The O.E.M. asked Allen to do a preemptive activation of BCARES members for Saturday, March 14th. The call out was due to an Xcel Energy’s planned massive shut-down of the electrical power grid for Boulder County in anticipation of extremely strong winds forecast for the weekend.

Allen’s message to BCARES said --- “The mission is to activate the MERN network. With power being shut off in the foothills, 911 service will not be available to the residents living in the mountains in the western part of the county. BCARES will be monitoring the following repeaters: Nederland, Gold Hill, Allenspark, Lyons. If an emergency call comes into BCARES EOC position, we will transcribe the information on a manual 911 Call-Taker ticket and walk it over to the 911 center for



Stream is Active - Click to play! Current Viewers: 2
Live video from a BCARES camera on 3/14 – streamed via BATC

response.” (editor’s note: *MERN stands for Mountain Emergency Radio Network. It is a network of amateur radio 2m FM voice repeaters in the Rocky mountain, western half of Boulder County. It was created by BCARES after the major 2010 forest fire using surplus radios from the Sheriff’s dept. when they had to go narrow-band.)*

In addition to manning the BCARES position in the EOC situation room, Allen also dispatched three ATV camera crews out in the field to monitor for possible forest and / or prairie fires. See above photo.



Joe - K2EVK



70cm Yagi Antenna

Boulder Welcomes a NEW ATVer !

On the Boulder, Colorado weekly ATV net on March 16th, we welcomed a new ham to our group. Joe Dempster, K2EVK, was finally able to put a great DVB-T signal through our W0BTV-TV repeater. Joe lives in the city of Longmont in the north-east corner of Boulder County. He is 18 miles from the repeater. His 70 cm signal was strong into the repeater at -80 dBm with a good 13 dB s/n.

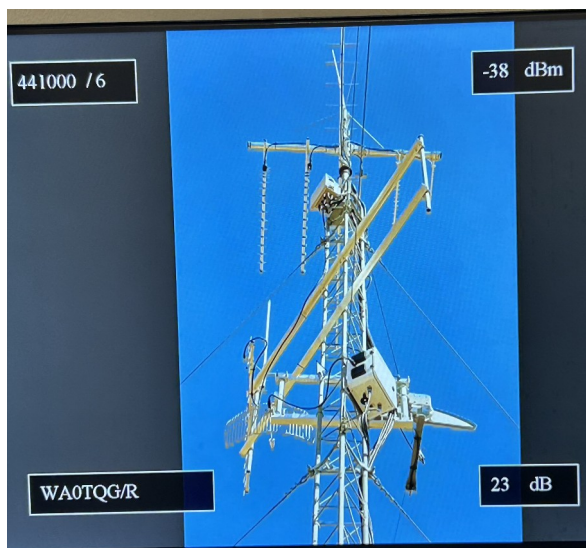
Joe and his wife Fredi recently relocated to Colorado from the Florida Panhandle, to be closer to their son and his family. Prior to moving to Florida Joe lived for over 40 years in the NYC area, where he worked in the information technology industry.

Once Joe got settled in Longmont he became involved in the local ham radio community and joined the Longmont ham club and also BCARES. He now represents LARC on the board of directors of BCARES.

Joe first became aware of ATV at the recent BCARES annual meeting in January. He got in contact with Jim, KH6HTV, for assistance in setting up his own ATV station. Joe's 70 cm ATV gear now consists of the Hi-Des HV-110 receiver, HV-320 modulator plus KH6HTV 70-LNA pre-amp and 70-9B 10 Watt Amplifier. He is using a 75 ft. run of LMR-400 low-loss coax to feed an M-Squared, 6 element yagi on his roof, which is nearly 20 ft. above ground level. Joe found a nice roof top bracket for the yagi on-line at a satellite TV store. It is held in place with some concrete paving blocks. See the above photo.

The yagi functions as the HV-320 transmitter antenna. A Diamond X-50 antenna feeds the HV-110 receiver. Joe's QTH is located at the very edge of the W0BTV-TV repeater's range. Some testing of receiver and transmitter parameters was necessary to arrive at a working configuration, as was the selection of the best antennas to get his station up and running on the air. The weekly ATV net provided help, encouragement—bringing the HV-110 online was straightforward, while most challenges arose on the transmit side—and valuable technical advice.

WELCOME JOE ! -- Great to have new blood on the repeater and see your smiling face each week on our ATV net. -- Jim, KH6HTV



WA0TQG's massive array of antennas



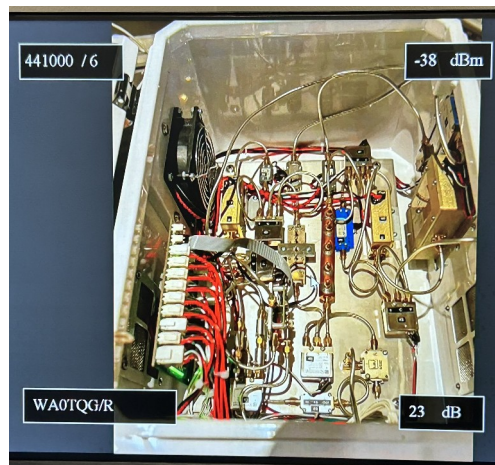
10 & 5 GHz dish antennas plus tower mounted electronics package

Boulder's Latest 5 & 10 GHz Microwave Amateur Television Station

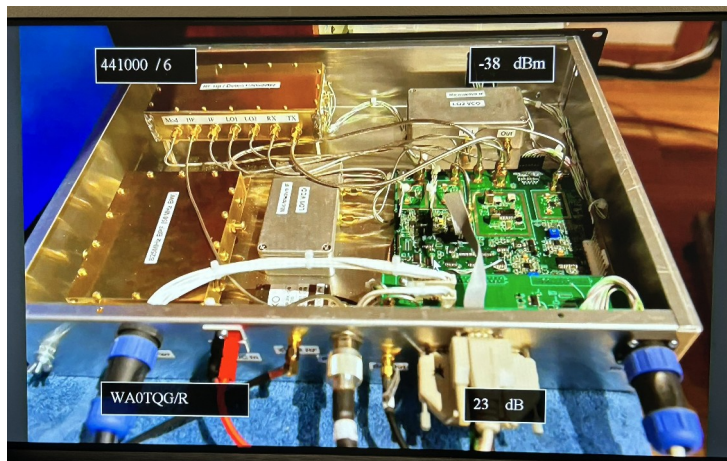
On our March 26th weekly ATV net, long time active ATVer, Steve, WA0TQG, gave us a slide show tour of his recent completion of his new 5 & 10 GHz microwave station. This has been a long labor of love for Steve which has finally been installed and functional. He has been waiting for the winter weather to clear before installing the antennas and top end electronics on his tower. Steve said it was a very labor intensive project requiring several hours atop his tower to complete.

Steve is a retired RF design engineer who is unwilling to stop designing equipment. So, he designed and built totally from scratch his complete all-mode (including DVB-T ATV), all-band, transceiver system. We have written about it in previous issues of this ATV Journal. His latest addition to it

added the 5 and 10 GHz bands. The photo above shows the tower mounted electronics package which contains the 5 and 10 GHz LOs, mixers, pre-amps and rf power amplifiers. Steve uses an 825 MHz IF for going to/from the ham shack to the top of the tower. Plus a separate control cable.



Tower Mounted Electronics



Ham Shack IF Electronics

So what are the key specs. for Steve's new station ?

5cm, 5.8 GHz:

Transmitter Power = 400 mW (DVB-T)

Receiver Noise Figure = 2.63 dB

Antenna Gain = 31.3 dBi

3cm, 10 GHz:

Transmitter Power = 540 mW (DVB-T)

Receiver Noise Figure = 1.92 dB

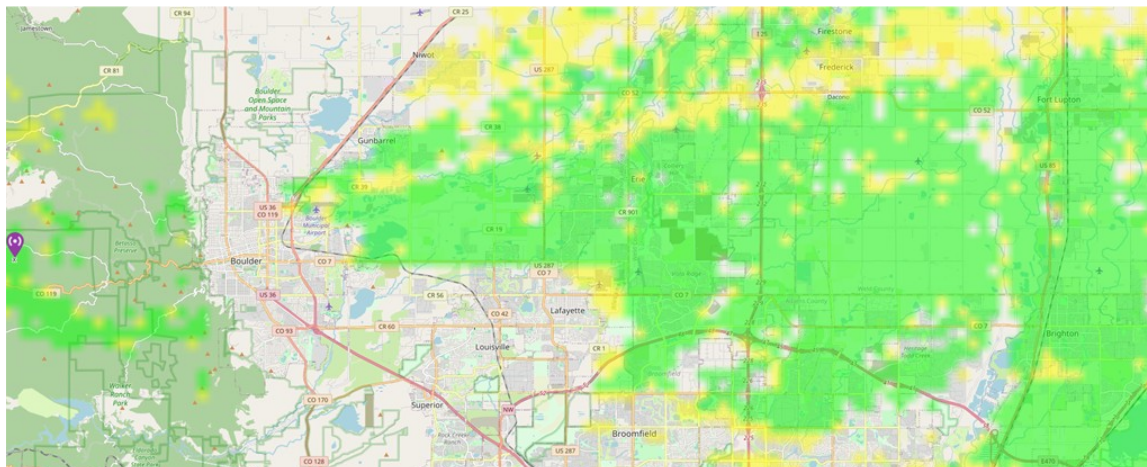
Antenna Gain = 27 dBi



Ham Shack Transceiver Radio Controller

Results: So far, Steve has only made one contact with his new station. It was on 10 GHz with Bill, K0RZ, at his home station. Steve said they were able to make a solid SSB contact, but were unsuccessful with DVB-T. It is a 20 km path between their QTHs. However, it is not a true line of sight path as the signals must get over the top of Flagstaff mountain. From Steve's QTH on Sugar Loaf mountain in the western part of Boulder County, he has a relatively narrow field of view out onto the eastern prairies

Our Challenge ! OK, now you other Boulder ATV micro-wavers --- Steve has thus challenged us to now get out in the field on the eastern prairies and setup up our roving microwave dish antennas and exchange our digital ATV signals with his new station. With spring weather approaching we need to start planning our first microwave DX-pedition. Attached below is a predicted coverage area map for 10 GHz DVB-T from Steve's qth. It assumes the receiver will be using a 30 dBi dish antenna.



*10 GHz DVB-T coverage map from WA0TQG's QTH
purple tear drop indicates the transmitter site on Sugar Loaf Mtn.*

Roland, KC6JPG – SK – Feedback:

Jackie and I are so very saddened to hear about Rolands passing. I along with the San Diego Digital Broadcast Society / ITG Labs pass our very sincere condolences to his wife, family and friends who are so many. He was a very encouraging person in the mode of television and a very great host on the ATN family of stations, he will be greatly missed by all. He was always seen as well as heard. 73 my friend, rest. --- Mario, KD6ILO

ATV in Chicago ?

Karl, KD9TVQ, writes --- "Jim - Are you aware of DTV activity in Northern Illinois or the Chicagoland area? I live in Arlington Heights in a third floor apartment facing essentially due North. I have no interest in legacy analog TV.

I was aware of local AM and experimental FM video on 70cm activity in the late 80s and the “war” that ensued over a proposed repeater that would not crossband. I was 14 at the time, so I didn’t have the money to invest. Relicensed 40 years later, I’m interested once again. Any help would be appreciated. 73, Karl

HF Remote SDR Receivers:

Want to hear your own signal on HF from a remote location? Or just monitor the HF bands from great receiving sites? Then check some of the great Web and Kiwi SDRs.

Northern Utah WebSDR: KD7EFG, www.Sdrutah.org This WebSDR is located near Corinne, Utah, about 80 miles (94km) north of Salt Lake City and about 14 miles (23km) east of the Golden Spike National Historic Site. This WebSDR system has coverage on all U.S. amateur HF, MF and LF bands, 2 meters, the bottom 1 MHz of 6 meters, and several shortwave broadcast bands. The antenna used for the HF and MF bands is a TCI model 530, an omnidirectional Log-Periodic antenna feeding a custom-built receiver multi-coupler array that, in turn, distributes RF to a number of receivers.

San Francisco, California: There are two, fantastic, former commercial maritime radio receiving sites north and south of San Francisco. KPH at Point Reyes and KFS Half Moon Bay.

<http://kphsdr.com:8073/>

<http://websdr1.kfsdr.com:8901/>

Colorado: We Boulder hams have one right in our back yard. It is in Berthod. Hosted by the Little Thompson Observatory Club, K0LTO. Jay Wilson, W0AIR, trustee <http://w0air.ddns.net:8073/>
For a complete list of WebSDR systems worldwide, go to www.websdr.org
For a complete list of KiwiSDR systems worldwide, go to <http://kiwisdr.com/.public/>

WOBTV 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/>

WOBTV 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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