

For SVECS ([www.svecs.net](http://www.svecs.net)) Quarterly Breakfast Meeting, Nov 3, 2007  
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## **Amateur Television (ATV) is real TV, not cellphone cam**

Same technology with different frequencies and different applications

FCC Part 73 Broadcast: Entertainment, sports, advertisement, make money

FCC Part 97 Amateur: Experimentation, hobby, ARES/RACES, cannot make money

*Save those old VHS VCR recorders!*

Most are cableready and make excellent UHF ATV receivers. They have video outputs for monitors, recorders, etc. and many have better sensitivity than TV sets.

Why are there more CATV channels than broadcast TV channels. CATV uses frequencies of other radio services, as long as it stays inside the CATV coax. However, these frequencies include amateur radio (i.e. cable channel 58 is 427.25MHz) so you can use "Part 73" receivers for view "Part 97" transmissions by connecting external antenna to CATV input of VCR.

### **ATV in the Field**

("shack" transmissions are useless for ARES/RACES)

Only use 12VDC devices (transmitters, TV sets, cameras) for ready use in the field. If using AC inverters, use smaller units i.e. 100 watts maximum.

Field kits should be simple enough for any reasonable amateur radio operator to assemble. It should be quick (i.e. 15 minutes) to setup or be able to delegate tasks (someone to deploy cables, another to raise antenna, one to connect power sources, etc.).

Highly specialized systems prevents ability to delegate.

There is a balance of simple systems/limited ability or flexible systems/messy (candidate for hamsexy.com).

Think of proper camera operations, like media ENG people. Slow movements, focused on subject, etc. This is not a party camcorder.

ARES/RACES footage is boring, it is not entertainment, but there are serious viewers.

## **ATV Transmitters**

Three bands to consider:

UHF (70cm) to transmit directly to cableready TV sets (427, 434, 439 MHz)

1.2GHz (23cm) to transmit to K6BEN repeater

2.4GHz (13cm) for point to point, compatible with Part 15 wireless video monitors

## **UHF Transmitters**

RTX70-1 (1W crystal controlled), \$300 from PC Electronics, <http://www.hamtv.com>  
VM-70X (5W 4-channel), \$200 from VideoLynx, <http://www.transmitvideo.com>  
Z70A Mini (100mW 4-channel), \$150 from VideoLynx, <http://www.transmitvideo.com>

Another option are video (CATV) modulators. These are VSB, not DSB as in most ATV transmitters. TVs only needs VSB, lower sideband just interferes with lower frequencies.

R.L. Drake ([www.rldrake.com](http://www.rldrake.com)) builds modulators for CATV but can be used as excitors. Add a Class A linear for RF power for ATV transmission.

Drake VMD860AG Desktop Agile Video Modulator list \$700

Drake VM2551 Agile Commercial Video Modulator list \$600

Always verify linear amps will work for ATV.

Linear amp from Downeast Microwave, [www.downeastmicrowave.com](http://www.downeastmicrowave.com)

UHF 7025PACK (35W), \$160

R&L Electronics

D15N MIRAGE UHF amp 15W \$180 Special Order

D26N MIRAGE UHF amp 60W \$270 Special Order

from AES closeouts

D26N MIRAGE UHF amp 60W \$250

## 1.2GHz Transmitters and Receivers

*Warning!* Verify 1.2GHz transmitters operate only on amateur radio frequencies.



Never buy anything else, most likely operates on aero radionav frequencies



If company or dealer cannot say exact frequency, then illegal to operate

MobiComm Communications (Netherlands) [www.mobicomm.net](http://www.mobicomm.net)

Sales are via buy-it-now on ebay, Seller ID: gnupic

DFM1200TSIM, 50mW 1.2GHz ATV transmitter, \$70 from Mobilcomm

DFM1200TSIM1W 1watt 1.2GHz ATV transmitter, \$130 from Mobilcomm

DFM1200RTIM 1.2GHz receiver, \$80 from Mobilcomm (needs preamp)

Linear amp

1.2GHz Downeast Microwave 2330PATV (30W), \$240

Receiver preamp (verify will work for ATV)

1.2GHz Downeast Microwave 23LNAWPQ LNA \$120

1.2GHz and 2.4GHz systems from [www.hamtvstore.com](http://www.hamtvstore.com)

Article in ATVQ magazine says it is a scam site.



*Never Purchase or Use 1.2GHz That Do NOT List Actual Transmit Frequencies*

There are plenty on ebay, sold on-line, sold at Pacificon, etc. These transmit in the 1000 to 1180MHz range, this is aeronautical navigation (transponders). These devices do not list operating frequencies. Videolynx and Mobilcomm DO list operating frequencies.

## 2.4GHz (13cm) 2300-2310 MHz, 2390-2450 MHz

point to point, compatible with Part 15 wireless video monitors

DFM2350TSIMP-WB, 200mW transmitter, \$100 from Mobilcomm

DFM2400RTIM-B receiver, \$80 from Mobilcomm

X10, Swan wireless cameras at Frys, baby monitors, etc.

These are 4-channel, only 2 operate on amateur radio frequencies.

Microwave ovens operate at 2.450GHz

## **Cameras**

Any camera with composite video output and 12VDC, no need to send sound

CCD cameras are typical, many on the used market. Avoid tubetype cameras.

Camera should be 12VDC with composite video output. If not 12VDC, it should be equipped with necessary inverter (but keep it small to maintain efficiency)

Camera with built-in titemaker and that is not “auto shut-off” a real plus

A recommended camera is Sony TRV-138, \$215 from B&H Photo or BestBuy

## **Antennas, Cables, ID Overlays**

Antennas should be small for easy transport and setup, but “big” enough for RF gain.

3-element UHF yagi, \$40 from centerfireantenna.com

SVECS UHF J-pole, \$25 from HRO

Dualband VHF/UHF Elk antenna, \$90 from HRO

Comet 1216E 1.2GHz multiple element yagi, \$150 from HRO

Antenna tripod MFJ-1919, cost \$80 from HRO.

MFJ-1919 is superior to ChannelMaster tripods. Lightweight, no tools required, more stable, not as ugly, etc.

Use the highest quality coax, i.e. LMR400 or 9913F. Do not use RG-8 or RG58.

Intuitive Circuits onscreen displays: OSD-ID-SA \$120, OSD-ID-PC \$140, OSD232 \$100  
<http://www.icircuits.com>

Jameco Electronics XBOB-NC video text module (part # 283768) \$190  
<http://www.jameco.com>

## **ATV Receivers**

Cable ready TV set that is direct tune, not autotune. Do not use “downconverters”

Ideal receiver is one with built-in VCR to record ARES/RACES events as needed. Avoid DVD recorders (not reliable)

Stores can only sell new TVs that are digital. Analog only no longer available including Icom R3.

15” Skyworth 12-Volt LCD TV DVD Player  
\$450 from roadtrucker.com

Target has Skyworth for \$260, but only analog available. No info if 12VDC.

Insignia 480i Portable LCD TV \$190 from Bestbuy  
Not sure if analog cable-ready  
Number of people mention poor performance

GPX 8.1” LCD TV model GRP KL858S \$230 from Circuit City  
181-channel cable-ready tuner (both digital and analog)  
Don't know if 12VDC, one comment it is a piece of junk.

ATI TV Wonder 650 Combo USB for PC, \$150 from ATI  
Digital TV / HDTV1 (ATSC)      Cable Analog TV (NTSC)  
requires amplifier for antenna use

AVerMedia M780 PCIe NTSC/ATSC Combo TV Tuner  
should work without preamp

Jensen 5” Black and White TV, model SSA 507BWR \$10 from Circuit City  
Unbelievably cheap, useless for ATV but has A/V input. Perhaps use it for laughs.

## Local ATV Groups

*Your first and fastest way to get into ATV is jump into a weekly net!*

*Silicon Valley ATV Group - K6BEN*

<http://www.batnet.com/mfwright/k6ben.html>

[http://k6ben\\_svatv.tripod.com/index.html](http://k6ben_svatv.tripod.com/index.html)

Input 1255 MHz video, output 421.25 MHz (cable ch 57) NTSC video  
Voice input 145.510 Mhz simplex

K6BEN video weekly net, visitors welcome, every Weds at 8:30 pm  
Can also check in audio on 145.510 MHz simplex or 443.125+, PL123.0

*Mt. Diablo W6CX ATV (Contra Costa Co.)*

<http://www.mdarc.org>

Input 1289.25 MHz video, output 427.25 MHz (cable ch 58) NTSC video

W6CX video weekly net, guests welcome, every Thurs at 8:00 pm  
Can also check in audio on 147.060+, PL100 MHz

*Stanford Amateur Radio Club - W6YX*

<http://www-w6yx.stanford.edu/w6yx/>

2433.75 MHz (X10 channel B)

## Amateur Television (ATV) Info

Amateur Television Network (ATN) <http://atn-tv.org>  
Amateur Television Quarterly (ATVQ) <http://www.hampubs.com>  
Amateur Television Directory <http://www.qsl.net/atn/atv-tv.org>

Slow Scan TV beyond HF <http://ksguy.com/ham/sstv.html>  
CQ SSTV de KB4YZ <http://www.kiva.net/~djones/>

ATV on dxzone.com:

[http://www.dxzone.com/catalog/Operating\\_Modes/Amateur\\_Television/index.shtml](http://www.dxzone.com/catalog/Operating_Modes/Amateur_Television/index.shtml)

Slow Scan TV (SSTV) software:

<http://www.dxzone.com/catalog/Software/SSTV/index.shtml>

NASA-TV retransmissions from Ames Amateur Radio Club to K6BEN:

<http://hamradio.arc.nasa.gov/AARCatv.html>

ATV presentation from 2005:

<http://hamradio.arc.nasa.gov/meetings/ATVpresentation.html>

More ATV info (some links outdated):

<http://www.svecs.net/amateurtv.html>

## ATV Frequencies in Reference to Broadcast and CATV Frequencies

Ch	Over the Air Broadcast		Cable Television (coax enclosed)	
	Video Freq	Audio Freq	Video Freq	Audio Freq
57	729.25	733.75	421.25	425.75
58	735.25	739.75	427.25	431.75
59	741.25	745.75	433.25	437.75
60	747.25	751.75	439.25	443.75

Complete list of NTSC frequencies:

<http://www.svecs.net/ntscfreq.html>