

Boulder Amateur Television Club TV Repeater's REPEATER

June, 2022
3ed edition, issue #104

BATVC web site: www.kh6htv.com

ATN web site: www.atn-tv.com

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On 15 May 2002, two Italian teams made two-way, digital ATV, QSO contacts over the fantastic distance of 903 km. They did it on three bands -- 70 cm, 13 cm & 3 cm ! !



The team of Filippo, IZ5TEP/1, and Francesco, IT9HZM/1, were setup in Monte Beigua, Savona, Liguria in northern Italia at grid square JN44GK83.

The team of Francesco, IT9GAJ/IT9, Davide, IW0GUR/IT9, and Johnny, IW0ARO/IT9 were in southern Italia at Monti Peloritani, Messina, Sicilia at grid square JM78RE58. See the map. Their signals were beamed across the Mediterranean Sea.

The contacts were made using DVB-S2 modulation. The equipment they used for the three bands is as follows:

433 MHz --- 11h00, two-way, DVB-S2, SR 333, D24

IZ5TEP/1 & IT9HZM/1: Pluto, 20W, 15 el, Minitiouner

IT9GAJ/IT9, IW9GUR/IT9 and IW9ARO/IT9: Pluto, 10W, 15 el, Minitiouner

2.4 GHz --- 13h00, two-way, DVB-S2, SR 333, D15

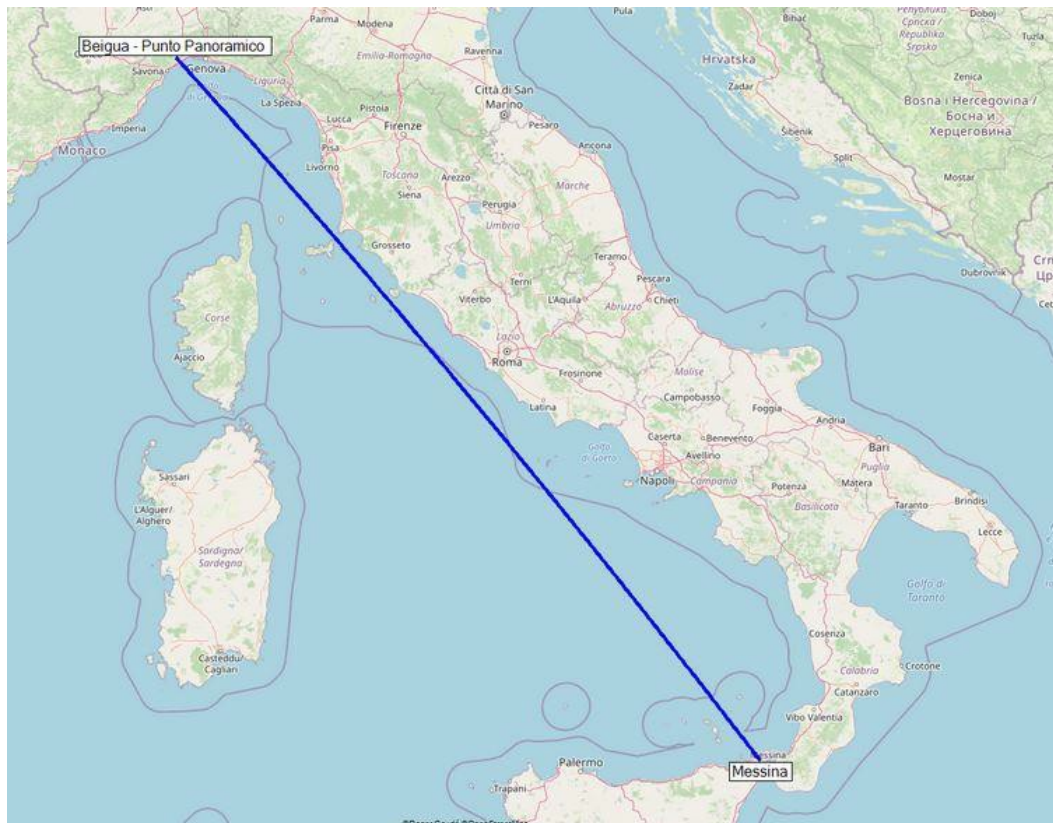
IZ5TEP/1 & IT9HZM/1: Pluto, 20W, grid 24dB, Minitiouner

IT9GAJ/IT9, IW9GUR/IT9 and IW9ARO/IT9: Pluto, 20W, grid 24dB, Minitiouner

10 GHz --- 12h00, two-way, DVB-S2, SR 333, D17

IZ5TEP/1 & IT9HZM/1: Pluto, transverter 3W, 48cm dish, Minitiouner

IT9GAJ/IT9, IW9GUR/IT9 and IW9ARO/IT9: Pluto, transverter 3W, offset 60cm, Minitiouner.



FEEDBACK on Analog ATV

From W6ORG --- Reference ATV newsletter issue #103 --- "I have also heard it reported that hams wishing to purchase a new TV receiver are finding many of them no longer include an NTSC, analog receiver."

According to FCC Rule 15.118(b) ---- All TV's imported and marketed in the USA still must have NTSC tuners capable of cable channels 1-125. So if anyone are seeing TV's that won't receive NTSC on cable channels, they probably did not arrive in this country legally.

What I find difficult for many new to ATV is that setting up newer TV's by having to go through the scan process. If they use their own transmitter as the signal source, it will often over load or have multi-path distortion thus skipping over as a valid occupied channel. Each scan for valid channels can take many frustrating minutes. Also annoying is the blue screen, video squelch mode when searching for sync bars in the snow while rotating the antenna for DX. Some times you can find older TV's in second hand stores that might be more suited to NTSC ATV.

Tom, W6ORG

WA6SVT --- Early on with the scanning TV sets, most allowed manual channel entry. Nowadays only scan to set up the channels.

73, Mike, WA6SVT

AH8AR --- There are no shortages of analog tv's whatsoever on eBay. As long as there is eBay, there will always be a large selection of TV sets available. By the way.... I think I remember hearing somebody stating that CW was dead!

P.S. We also have a large thrift store in the area that have "giveaway prices" on TV sets.
 Cheers, Dave, AH8AR

W8KHP --- Analog TV reception is actually quite easy. SDR# has a plug-in for that. It is actually more sensitive than using an actual TV set. In the picture above the lower left frame is reception via SDR# and upper right is via a Bentley TV.

Al, W8KHP





S58RU --- I have read the lines (DVB-S, DVB-S2) by Dave G8GKQ. I can agree with them if we talk about work via repeaters or on 50 MHz, 70 MHz, 144 MHz, 432 MHz (and the two US frequencies). I also saw his beautiful photo. I am attaching two of my photos from two of my IARU contests. I would ask Dave to comment on the results of this year's IARU contest. I don't know the results, but I'm curious.

73 de Rudi S58RU, Koper, Slovenia

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Analog TV Sets Are Still Very Much Available on the “Used” Market

Dave, AH2AR

The question came up last week regarding the quandary involved in finding a good analog TV to use with PC Electronics transceivers or TVC-series down converters. There are two fundamental problems with finding working TVs for A5 use. One primary problem is that all new TV sets have a programmed-channel scanning function that makes it difficult to use it to receive an “off-air” Channel three. You must first scan the channel and you have to depend upon having an active channel in order to retrieve that channel. The other problem that is encountered is that all new TV sets have a “Blue-screen” video squelch function that makes it impossible to see a “snow-field” when there is no signal present.

Consequently, finding good used TV sets that work for A5 use may on the surface seem to be a showstopper. However, there are literally hundreds of used TV sets available through e-bay. In this article I have identified several models that are widely available on e-bay that work fine as these used sets can be re-purposed for ATV use.

“BENTLEY TV”: At any given time, there are literally hundreds of these TV sets available on e-bay. The majority of these TV sets were made around 2010-2011. Having

an extremely small “footprint”, the TVs take up little shelf- room in the ham shack. Varactor tuning allows you to continuously tune through the lower VHF channels. These TVs have Black & White CRT’s and have a 5 inch diagonal screen. There are several “hacks” that can be accomplished for re-purposing these TVs. Firstly, be aware that the proprietary DC input plug has a negative voltage center-pin on its proprietary connector. Hams in this region usually bypass the DC plug by installing another chassis style barrel connector where it can be powered by a 12 VDC power supply. The other issue that is encountered with these TVs is that it requires a 3.5mm male mono plug jack to hook up the down converter IF output into its external TV input jack. The solution to this issue is to simply use an F-connector to 3.5mm plug adapter, or an alternate solution is to install a chassis mount female F-connector on the side of its enclosure. Once these modifications are made, powering the TV and hooking it up to the down converter IF output provides a simple means for these TVs to be used for ATV.

FAQS:

* Why use a Black and White TV? --- A Black and White raster will offer more contrast when receiving weaker ATV signals.

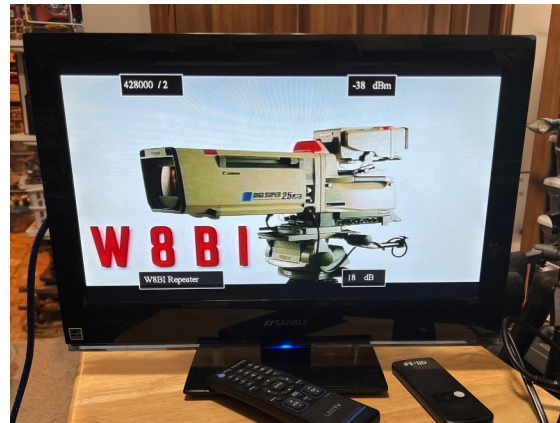
*Is there a “risk” when buying a used Bentley TV from e-bay (or any used e-bay products for that matter?) ---- The way e-bay works is that purchases are biased for the buyer. If you find that the TV is inoperative (such as horizontal hold does not lock, as an example) it is up to you to resolve this issue through the seller to your satisfaction. Keep in mind that these TVs are 12+ years old and its always possible you may get a lemon. Note however, many of these sets have been employed in a time-limited “portable” operation, and I have found that nine times out of ten, the CRTs are in good shape.

*If I don’t want to modify the proprietary DC plug, is there another option? ---- Yes there is... Since the unit takes D cell batteries, you can always hook up a DC supply to the battery terminals in the battery compartment, or, you can use the Bentley TV wall wart, if the wall wart comes with the TV.



AH2AR's in-shack Bentley TV on 18 June 2022 receiving W8ZCF via simplex in Cincinnati (60 miles)

SANSUI FLAT PANEL COLOR TV 19 INCH, (Model numbers SLED1980D, or HDLCD19WB) Also available through e-bay are SANSUI Flat panel TVs that are absent of the “Blue Screen Feature” and also can be manually configured to receive channel 3. The TV comes with a number of other useful features, such as an HDMI input, an F-connector-style VHF TV external antenna input, a composite video input, and a VGA input. The SANSUI pictured was purchased on e-bay for \$30. This Flat Panel is actually pretty light as it weighs about 7 pounds, so shipping is not prohibitively expensive.



Left Photo: SANSUI Model SLED1980D Receiving a “P3” A5 Video from the W8BI ATV Repeater site

Right Photo: SANSUI Model SLED 1980D Receiving a 2 MHz-wide bandwidth DVB-T Video from the W8BI ATV Repeater site

The Sansui TV works on cable channels for directly receiving ATV signals. The TV set was tuned to cable channel 57, (421.250 MHz) for this test, and it was confirmed that the channel can be manually selected as the TV set does not require channel scanning. Like all cable ready TV's, sensitivity is terrible when using flat panel TV's for direct receive on 70cm. I had to use the KH6HTV Video preamp in order to receive the repeater, otherwise I was unable to tell the



repeater was even on the air without the preamp. Lastly, the TV does not have the blue screen feature, consequently, a snow-raster is present when receiving a weak signal.

My comment about cable channel 60 receive sensitivity for all cable ready TV sets is just a general statement and my comment is not directed to the specific flat panel TV discussed in the article, although it does receive on the cable channels.

When using a down converter set up on a TV tuned to channel 3, we have found that having the ability to offset tune a down converter provides better tuning control when zeroing in on different weak signal ATV signals, where they will be on slightly different frequencies due to individual exciter performance factors. For those watching a single ATV repeater and not working simplex, such tuning control is not necessary and a cable ready set tuned to the correct cable channel frequency will work just fine.

Editor's Note: *While Dave loves using the PC Electronics 70cm down-converter, we have the same issue of obsolescence with it. Tom, W6ORG, of PC Electronics has since retired and is no longer building them. So again, the only source of them is the surplus market.*



S58RU, Rudi's Antenna Farm

Rudi reports that he presently has antennas to work all the way from 1.8 MHz to 122 GHz ! For analog ATV he can work from 1.3 GHz up to 24 GHz. For digital DVB-T, he can work 1.3, 2.4, 10 & 24 GHz. He lives above Koper-Koper (above Trieste) at 275 meters (ASL). His grid square is: JN6506PN.

NEW ATVer on Boulder Repeater

Congratulations to Jeff, KD0TLB. After many tries, he was finally able to get a picture into W0BTV. Jeff lives in Denver, 30 km (19 miles) from the repeater. From his condo rooftop, he just barely can see the



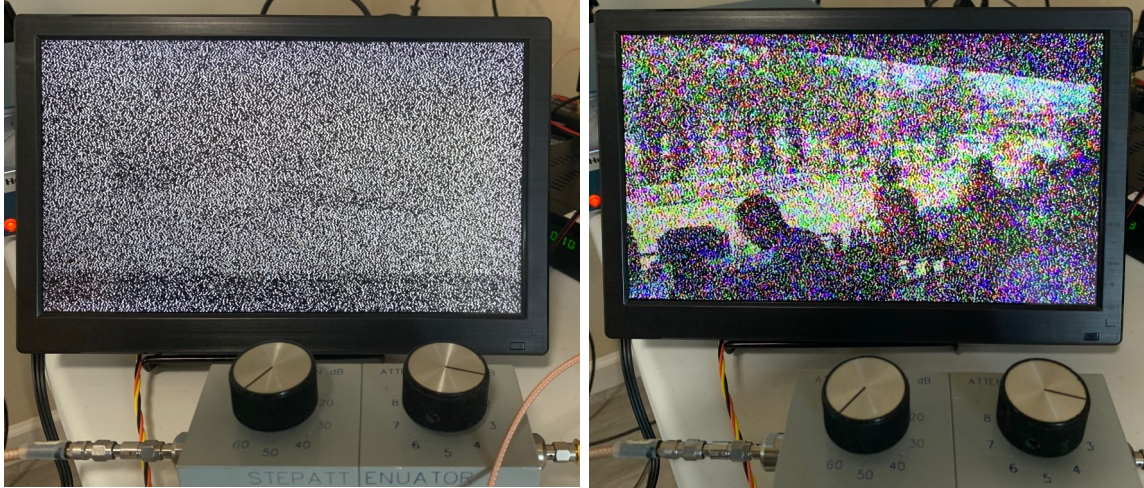
repeater. His TV signal has to graze over two ridge lines in the rf path. He was transmitting on 23cm, DVB-T, with 3 Watts to a 15dBi loop yagi antenna. The repeater received him at -94dBm with s/n = 9dB.

Analog TV Receiver Sensitivity

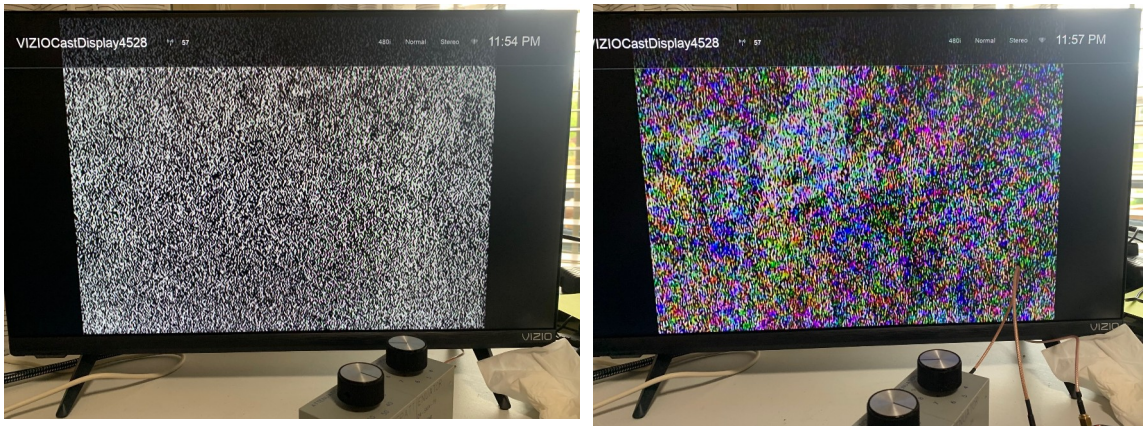
Jim, KH6HTV

Dave, AH8AR, and I have had a discussion back and forth as a result of my comments about "the nail in the coffin of analog ATV". It has been in particular about the ability to receive really weak ATV signals. Dave's article in this newsletter is a result. So, I decided to also include some measurements of my own on the sensitivity of my analog TV receivers. The tests were performed on the 70cm ATV band.

In the previous newsletter, I mentioned seeking to buy a CATV, NTSC modulator and de-modulator to replace ones I lost in the Marshall fire. Last week, I was able to obtain from ATV Research a Toner model TAMM-860 modulator and Blonder-Tongue model MIDM-806C de-modulator. Initial tests showed they worked great to create and receive perfect NTSC, VUSB-TV signals. I accurately measured the rf output power of the modulator using my Rigol spectrum analyzer. I then placed the modulator on one side of my ham shack. I ran a long coax cable to the other side of the shack to a fixed 30dB attenuator and a rotary step attenuator which then was connected to the TV receiver under test. I used a DVD player playing a travelogue video to provide a source of "live" video and audio. I then cranked in attenuation to determine the sensitivity of the receiver under test. I tested two TV receivers. The first was the Blonder-Tongue CATV demodulator. It's composite A/V was viewed on a 11" flat screen (1080P) video monitor. The second receiver was a new 24" flat screen Vizio brand.



Blonder-Tongue MIDM-806C --- The 11" video monitor included a Blue Screen, video squelch. The photo on the left shows the minimum signal possible to receive with the B-T demodulator. Dropping the signal one more dB and the blue screen came on. The input signal level was -95dBm(PEP). I then added a KH6HTV Video model 70-LNA, low noise preamplifier in front of the B-T. The photo on the right shows the resultant picture at the same rf power level of -95dBm. Then cranking in more attenuation, I found the new blue screen video squelch threshold to be -103dBm.



VIZIO 24" TV Receiver --- The Vizio also includes a video squelch (black screen). The photo on the left is the received picture when at video squelch threshold. The RF input signal level was -101dBm. This was considerably more sensitive than the B-T CATV demodulator. The photo on the right is at the same -101dBm rf level, but now with the 70-LNA preamp ahead of the receiver. The video squelch threshold with the preamp was then -104dBm. The Vizio was difficult to program. It required my connecting the CATV modulator to the antenna input with a moderately strong signal and then doing a new Auto-Scan to find and memorize the active channel. No simple entry of the channel number like is possible on the CATV demodulator.

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.](#)

Boulder Amateur Radio Club (BARC)

BARCfest Hamfest

Ham Radio and Electronics Garage Sale
Sunday, October 2, 2022, 8:00 a.m.

Boulder County Fairgrounds -- Exhibit Building
(Just 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 Delay at Door)

Lots of Great Treasures

**Awesome Door Prizes Hourly with
Grand Prize at 12 Noon**

(Must be Present to Win)



ARRL V.E. License Testing, 10 a.m.



For items to bring, see web page at <http://www.qsl.net/w0dk/vetteam.html> or 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

Also, see the BARC web site: <http://www.qsl.net/w0dk>



Boulder Amateur Radio Club (BARC)

BARCfest Hamfest -- Table Reservations

Sunday, October 2, 2022

Boulder County Fairgrounds – Exhibit Building

9595 Nelson Rd. (north of Hover Rd. & Nelson Rd. intersection), Longmont, Colorado

Standard 6 ft. table with chair(s) -- \$15 pre-paid in advance (\$20 at the door)

Admissions -- \$5 each (children 12 and under free with paid adult)

Tables are separate from admissions. Please include the number of admissions needed.

Vendor doors open for set-up at 6:00 a.m. Sunday morning.

(If desired, Saturday set-up may be possible. Contact us for information.)

Advance, pre-paid reservations must reach us by **Tuesday, September 27, 2022.**

(If you miss that date remaining tables will be sold at the door for \$20)

Yes, please reserve _____ table(s) at \$15.00 each -- \$ _____

Also please add _____ admission(s) at \$5.00 each -- \$ _____

For a total of \$ _____ enclosed

We need AC power at our table(s): _____ Yes, or _____ No

(Note that power outlet boxes may be several feet behind tables.)

Contact Name:

Organization / Ham Call:

Mailing Address:

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

E-Mail Address:

Mail a copy of this page with a check (payable to “**BARC**”) for the full amount to:

BARC / Deb Goldman
4769 McKinley Drive
Boulder, CO 80303

Reservations are acknowledged by e-mail (phone or postal mail if you have no e-mail). Please provide complete contact information! Pick up tickets at door. If you have not received confirmation or need more information, please be sure to contact us: barc70@arrl.net, or Debbie at DebbieBARC@gmail.com, 303-447-3183.

Boulder County Fairgrounds offers an inexpensive RV and camper park. If interested, click on "Campground" at <http://www.bouldercountyfairgrounds.org>.