

**Boulder Amateur
Television Club
TV Repeater's
REPEATER**
September, 2022
issue #110



BATVC web site: www.kh6htv.com

ATN web site: www.atn-tv.com



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

**World-Wide ATV QSO Party
- Friday, August 26th**



The ATV-QSO party was organized by Peter, VK3BFG, and hosted by the Melbourne ATV repeater group.

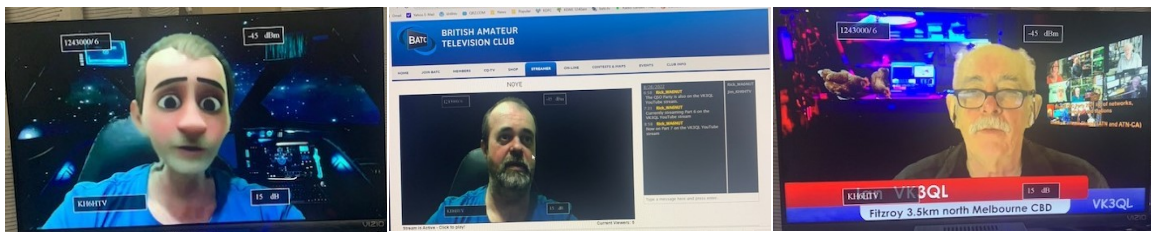
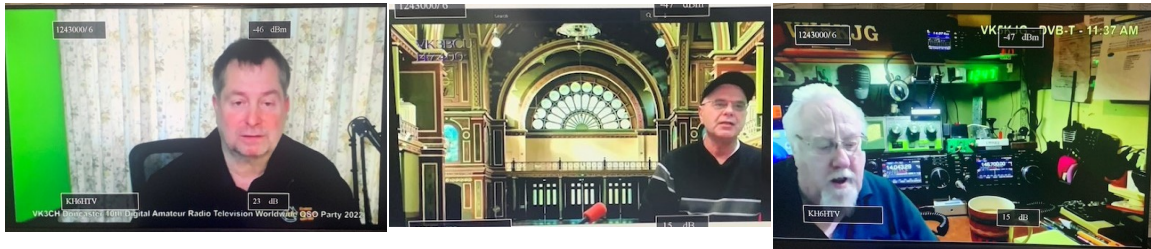


The USA coordinators were Art, WA8RMC, Ohio -- Bill, AB0MY, Colorado and Roland, KC6JPG, California



Boulder, Colorado participants were Don, N0YE, and Jim, KH6HTV

AUSTRALIAN --- ATV HAMS



USA --- ATV HAMS



This was the 10th QSO party. Each year gets a bit better. Better quality video and fewer technical glitches. We didn't catch photos of all the participants, but the above give you a flavor of what transpired. We here in Boulder were very impressed with some of the Aussie's elaborate ham shacks and exotic video processing capabilities. We especially liked the closing ATV transmission from the Melbourne beach. Good to see some outdoor, portable ATV activity.

COMMENTS from Peter: Below is a link to a newsletter written by Mick VK3CH. He has a good wrap up of the DATV QSO Party as well as a lot of other material. I don't know how Mick finds the time !

<https://nevarc.org.au/wp-content/uploads/2022/08/NEVARC-NEWS-Vol-09-Issue-09-2022.pdf>

We had a few hitches but the SRT direct into VK3RTV was a great success. Here in Australia DATV Repeaters in New South Wales (VK2RTS) and South Australia (VK5DMC) were linked by SRT in to VK3RTV as well as Bill AB0MY feeding the Boulder Repeater WB0TV and Roland KC6JPG with the multiple ATN Network Repeaters. Video quality was hugely improved over previous years. Hopefully next year

we could include the Columbus and Dayton Repeaters as well. Having the SRT service simplified the operation. We ran a Back Channel on Zoom just for liaison purposes. Would be great if an SRT service could be offered the other way across the pacific pond.

Best 73, Peter VK3BFG, Melbourne, Australia

What is SRT ? SRT is mentioned by Peter. Fortunately, Mick in his newsletter tells us what it means.

SRT - SECURE RELIABLE TRANSPORT PROTOCOL --- SRT is a video streaming transport protocol and technology stack designed to connect two endpoints for the purposes of delivering low latency video and other media streams across lossy networks such as the public internet. In a nutshell, SRT brings the best quality live video over the worst networks. It accounts for packet loss, jitter, and fluctuating bandwidth all while maintaining the integrity and quality of video. With SRT, you can keep your streams secure and easily traverse firewalls. Because SRT operates at the network transport level, acting as a wrapper around your content, it can transport any type of video format, codec, resolution, or frame rate. Thanks to SRT's security and reliability, the public internet has now become a viable option for an expanded range of streaming applications. SRT offers significant operational flexibility and cost savings compared to satellite or custom network infrastructures.

QSO Party Feedback: Thanks for the Newsletter! and thanks to a previous one I learned about the DATV Party! I will attend the party (as a "lurker" Emoji) on Friday as it will be around noon for me. On Saturday I will probably miss the US segment but will review VK3QL's recording on his YouTube page later. I will spread the news in a couple of Italian DATV web groups and hope some of the guys will also attend!

best 73 and 51 for the Party! I2NDT, Claudio

FEEDBACK:

WB9KMO: I was pleasantly surprised to be highlighted in your August 2022 newsletter. That segment in your newsletter is excellent and I know you have lots of deserving ATVer's to highlight. Keep up the great work. We're indeed fortunate to have so many excellent people who have helped ATV grow and thrive. I'm blessed to have worked and played with so many of them for decades.

I appreciate you giving my Mesh Workshop a plug. We had an excellent session this month with a turnout approaching pre-COVID. That has been a long time coming. I may also start up a local ATV Workshop, since we are getting more ATV interest than we can address at the Mesh Workshop and since we're evolving more into Digital ATV, Mesh Video and Microwave FM ATV.

73 de Rod, WB9KMO, Mesa, AZ

DARA Happenings:

W8CWM, Bill McCoy happened to be up and running while Bruce, K8FIX and I were down at the repeater site Saturday working on the CAD block diagram project. Bill's A5 video was being repeated via the ATV repeater, and of special note is that Bill has recently acquired a digital 70cm transmitter, so you will be seeing his DVB-T video shortly, once he gets his ham shack re-arranged. Everyone knows that re-plumbing all of that wiring is a major operation and we dare not look behind the bench!

Dave, AH2AR, Dayton, Ohio

photo is the DARA ATV Repeater rack



INTERNATIONAL --- ATV CONTESTS

After talking to many of the participants, both in the UK and at Friedrichshafen, I have set out some proposed rule changes for future IARU ATV Contests. Not all need to be implemented, but I think that the time is right for change. I would welcome comment by e-mail to atv@iaru-r1.org before 30 October 2022.

The ATV Contest community is strong, but I believe that these changes are required to continue to encourage newcomers. In brief the proposals are:

1. Only the bands 1.2cm and above qualify for increased scoring multipliers.
2. The contest is split into a low band (6m – 13cm?) contest in June and a high band (9cm – 0.2cm) contest in September)
3. Roving stations are limited to 2 locations except for bands of 1.2cm and higher.
4. Video codes sent to roving stations need not be changed for second contacts.
5. Equipment sharing between stations at a single site is stated as not being permitted.

Thanks -- Dave, G8GKQ, -- IARU ATV Contest Coordinator

EGG ON MY FACE!

My sincere apologies for publishing questionable measurement results. In our previous August issue # 108, I had an article on the *Differences in DVB-T Receiver Sensitivities for Various Bandwidths*. I got some questionable results especially when adding a low noise pre-amp in front of the Hi-Des HV-110 receiver. Several readers questioned them

and rightly so. I too was baffled by them and should have listened to myself. So, I have now repeated my measurements. But this time I have taken more care in the test set-up. I have put a lot more distance between the test signal source and the receiver under test. This time, there is now a 45 ft. coax cable between them. The previous measurements were obviously corrupted by leakage from the source bypassing the calibrated attenuator string. The source and receiver were previously too close together for weak signal measurements. So here is the corrected table with the new measurement results.

Comparison of Digital Thresholds with & with out low noise, pre-amp

(new measurements performed 3 Sept. 2022, kh6htv)

Band-Width	Modulation	Normal/ Aggressive	HV-110	70-LNA HV-110	Improvement with pre-amp	S/N max / min
6 MHz	64QAM	Normal	-83dBm	-86dBm	3dB	32/22dB
	64QAM	Aggressive	-89dBm	-92dBm	3dB	32/15dB
	16QAM	Normal	-89dBm	-92dBm	3dB	26/15dB
	16QAM	Aggressive	-93dBm	-96dBm	3dB	26/10dB
	QPSK	Normal	-95dBm	-99dBm	4dB	23/8dB
	QPSK	Aggressive	-97dBm	-102dBm	5dB	23/5dB
4 MHz	64QAM	Normal	-85dBm	-89dBm	4dB	32/22dB
	64QAM	Aggressive	-90dBm	-94dBm	4dB	32/15dB
	16QAM	Normal	-91dBm	-94dBm	3dB	26/15dB
	16QAM	Aggressive	-94dBm	-98dBm	4dB	26/12dB
	QPSK	Normal	-97dBm	-100dBm	3dB	23/8dB
	QPSK	Aggressive	-99dBm	-104dBm	5dB	23/5dB
2 MHz	64QAM	Normal	-84dBm	-91dBm	7dB	32/22dB
	64QAM	Aggressive	-93dBm	-97dBm	4dB	32/15dB
	16QAM	Normal	-90dBm	-98dBm	8dB	26/15dB
	16QAM	Aggressive	-95dBm	-102dBm	7dB	26/12dB
	QPSK	Normal	-100dBm	-104dBm	4dB	23/8dB
	QPSK	Aggressive*	-101dBm	-106dBm	5dB	23/6dB

S/N: For QPSK, the max. possible s/n is 23dB. For 16QAM, it is 26dB. For 64QAM, it is 32dB. The lowest possible s/n at digital threshold depends upon the modulation and the aggressiveness of the FEC. For QPSK it was 8 and 5dB. For 16QAM, it was 15 and 12dB. For 64QAM, it was 22 and 15dB.

6 MHz BW Summary: For normal FEC encoding, the sensitivity measured was -95dB (QPSK), -89dBm (16QAM) and -83dBm (64QAM). Lowering the data rate and

using very aggressive Forward Error Correction (FEC) of 1/2 was seen to buy several dB improvement. Also using a low noise pre-amp was seen to add 3 to 5 dB improvement.

4 MHz BW Summary: I found it possible to use 1080P for all settings on 4 MHz band-width. For normal FEC encoding, the sensitivity measured was -100dB (QPSK), -90dBm (16QAM) and -85dBm (64QAM). In other words, going from 6 to 4 MHz brought a 2 dB improvement in sensitivity. Lowering the data rate and using very aggressive Forward Error Correction (FEC) of 1/2 was seen to buy several dB improvement. Also using a low noise pre-amp was seen to add 3 to 5 dB improvement.

2 MHz BW Summary: As mentioned previously one needs to lower the video resolution for 2 MHz BW. 720P works well for QAM. QPSK requires even lower 480. For normal FEC encoding, the sensitivity measured was -99dB (QPSK), -92dBm (16QAM) and -84dBm (64QAM). Lowering the data rate and using very aggressive Forward Error Correction (FEC) of 1/2 was seen to buy considerable improvement for QAM, but little for QPSK. Also using a low noise pre-amp was seen to add from 4 to 8dB improvement. A significant difference. The lowest observed level was -106 dBm for 2 MHz BW, QPSK with 2/3 FEC (code rate), 1/16 Guard and 480 resolution.

73 de Jim, KH6HTV, Boulder, Colorado

Note: These corrected results and the complete report will be available as application note, AN-64 on the www.kh6htv.com web site.

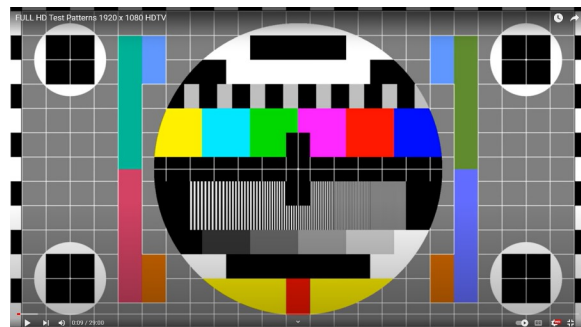
ATV at TAPR Conference: Mel Whitten, K0PFX, will be giving a talk entitled "*Introduction to High-Definition Digital ATV*". His talk is scheduled for Saturday, 17 Sept. at 10:30am. Will this be a first ATV talk for TAPR ? The ARRL / TAPR Digital Communications Conference annual meeting will be held in Charlotte, North Carolina on Sept. 16-18th. <https://tapr.org/?product=2022-dcc-registration>

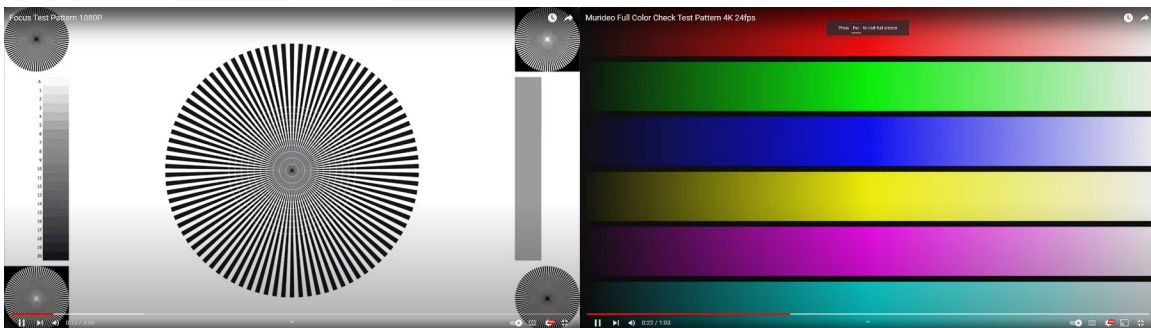
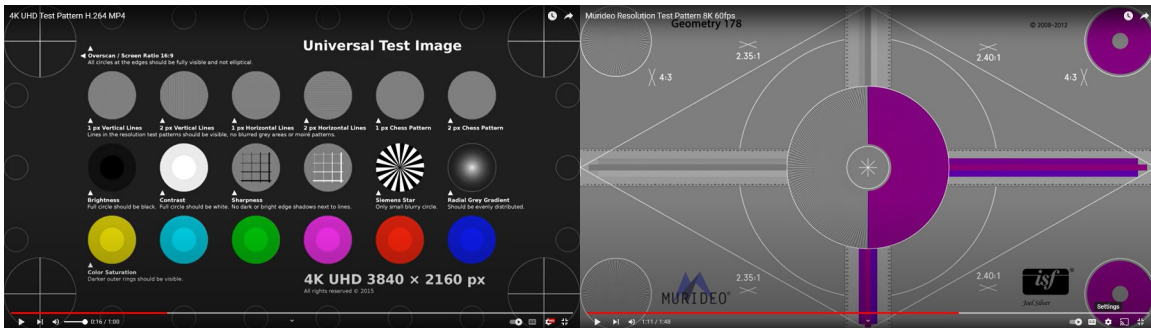
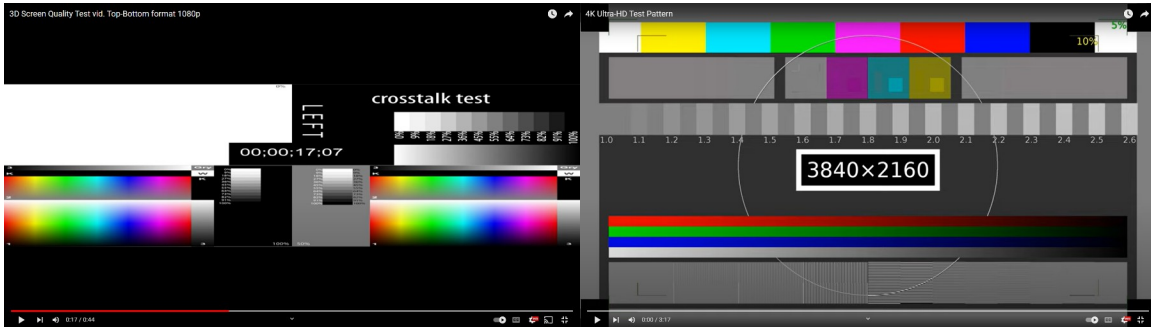
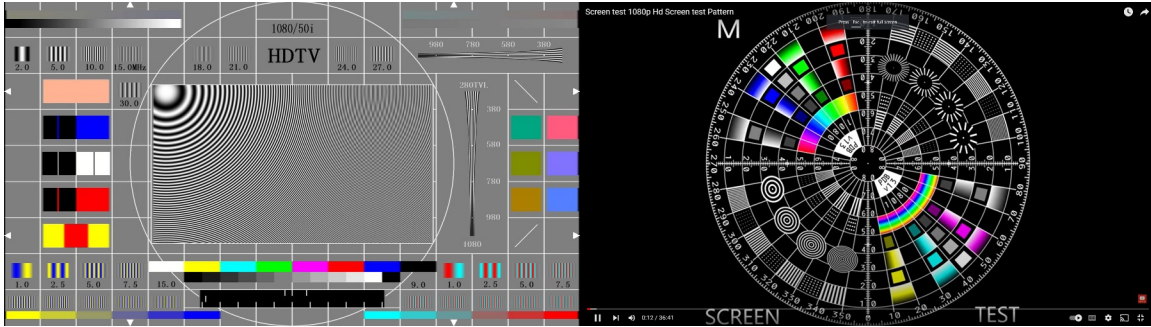
TV Test Patterns

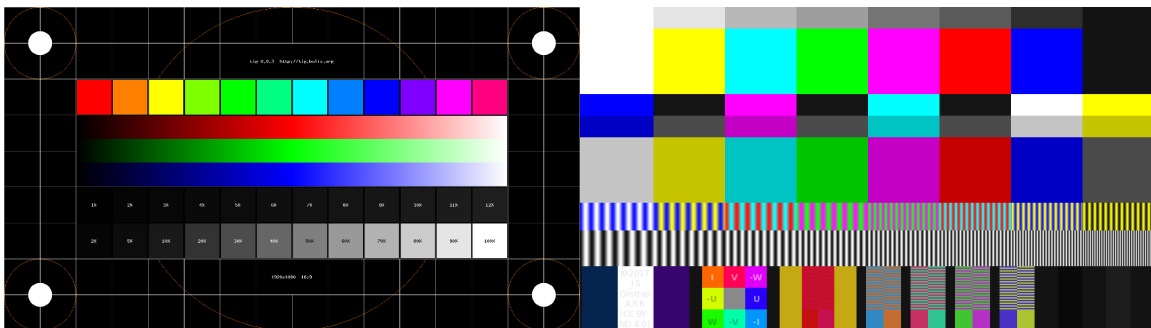
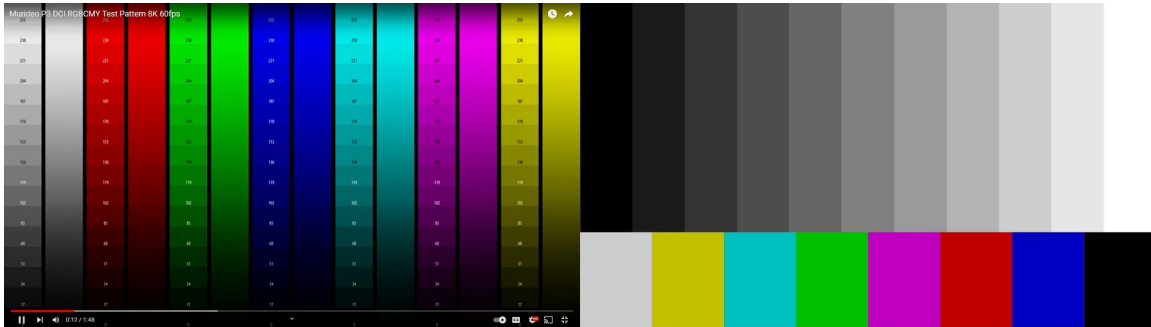
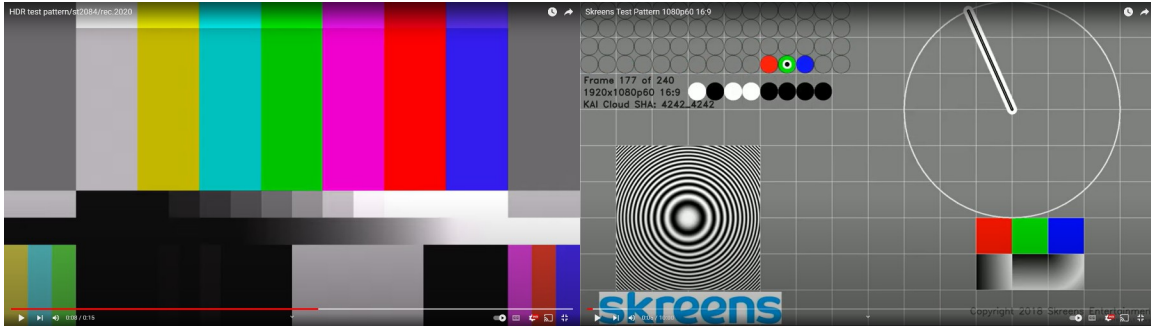
Surfing the internet turns up a whole lot of different video test patterns.



For details: www.qrz.com & www.kh6htv.com







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* or *ab0my*. 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.

Boulder, Colorado - Ham Radio Swapfest !

After a long, covid enforced delay, the Boulder Amateur Radio Club (BARC) will once again be hosting it's annual, fall ham radio swapfest. It is coming soon, on the first Sunday in October (2ed). As in the past, it will be held in the exhibit hall at the Boulder County fairgrounds. Details are on the flier on the next page.

A special feature added this year will be a Radio Testing Table hosted by BARC. It will be a FREE service to attending hams. HF / VHF / UHF rigs up to 100 watts can be tested. Tests will include transmitter power output and spectrum and receiver sensitivity.

Our BATVC group will also have a display table with a live demo of high-definition, digital, amateur television. Don, N0YE, will host the table.

Boulder Amateur Radio Club (BARC)

BARCfest Hamfest

Ham Radio and Electronics

Sunday, October 2, 2022, 8:00 a.m.

Boulder County Fairgrounds -- Exhibit Building

(North of the Hover Rd. & Nelson Rd. intersection in Longmont, Colorado)

Admission \$5 -- Children 12 and Under Free with Paid Adult

(Correct Change Appreciated to Avoid Delays at Door)



Door prizes every 15 minutes

Premium prizes on the hour with

Grand Prize at 12 Noon

(Must be Present to Win)



V.E. License Exams at 10 a.m.

Pre-registration required. Go to BARCfest session October 2, 2022 at hamstudy.org

Direct registration link: <https://hamstudy.org/sessions/62bae36019db3d176cd45dccc1>

For questions write to: barc70@arrl.net

Main Doors Open to the Public at 8:00 a.m.

Vendor Doors Open for Set-up at 6:00 a.m.

For more BARCfest information contact: barc70@arrl.net or Debbie (WB2DVT) 303-447-3183



Boulder Amateur Radio Club (BARC)