Amateur Television Journal

April, 2026
3ed edition, issue #207
BATVC web site: www.kh6htv.com
ATN web site: www.atn-tv.com

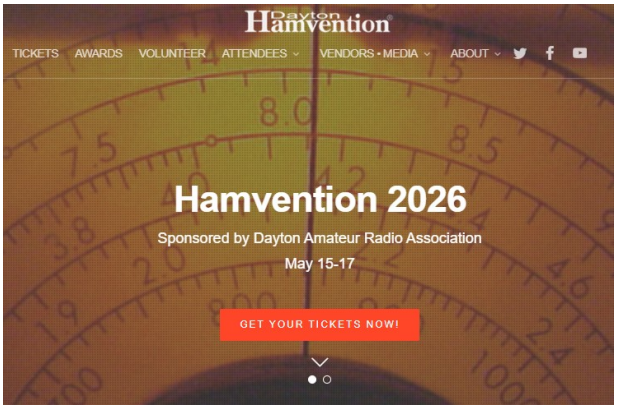
Jim Andrews, KH6HTV, editor - kh6htv@arrl.net www.kh6htv.com

ATV at Dayton

Are you planning to attend the world's greatest Ham radio convention and exposition ?

Don't miss the ATV activities at the upcoming Dayton Hamvention - 2026.

The ATV group in the Dayton ham club will be hosting an ATV demo in booths #1003 & 1004 in Building #1 at the fair grounds.

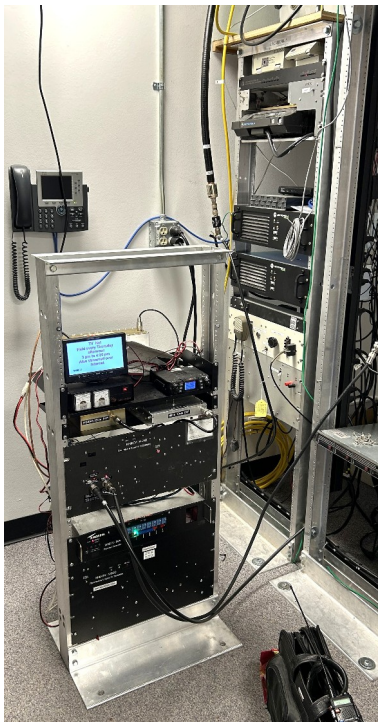


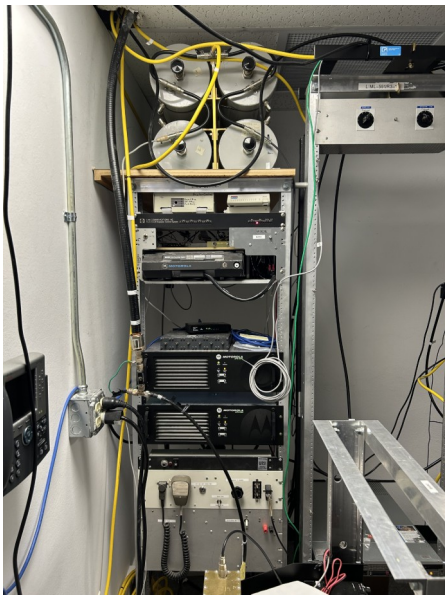
They will also be hosting an **ATV DINNER** on Friday evening, 6:30pm, for all ATV hams to have a social time to get together for eyeball to eyeball QSOs and great food. Plan to attend. There will also be some great door prizes for attendees. They will include: a Sony PTZ HDMI camera and tri-band HTs, etc. The dinner will be held at the China Garden Restaurant in Dayton, 112 Woodman Drive.

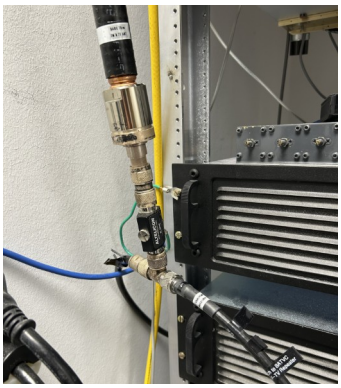
There will also be an **ATV FORUM** held on Saturday in conference room #4, 11 - 12am. Here is the write-up for it. ----- "Join Art Towslee (WA8RMC), Darco Banko (OE7DBH), Joel Wilhite, (KD6W), Mike Collis (WA6SVT/VP6MC), and Dave Pelaez (AH2AR), for a discussion on Ham digital TV equipment and DATV transmitters. There will be a followup on last years discussion of digital ATV and information about DATV repeater concepts. The speakers will cover a range of different DATV coding/modulation techniques and repeater concepts, DVB-T2 installation on Pitcairn Island, as well as some interesting activities on the island. EXCELLENT DX will also be discussed."

For more info about the ATV activities, contact Dave Pelaez, AH2AR, at ***tpelaez@woh.rr.com***
For general info about the convention itself, go to their web site: ***https://hamvention.org/***
==========

A Successful Trip Up the Hill to W0BTV Repeater Site







Photos are: left BATVC & BARC repeaters, center - BARC 2m & 70cm FM Voice Repeaters, right top - 2m Duplexer, right bottom - 70cm Antenna combiner (note: both the TV and 70cm FM voice repeaters share the same common antenna. note the Big coax cable !)

On Thursday, April 9th, Don, N0YE, and Jim, KH6HTV, made a trip to our TV repeater site for repairs. We needed to reset the timer on the 24 hour reboot timer clock. We normally have it cycle the AC power off for 15 minutes at midnight to reboot all digital circuits. The clock had gotten way off and was resetting during the middle of the day. Also, the 10 GHz, 3 cm, receiver had gone blind. We needed to find out why? What did we find? Simple ! The extremely strong winter winds had blown the 10 GHz antenna off the tower and it was lying on the roof-top. We took it home to check it out and fabricate new, more secure mounting brackets.

While there, we thought our members might be interested in seeing what the hardware at the repeater site looks like. Thus we took the above photos to share with you.

73 de Don, N0YE, & Jim, KH6HTV

News From Across the Atlantic

ON0TVO East Flanders ATV Repeater

French, ON4VVV, writes a monthly newsletter to members about their repeater's activities. Here are excerpts from his April newsletter.

ROYAL OVRC: on March 24, our chairman Eddy ON6ZV received the “ROYAL OVRC” certificate from the Governor of the Province of East Flanders in recognition of our non-profit organization's existence of more than 50 years. It is partly thanks to the solid financial backbone of the OVRC non-profit association and its high membership that we are able to maintain and even expand our ATV repeater.

French reports on the failure of his **250 Watt !**, 70cm D-ATV amplifier. "During the March contest, the LD-MOS power amplifier suddenly failed. This amplifier was capable of delivering a D-ATV output of 450W, even though, for safety reasons, I had limited the maximum power to 200 to 250W using the settings on my Ports Down transmitter. So I must have done something wrong; perhaps I turned the power up a little too early while the SDR center spike hadn't kicked in yet.

I wanted to do my best to get things sorted out for the next contest, which will take place this coming April 18 and 19, but it looks like the ordered LDMOS will arrive just too late and I will have to make do with a maximum power of 40W." (*editor's comments - oh boo hoo, most of us wish we even had 40 watts to play with !*)

VERON ATV CONTESTS: (an activity in which we also gratefully participate in Belgium)
The calendar for the remaining ATV contests is as follows:
June 13 and 14 IARU R1 ATV contest 6m and above in all modes
August 15 and 16 D-ATV narrowband 6m, 2m and 70cm
September 12 and 13 everything from 70cm and above in all ATV modes
December 12 and 13 everything from 70cm and above in all ATV modes
---

Hi Jim! -- I bought the Icom IC-905. As you know, the IC-905 also allows you to operate in FM ATV. The IC-905 concept is a bit different from what we've done so far. To make the most of this RTX, I mounted a 140 cm diameter dish with a launcher for the 2, 5, and 10 GHz frequencies. To see if I assembled everything correctly, I tried listening to the beacons on the frequencies listed above. Then I tried receiving the ATV RPTs. Here are the photos of the tests (in 10 GHz).

73 de Rudi Pavlik, S58RU, Koper, Slovenia

==========

Video From Artemis Moon Mission

Mario, KD6ILO, has been rebroadcasting the video from the recent Artemis Moon mission fly-by via the BATC streaming service. Viewers had asked "why no audio?" As a result, Mario has given us more technical details on how communications are handled now by NASA with spacecraft.

"Thanks for reaching out about the Artemis 2 communications. It’s a fascinating topic, and I’m happy to provide some details you can share with the club.

Artemis II, used a hybrid communication system that combines traditional radio frequency (RF) with advanced optical O2O (laser) technology. Here are the key items I want to acknowledge :

1. Optical Communications System (O2O): Was the primary high-bandwidth system. It uses laser technology (FSO) to send 4K HD video, flight plans and large data sets at rates up to 260 megabits per second. This capacity is much higher than what was possible during the Apollo era.

2. Deep Space Network (DSN): NASA's traditional network of large radio antennas still handles mission-critical tasks like navigation, distance tracking, and monitoring spacecraft health (telemetry).

3. S-band: This frequency is used for essential voice and data communication between the spacecraft and Mission Control.

[Q1] Regarding the club's observation about "listening in," the shift to high-speed digital and optical formats does make the signals much more complex to intercept or decode compared to the older analog systems. The integration of laser technology allowed secure communications and transport massive amounts of data and stream HD 4K Video, which is a significant leap forward for the current deep space mission and it will further advance space (ISL) communications beyond the moon.

I hope this helps enlighten the group! Aloha & Mahalo my friend
Note: I worked on the optic terminal R&D and integration for the program at JPL/NASA between 2018-21 along with eESA in Spain and Germany.

73 de Mario Badua, KD6ILO, Oceanside, California

==========

Letters from Readers:

Thanks for the analog ATV info. The hardest thing is to find boxes that are not just standard frequency Channel settings. We use 426 MHz here in Portland Oregon. Very hard to find good receivers for that freq. As you know. The nearest NTSC Channel is at 427.25 MHz. Then when you ask sellers about 426, they don't know. Unless we are doing simplex we do 426.25 AM in and 1253 FM out of the repeater (when the repeater is up). OF course the receivers from P.C. Electronics were far superior to just analog TV receivers. Sorry he has retired.

73 de Ed Mellnik, WB2QHS, Portland, Oregon

(editor's note: I sent Ed the suggestion to make a tunable down-converter with an LO and mixer and beat the non-standard frequency 70cm TV signals down to TV channel 3's standard frequency. See following page for suitable down-converter design.)

Jim - Thanks for the newsletter. I have contacted a rep for Illinois repeater coordination, asking whether he's aware of an ATV repeater or simplex activity. I'll let you know what I find. Finding out about activity in my area seems to be so "underground."

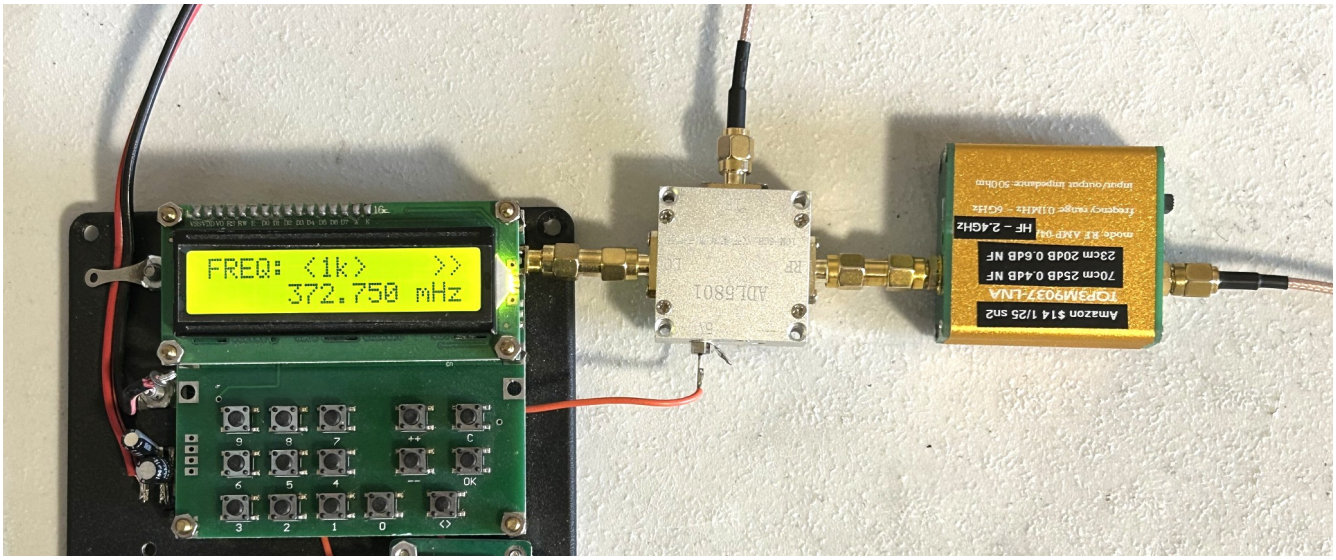
follow-on --- What's your advice re 70CM antennas for ATV, home brew and commercial? I'm looking at a home brew trough antenna from the Antenna Book (1994). If I move forward with ATV, the antenna will be a genuine challenge. It'll have to be something I can temporarily bolt to a railing.
(editor's note: I sent him a copy of our app. note, AN-67 with antenna recommendations.)

By the way: According to the repeater coordinator for Illinois, there are no ATV repeaters operating in the state. There's also apparently no simplex activity. You can pass that along in the newsletter.

73, Karl Lewis, KD9TVQ, Arlington Heights, Illinois

I recently moved from Orange County, California to the St George, Utah area. Are there any ATV Repeaters in the St George Area ? 73 de Dan Breig, KM6PO

Hi Jim -- Thanks for the newsletter. I am still active on 434 AM NTSC simplex, and DVB-T mode here in Las Vegas, Nevada.
Letting you know that Richard Holler, K0RAH, is now a Silent Key. In 2024 he moved back to Greely, Colorado but his qrz map still shows the qth as in las Vegas. I sure miss him on ham tv. He spent endless hours on his ham station, and had the very best equipment.
73 de Steve Scott, KD8S, Las Vegas, Nevada



An Inexpensive, All-Band, Down-Converter

Jim Andrews, KH6HTV

In response to WB2QHS, Ed's above letter about the difficulty in finding suitable analog, NTSC, receivers for repeater's using non-standard TV channel frequencies, I am including this example.

The standard, 6 MHz TV channels in the 70cm band have the following video carrier frequencies for NTSC analog TV: Cable channels, Ch 57 = 421.25 MHz, Ch 58 = 427.25 MHz, Ch 59 = 433.25 MHz & Ch 60 439.25 MHz.

A quick survey of our latest ATV Repeater directory shows that eleven (11) ATV repeaters are presently using 434.00 MHz as an input and one repeater is using 426.25 MHz. So it is a common problem in California, Arizona, Oregon, Nevada, and Maryland.

Here shown in the above photo is a very simple to build, low cost down-converter which can be assembled in minutes from three modular components purchased from Amazon for a total cost of only

$86. Use this to down-convert a non-standard frequency 70cm ATV signal down to Channel 3 (61.25 MHz) for reception on any home TV which will still receive analog signals. The LO frequency is set to LO = 434.00 (RF) - 61.25 (IF) = 372.75 MHz. For 426.25, set the LO to 365.00 MHz.

The required components are from left to right in above photo:

1. An Analog Devices ADF-4351 Frequency Synthesizer (35MHz - 4.4 GHz), $50
2. An Analog Devices ADL-5801 Active Mixer (10MHz - 6 GHz), $25
3. TQP3M9037 - LNA, broad-band preamp, $11 (no battery) or $24 (with internal battery)
   note: the LNA is specified to work 0.1 - 6 GHz. Do not believe it ! -- But it is useful up to 2.4 GHz.

All of these items are designed to work with +5Vdc power supply. I mounted the frequency synthesizer on a metal plate along with a 7805 linear voltage regulator. A well regulated, low noise DC power source is important to minimize phase noise in the LO.

For 70cm, I measured the gain of the LNA to be 25 dB with a very low noise figure of 0.4 dB. (on 23cm, 20dB gain, & 0.6dB NF). The LO power output is just right to drive directly the active mixer's LO port. The conversion loss of the mixer from 70cm down to Ch 3 was measured to be -12dB. Adding the LNA in front of the mixer, the composite down conversion gain was measured to be +14dB.

Now for the "frosting on the cake" -- You can use this down-converter with no changes for the 33cm, 23cm and 13cm bands also. All of the components are extremely broad-band. Simply program the LO to the appropriate frequency. For example: The W6ATN and W7ATN network of repeaters in southern California and Arizona have as one of their output transmitters a frequency of 1253.25 MHz for NTSC analog TV. As an example using an IF frequency of standard broadcast TV channel 7 (175.25 MHz), we would thus set the LO to 1253.25 - 175.25 = 1078 MHz

Enhancements to this down-converter design would be to add suitable RF and IF band-pass filters. But these would need to be home-brewed. As is, this simple configuration should solve most situations.

73 de Jim Andrews, KH6HTV, Boulder, Colorado

==========

TV Cameras for ATV

Jim Andrews, KH6HTV

A key component for any ATV ham shack is a good TV camera. There are literally 1000s of choices. Here in Boulder, Colorado, our hands down favorite has been camcorders from Canon. Over the years there were several similar models which all sold in the retail price range of $250. We found them to be ideal for use as our "Studio" camera in the ham shack and also for out in the field portable ARES and DXpeditions use. They had good optical zoom capability along with subsequent digital zoom. A fold out flat screen monitor. Both 1080P, HDMI and composite video outputs.

Unfortunately, Canon has discontinued offering these low cost ($250) camcorders in favor of much more expensive (> $1K), 4K camcorders. You can still find them as used equipment on E-Bay for

reasonable prices. *Note: we avoided SONY camcorders because they did not output audio when in the stand-by mode.*

CANON camcorder

Chinese camcorder

If you search Amazon today for camcorders, they offer you a lot of really low cost (< $100) camcorder choices. Some even as low as $50. These all seem to come from China with no brand names, etc. We have asked in the past here in this newsletter for product report on these camcorders from our readers. Up to now, no one has reviewed them for us.

Joe, K2EVK, is a new ATV ham in our Boulder group. Looking for a TV camera for his ATV ham shack, Joe did in fact purchase a $50 camcorder from Amazon. As a result we can now report on it's suitabilty, or lack thereof. Our conclusion: Do NOT Buy ! Why ? What are it's deficiencies for ATV use?

1. When an HDMI cable is attached, the monitor screen goes blank.
2. When an HDMI cable is attached --- no audio comes out from the microphone in the stand-by mode. Audio will come out, but only during play-back of pre-recorded video.
3. The frame rate is slow at 15 fps at 1080P -- not standard 30 fps.
4. Automatic time-out power down after 20 minutes. It can not be dis-abled.
5. No optical zoom. Only digital zoom which throws away pixels.

The Chinese camcorder is suitable only for shooting home videos and then playing them back later. Not suitable for our ATV use.

p.s. Joe gave up on his Chinese camera and replaced it with a very nice Canon camcorder he found used on E-Bay.

==========

NEW ! 10 GHz Amplifier from Hi-Des

A new product has suddenly appeared on the Hi-Des web site. It is a high power, 10 GHz amplifier. Price is $1,000 Looks interesting !

The specs. are: 9-12 GHz BW, 30dB gain nominal, P(-1dB) = 1.6 W, P(sat) = 2.3 W, P(DVB-T) = 230 mW, Pin(max) = 20mW, Vdc = 8 to 15V, 1 Amp @ 12Vdc,

==========

K3NEM

05 Amateur Television (2026-04-09)

Amateur Television

- Jim Andrews
- Boulder, Colorado
- www.kh6htv.com

KH6HTV

ATV Publicity

plus Ham Radio Classes

Our ATV niche of amateur radio got some good publicity recently. **The Amateur Radio Club of the National Electronics Museum** (***www.k3nem.org***) in Baltimore, Maryland hosts several on-going series of amateur radio classes on line with Zoom sessions. They have separate classes for Technician, General Class, and Extra Class. In addition, as follow-on material they have a separate class for Amateur Radio Operating. The present class which started on the 2ed of April and runs through June 18th, consists of 12 sessions covering the many varied aspects of ham radio, including our ATV. The Zoom classes are held in the evening and typically last for about 3 hours, with a couple of speakers for each session. They have proved to be quite popular with several hundred hams attending each session remotely via the inter-net. To find out more, go to this URL link: ***https://www.k3nem.org/?p=2670*** The organizers and class moderators are:

Rol Anders,	K3RA	***roland.anders@comcast.net***	410-796-4792
Tom Christovich,	K3YH	***tom.christovich@gmail.com***	410-615-3269

After each session, Tom & Rol also post the lectures on You-Tube.

For the 2ed session on April 9th, the first speaker was Brian Skutt, N2IQ, who talked about "VHF/UHF Weak Signal Work and Roving". He had some photos of some fantastic Porcupine Roving Vehicles !

The second speaker for the evening was Jim Andrews, KH6HTV. Jim's talk on ATV covered the FCC rules, history, principles of the original NTSC analog TV and the more current digital TV. He also discussed what equipment is needed for both analog and digital TV. Questions from the viewers included "What is a typical TV QSO like ?" Jim also mentioned the use of ATV for ARES public service. Jim's 1 1/2 hour talk with Q/A was recorded and can be viewed on You Tube at: ***https://youtu.be/DewGuqEdeWo***

==========

W0BTV 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/*

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. 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*

For Sale - or - Want to Buy

ATV Suppliers:

The following table lists known suppliers of ATV equipment. It is by no means complete. Many other suppliers can be found by google searching on the internet. Listing here does not imply endorsement by KH6HTV. The list is arranged alphabetically.

ATV Supplier	web site	Country	Notes
Advanced Receiver Research	www.advancedreceiver.com	USA	preamps
AMAZON	Www.amazon.com	All	Cameras modulators demodulators, A/V eqpt. Amps, etc.
Antennas-Amplifiers	Www.antennas-amplifiers.com	Serbia	Antennas, amplifiers
British Amateur TV Club	https://batc.org.uk/	U.K.	DTV kits -- free streaming service for ATV repeaters
Comet	www.cometantenna.com	Japan	antennas
CosmoWave	Www.cosmowave.net	Japan	Transverters, amplifiers, antennas, etc.
DCI (now Til-Tek Antennae)	Www.tiltek.com	Canada	RF filters and antenna
Diamond	www.diamondantenna.net	Japan	antennas
Digi-Key	Www.digikey.com	USA	Electronic components
Directive Systems	www.directivesystems.com	USA	VHF/UHF & microwave antennas
Down East Microwave	www.downeastmicrowave.com	USA	rf products from 50MHz to 10GHz, amplifiers, preamps, transverters, etc.
E-Bay	Www.ebay.com	All	Cameras, modulators, demodulators, A/V eqpt. Amps, etc.
GT-Media	Www.gtmedia.store	China	DVB-T & S receivers
Hi-Des	https://hides.com.tw/index_eng.html	Taiwan	low cost DVB-T modulators & receivers
Hustler	Www.new-tronics.com	USA	antennas
ICOM	Www.icomamerica.com	Japan/USA	Microwave transceiver with FM-TV
ID-Elektronik	https://www.id-elektronik.de/en/	Germany	Transmitters, Amplifiers, Antennas, Filters

Intuitive Circuits	www.icircuits.com	USA	OSD-ID board, DTMF decoder, analog ATV repeater controller board
KH6HTV Video	www.kh6htv.com	USA	70 & 23cm RF power amplifiers, preamps, up/down converters, BPFs - ATV/DTV application notes
KUHNE Electronics	https://shop.kuhne-electronic.com/kuhne/en/	Germany	power amplifiers, preamps, converters, oscillators, transverters
L-Com	www.l-com.com	USA	microwave antennas
Microwave Filter	www.microwavefilter.com	USA	filters
MiniKits	www.minikits.com.au	Australia	70cm, AM-TV & 1.2/2.4GHz FM-TV transmitter kits, rf amplifier kits
Mouser	Www.mouser.com	USA	Electronic components
M-Squared	www.m2inc.com	USA	antennas
OE7DBH	Www.oe7dbh.blogspot.com	Austria	amplifiers
OREI	www.orei.com	USA	HDMI A/V accessories
P.C. Electronics	www.hamtv.com	USA	former supplier of AM-TV transmitters ATV application notes
PE1RKI	www.pe1rki.com	Holland	high power, microwave amplifiers, pre-amps, filters & antennas
Pro Video Inst.	Www.shop.provideoinstruments.com	USA	modulators
Sat-Link	www.sat-link.com.cn	China	modulators
SuperPass	www.superpass.com	Canada	microwave patch antennas
SV1AFN	Www.sv1afn.com	Greece	Amplifiers, filters, etc.
Taoglas	Www.taoglas.com	Japan	Band-pass filters
Technical Antennas	www.TechnicalAntennas.com	USA	antennas
THOR	Www.thorbroadcast.com	USA	modulators
Toner	Www.tonercable.com	USA	Analog & digital modulators & de-modulators
Q5 Signal	Www.q5signal.com	USA	Microwave transverters
W6PQL	www.w6pql.com	USA	high power amplifiers
WA5VJB	Www.wa5vjb.com	USA	antennas
Western Test Systems	www.westerntestsystems.com	USA	Microwave components

Plus the on-line resources of AMAZON, E-BAY, Alibaba, Banggood, etc. should be google searched for a lot of misc. ATV parts & accessories.