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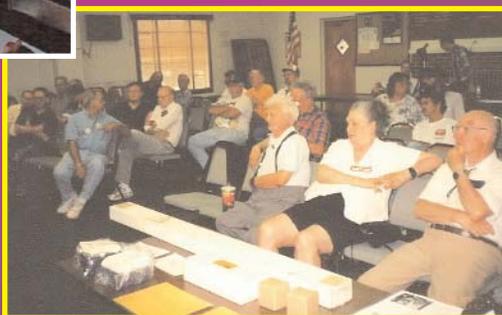
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Field Day ATV Demo- Rockford, IL



Friday Night Meeting - Dayton Hamvention



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to those hams that can't make it.

*DX is over 100 miles snow free line of sight between 14dBd beams and using 100ft. of Belden 9913 low loss coax simplex. Check the ARRL Repeater Directory for ATV repeaters near you or call us for info on other ATVers in your area to find out frequencies, antenna polarization and activities.

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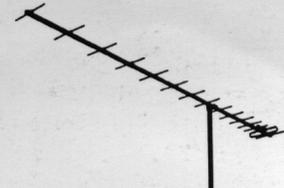
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Field Day & New Product

by Gene Harlan - WB9MMM - email: ATVQ@hampubs.com
5931 Alma Dr.
Rockford, IL 61108

Shari & I had a lot of fun this year for field day. We put up a demo of ATV with Wavecom 2.4 GHz video being transmitted of Shari - N9SH, working hard making contacts and being viewed in the food tent where those taking it easy could make sure she was still doing her job, and visitors would ask "What is this?" I tried to make a satellite contact (yes, singular - one would have made me happy), but it did not happen. Lots of people on the FM birds, and when I tore down, the coax FELL APART from the connector between the SWR meter and the radio. I am surprised that the SWR had checked out OK. Well, something to look forward to next year!



Gene setting up 2.4 GHz.

Chris, N8UDK, Intuitive Circuits, has introduced a new product which is an ON SCREEN DISPLAY showing SIGNAL STRENGTH of the received signal. I can see every repeater wanting one of these! Chris had this in the booth at Dayton, so many of you may have already seen this. Sounds neat Chris, keep up the creativity!



Everyone watching Shari work!

Nice seeing those of you that stopped by the booth in Dayton. The only bad news was that I had almost no time to shop for bargains myself.

Gene Harlan - WB9MMM

ATVQ

Hamvention Dayton 2000

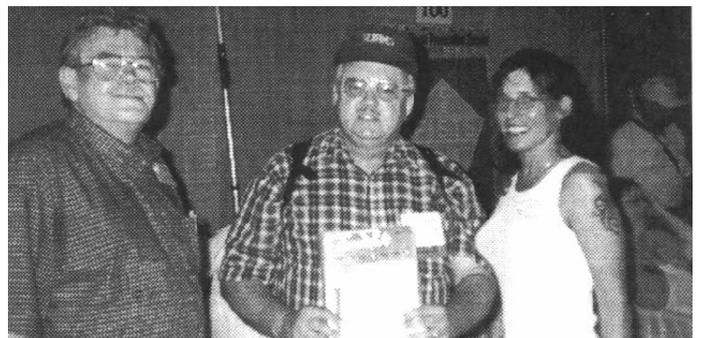
Klaus Kramer DL4KCK@t-online.de

For the first time an AGAF committee member travelled to the Hamvention in the USA. Together with Tatjana - known to members by her stand service at radio fairs - Heinz, DC6MR, made the 17 hour trip. The worlds biggest hamfest was impressive, also the bright weather with 30 degrees Celsius (Americans like to exaggerate by saying 100 degrees :-)). We were happy to find the stand of ATVQ publisher Gene Harlan, WB9MMM, and his wife Shari, N9SH, rather quickly. Like AGAF in Germany Gene had produced CD-ROMs with former issues of his magazine, 2 years bundled on CD for \$24.95. These are available on request at the AGAF service.



Heinz, DC6MR, Gene, WB9MMM, and Shari, N9SH

Then we visited John Jaminet, W3HMS, president of ATNA, at his stand and presented our latest edition of TV-AMATEUR and the AGAF-CD-ROM #1. John who is able to speak French, but not German, likes to see the magazine because of its professional look.



Heinz, DC6MR, John, W3HMS, and Tatjana

(translation from TV-AMATEUR 117: DL4KCK)

ATVQ

ATVQ TO PAY FOR ARTICLES!

Payment for Technical Articles

ATVQ will pay for certain articles that it publishes. I will outline the policy here, but it will be subject to change as needed to make sure that ATVQ continues to be an ongoing publication. ATVQ will pay \$25.00 for technical articles that are published and are a minimum of 2 pages. While this is not a great amount, it is a starting point and I hope it will encourage more technical type articles to be written. Exceptions will be articles that are written by a manufacturer/seller of equipment that is being written about. While I do not want to discourage this type of article, the article itself is an advertisement of the product. Articles from clubs will be encouraged, and I would expect they would like to share their information with the ATVQ readership. Information gathered from the Internet will not be paid for and is mostly small filler items.

Ideas

Do you have an idea for an article that you've said to yourself that you wanted to write, but never did. Feel free to check with us to see if it is of interest, or write and send it in. No guarantees that it will get published, but if you don't try, you will never know. I'll be looking to see what you can do!

AUTHORS GUIDE

Preferred method of receiving articles is from **Microsoft Word**, however **Wordperfect** is OK too. Next preference would be **ASKII text**, followed by **typewritten** or **hand written** (clearly). Diagrams or pictures (B&W or Color) can be sent in hard copy, or if you scan them in, save to PCX or JPG formats (actually I can read about anything). If you send a computer disk, make sure it is PC (not MAC) format.

When sending in articles in Microsoft Word, please **SAVE** with **FASTSAVEOFF** and save in Word 6 format. Also, articles written in any word processor, consider what will happen when it is re-formatted to fit the style that I might put it in. An example would be setting up tables or adding figures into the article. They can be very hard to strip out. If possible, put the tables, figures, each in a file by itself. This will help me to be able to import into the magazine format.

Articles can be sent to: **ATVQ, 5931 Alma Dr., Rockford, IL 61108**
or to our email address: **atvq@hampubs.com**

Also note our web page address: **http://www.hampubs.com**

TOPICS FOR ATVQ ARTICLES

Some requests that ATVQ has had for articles are:

1. How many ATV repeater systems are running weekly classes?
2. What kind of "productions" go on ATV repeaters and how are they done?
3. Looking for a "squelched" video switch, so I won't get snow with no picture per sent.

Just a few items to give you ideas on what to write. Looking forward to hearing from YOU!

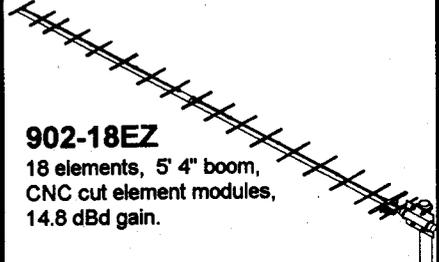
Gene Harlan - WB9MMM
EDITOR

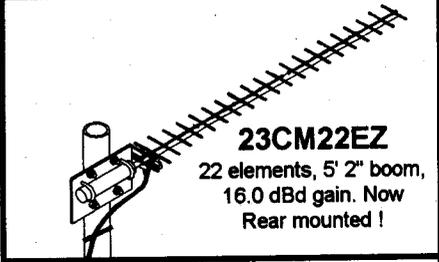
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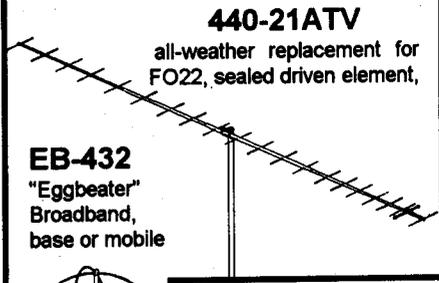
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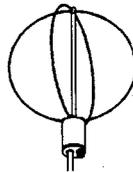
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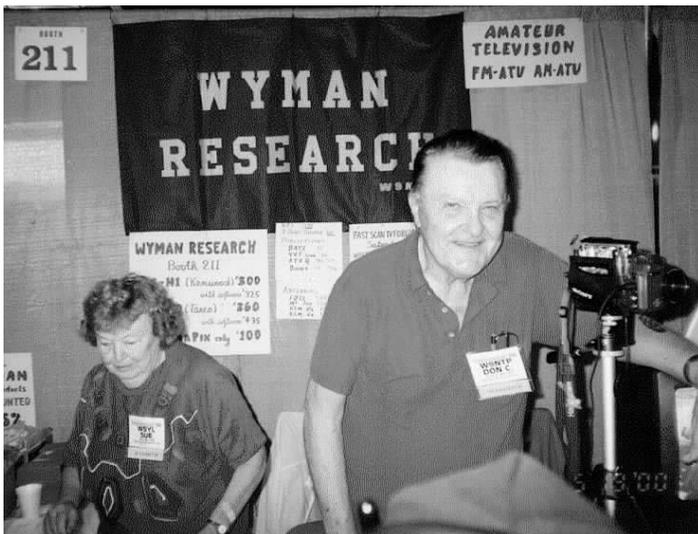
Hamvention 2000 ATV Vendors..... The Lifeblood of our ATV Hobby

by Art Towslee - WA8RMC - email: towslee@ee.net
180 Fairdale Ave.
Westerville, OH 43081

Here they are folks, caught in the action on Friday afternoon.
Look for them and stop by to say "Hi" next year.



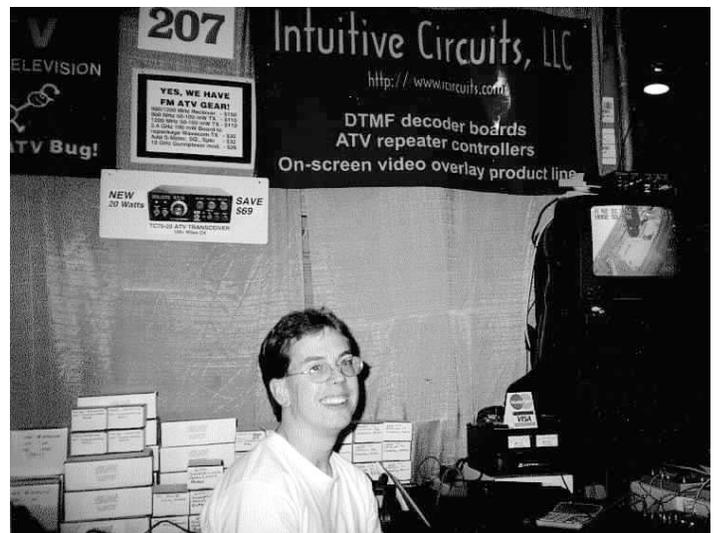
Gene Harlan, WB9MMM, and his wife Shari, N9SH, from
ATVQ Magazine.



Don Miller W9NTP and his wife Sue, W9YL, from Wyman
Research.



Tom O'Hara W6ORG and his wife Mary Ann WB6YSS
from PC Electronics



Chris N8UDK from Intuitive Circuits

Friday Night ATV party comments and pictures.

The Friday night ATV party was very successful again this year. Funded and sponsored by ATNA and hosted by John, W8STB, the event was completed without a hitch. We had about 85 participants which was slightly less than last year but more people were genuinely interested in the presentations this year. Even

Prize

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9. Black/White TV camera
10. 432MHz ATV yagi antenna
11. 439MHz Downconverter

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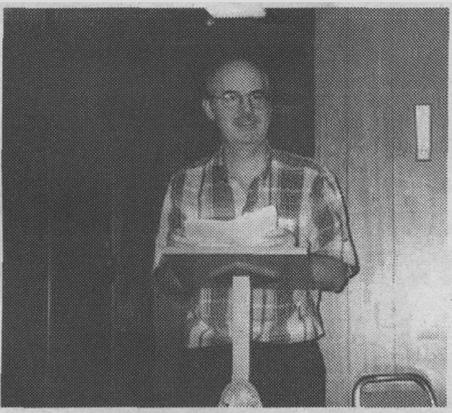
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Here is a shot of some of the participants at the Friday night ATV party. Notice the table of door prizes yet to be handed out in the foreground.

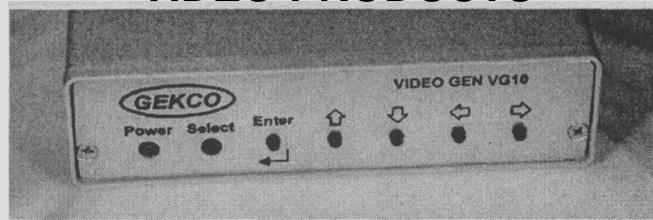


Bill Brown WB8ELK describes his balloon launch experiences to the audience.

though we tried to wrap it up earlier because of the long next day, many kept asking questions which extended the closing time to nearly 11:00PM. Many even stayed to help clean up afterward. What dedication! It was great. I was able to obtain 11 different door prizes to hand out to lucky winners during the evening. Lets see...85 people and 11 prizes...you do the math to determine the odds of any given person going home with a prize. Pretty good whichever way you figure it! We're already looking forward to the party next

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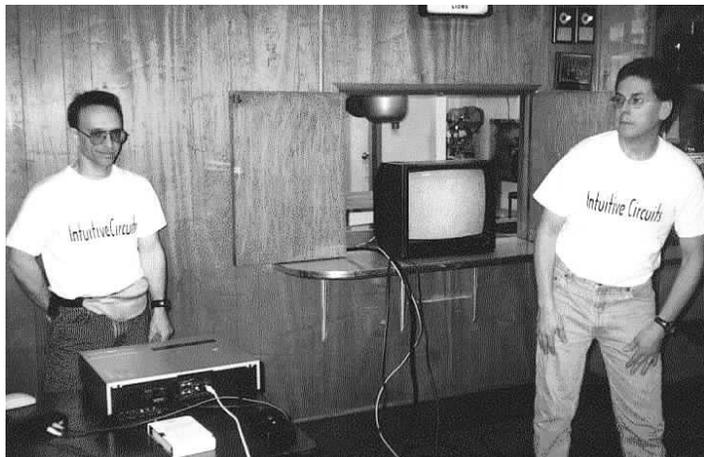
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year. The prizes, donors and recipients are listed below. Many thanks to the vendors that provided prizes. Their generosity made this possible. Patronize them if you can!...WA8RMC.



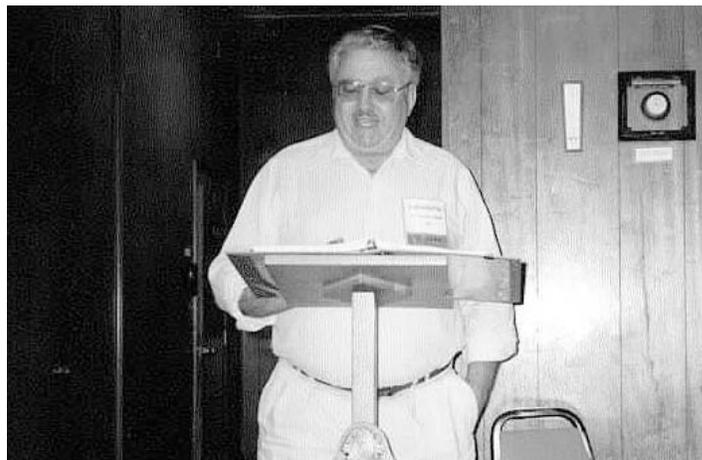
Jeff, N8QPJ, (left) watches as Chris, N8UDK, describes ATV topics.



Ralph, N4NEQ, (left) and Dave, KD4SHH, from the Atlanta ATV Group



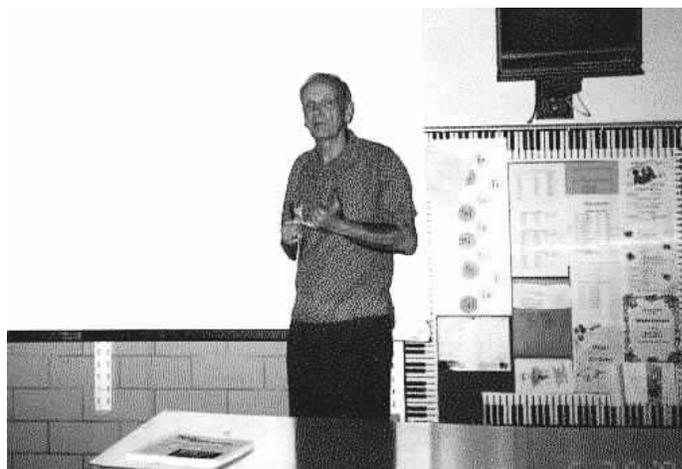
Our host John, W8STB, addresses the group



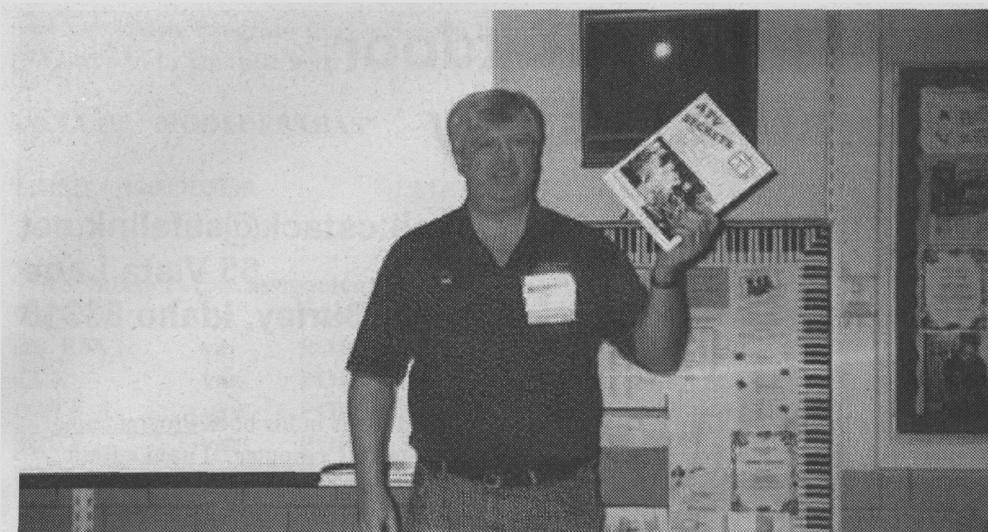
Finally John, W3HMS, talks about his 10GHz adventures

And now we go on to the Saturday ATV forum.

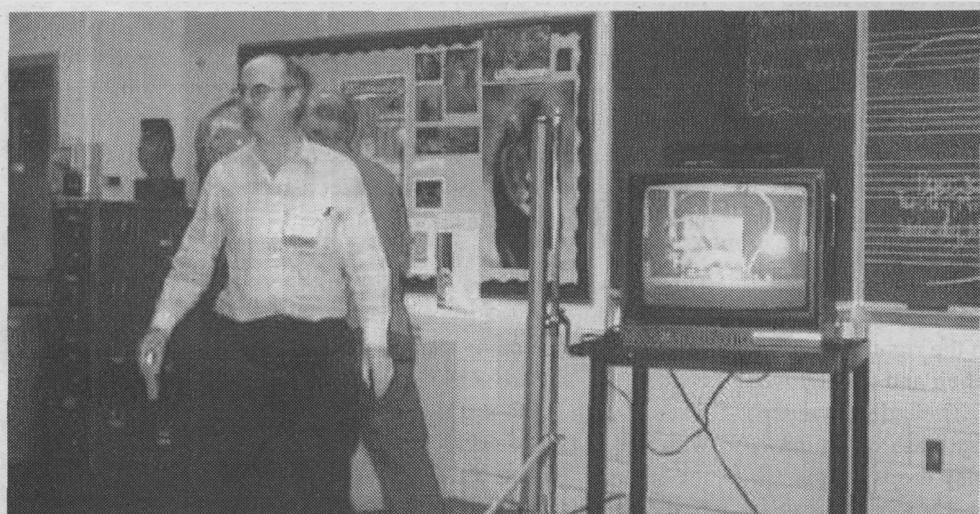
The Saturday ATV Forum also had a great turnout in spite of the fact that the event was moved to Meadowdale High school. Admittedly, at first I thought it was going to cut into my "flea market" time to ride the bus and all. I found that it wasn't bad at all. It only took a few minutes to get there and back so I give it a "two thumbs up". The sessions were very interesting but most of us already knew that when we realized that Bill Parker W8DMR was going to be at the helm. Bill puts on quite a show so if you haven't seen him in action before, you're in for a treat! He really keeps it going with his quick wit and intelligent discussion. Lets hope he'll come back next year. If you missed it this year, you'll have something to look forward to next year.



Here's our wonderful host Bill Parker, W8DMR, who kept the proceedings moving at a fast and entertaining pace



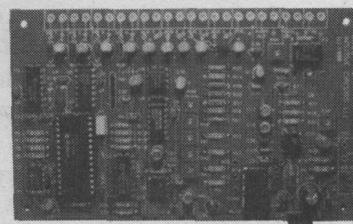
We can't forget the editor of the only ATV magazine in the country Gene Harlan, WB9MMM, talking about his magazine, "ATVQ."



Finally, Bill Brown, WBSELK, wraps it up with his balloon adventures.

ATV Repeater Controller

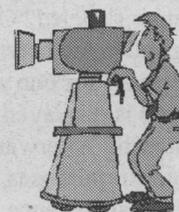
ATVC-4 is one of the most robust and reliable Amateur Television repeater controllers on the market today. Four of ATVC-4's five video inputs can be configured to automatically scan for valid incoming video and key the transmitter. The fifth video input is available for a video ID generator and all five inputs can be selected remotely. Additional features include four mixable audio inputs, a non-volatile Morse Code repeater ID, a non-volatile DTMF password, robust Morse Code repeater telemetry, a programmable hang time, a beacon mode, and the ability to remotely control two repeater site devices (e.g. repeater room lights, fans, etc.) 6 x 3.75 One year warranty. \$279



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Voice: 248.524.1918

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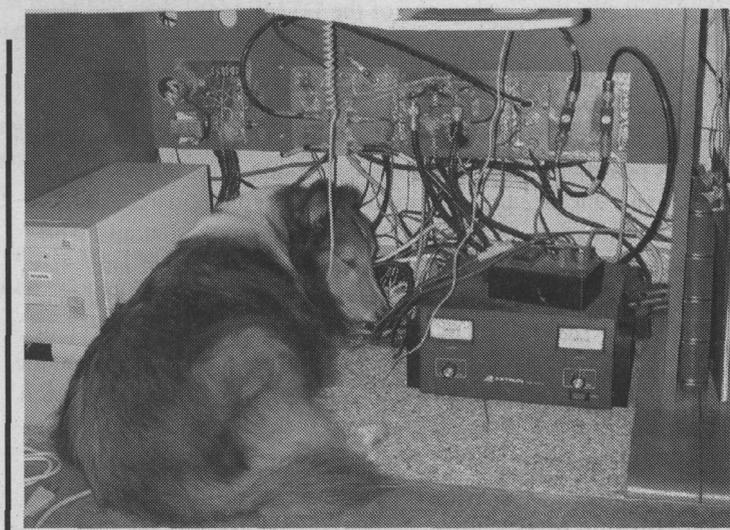
ATNA HF NET

A group of ATV'ers have been meeting on Friday night at 9:00 PM EDT (2100Z) on the frequency of 3930.0 KHz. This has been going on for about one month, with good results. Feel free to join the discussions.

If anyone has suggestions as to band, frequency, day of the week, or time of day, please inform:

Ron Cohen, K3ZKO -

Email: ronk3zko@juno.com



A visual of a problem at the QTH of Rick Pemble, W4RP

On Screen Indoor/Outdoor Temperature Display

By Charles L. Stackhouse WA2IPZ Email:cstack@safelink.net
65 Vista Lane
Burley, Idaho 83318

This article describes a way to measure the temperature in two separate locations and only the temperatures onto a video signal, giving readings in both Fahrenheit and Centigrade. The impetus for this project is a planned major upgrade to the K6ZVA ATV repeater, located on Mount Harrison in south central Idaho. One part of that upgrade is a new remote video camera. The old camera to be taken out of service has a digital thermometer in the camera housing that the camera can be turned to view. This new camera has a completely different housing and we need a new way to display temperature.

This project displays the temperature outside and inside the repeater shack. The temperature sensors used are Dallas DS1620 digital thermometer chips that are read by a preprogrammed Microchip PIC16f84 and the temperatures are displayed on the video downlink of the repeater using the BOBII video text display module. To initiate a temperature reading, an input pin on the PIC is briefly grounded. The temperature display shows the outdoor temperature (labeled "Out") first on the right side of the screen. Readings alternate between Fahrenheit and Centigrade, each displayed 3 times for one second each. The indoor temperature (labeled "In") is displayed in an identical fashion on the left side of the screen. Afterwards, the display drops off the video screen.. For our purposes, we have set it up for the display to trigger with each appearance of the video ID screen, which comes up every 10 minutes automatically, after each transmission or at any time, using one of the DTMF tones decoded by the repeater controller. A simple pushbutton switch would work as well for use in the home QTH.

The hardware is straightforward. I built up the unit on a printed circuit board designed with the free version of Eagle software, although I am sure that any kind of prototyping board, "dead bug" construction, or other favorite wiring method would work. Mount the PIC in a socket to allow reprogramming if later desired. The indoor DS1620 is soldered on the circuit board and the outdoor DS1620 is soldered to the end of a 15 foot piece of Category 5 wire (only 5 of the 8 wires were used). I skipped the capacitors usually seen between each lead of the PIC crystal and ground, since it worked fine without them. The BOBII module comes with a 30pin SIMM socket for mounting.

The software was the most challenging part of this project. It was written in Basic and compiled for the PIC16f84 with PicBasic Pro Compiler. I started off with software

(LED_TEMP.BS) by Scott Edwards in his book Programming and Customizing the Basic Stamp Computer. I used a Basic Stamp2 microcontroller to read one DS1620, moved it over to the PIC microcontroller with PicBasic Pro, thanks to help from David Covick WA6LBX, and got it working with 2 DS1620's with help from Bill Carver, W7AAZ.

The PIC16f84 is a great chip. It has flash memory so it can be reprogrammed again and again without the need for ultraviolet erasure. Changes in software were very quickly burned into the chip and tested immediately. Programming software for the 16f84 is widely available for free on the Internet and homemade programmers can be built for a few dollars. The hex file for programming the 16f84 for this project can be obtained from the author as an email attachment.

This project was tested to below 0 degrees by frosting the DS1620 chips with a can of "Dust Off" held upside down and above 100 by touching them with a soldering iron. (The DS1620 is rated for -67F to +257F). A handheld transceiver running 5 watts at both VHF and UHF had no deleterious effects, even with the 15 feet of cable from the outdoor sensor coiled around the antenna. I wrote the software so that the displays were in the best locations for visibility on the ID screen, although they could have been placed anywhere.

The BOBII module automatically synchronizes to external video and superimposes text so any video signal can be fed into the project and displayed on a video monitor in your shack or displayed on your transmitted video signal. Since the data is sent out of the PIC chip in a serial manner (9600bps, 8N1, inverted 5v logic level), it could also be displayed on a LCD display or an LED display driven by a MAX7219 chip.

The Basic code and schematic follow.

=====Basic Program for On Screen Indoor/Outdoor Temperature Display=====
(Written to be compile with PicBasic Pro Compiler (microEngineering Labs, Inc.)

INCLUDE "MODEDEFS.BAS"

TRISB = %00010000 ' MAKE PORTB.4 an INPUT pin.

' == Variables (pin assignments)

DS_RST var PORTB.0 ' Enable pin for DS1620. "OUT"
DS_RST2 var PORTB.5 ' Enable pin for #2 DS1620 "IN"
CLK var PORTB.1 ' Clock line (shared).
DATA_n var PORTB.2 ' Data line (shared).
SOUT var PORTB.3 ' Serial Out pin
PROGON var PORTB.4 ' Turn on program (pin input)

' == Constants (DS1620 instructions)

WCFG con \$0C ' Write-configuration instruction.
CPUCON con \$02 ' Computer-interface/continuous operation.
STARTC con \$EE ' Start temperature measurements.
RTEMP con \$AA ' Read the current temperature.

' == Variables

theTemp var word ' DS1620 reading in 1/2 degr. C units.
tempByt var theTemp.lowbyte ' Value portion of DS1620 temperature.
tempSgn var theTemp.bit8 ' Sign bit of DS1620 temperature.
mySign var bit ' Separate sign bit for calculations.
C_or_F var bit ' Selector bit: 0= readout in C; 1= readout in F
SELECT var byte
Times var byte
LABEL var byte 'adds label for C or F to SEROUT
SIGN var byte 'adds sign to SEROUT

' == Begin Program: Initialize DS1620

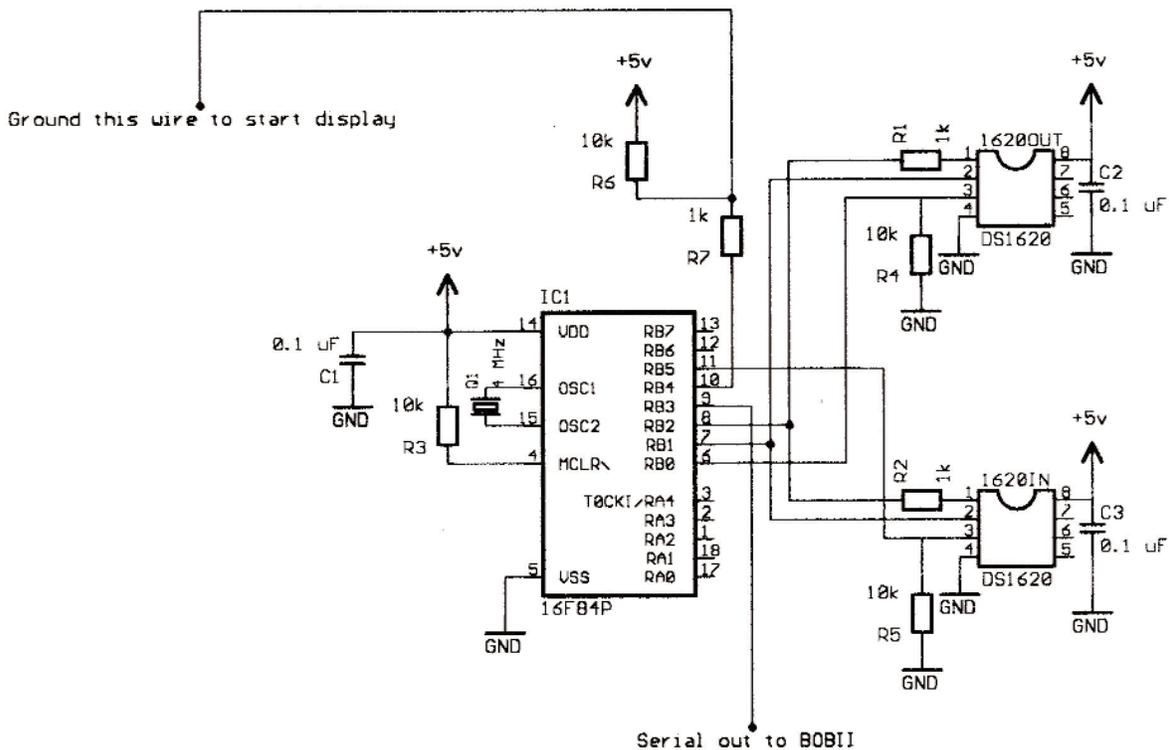
low DS_RST ' Deactivate the DS1620
low DS_RST2

high CLK ' Start with clock high for DS1620.
pause 100 ' Give things a moment to settle.
high DS_RST ' Now, activate 1620 and write configuration to it:
high DS_RST2

shiftout DATA_n,CLK,lsbfirst,[WCFG,CPUCON] ' "computer/continuous"
low DS_RST ' Deactivate the DS1620.
low DS_RST2

pause 50 ' Wait for it to digest configuration command.
high DS_RST ' Tell the 1620 to begin continuous conversions.
high DS_RST2

shiftout DATA_n,CLK,lsbfirst,[STARTC]
low DS_RST ' Deactivate.
low DS_RST2
pause 1000 ' Wait a second.



Charles L. Stackhouse WA2IPZ

TITLE: OSD On Screen Temperature Display

Document Number: 1

REV:
A

Date: 6/27/2000 12:00:58a

Sheet: 1/1

‘=====Main program loop

again:

SEROUT2 SOUT,84,["{A}"]

‘Clear Screen commands to BOB-II

klik:

if PROGON = 1 then klik

‘This turns on program with grounding of pin 1(RB.4)

‘ (has pullup resistor). If not grounded program just loops

‘here.

GOSUB get_and_convert_out

GOSUB get_and_convert_in

goto again

‘=====Subroutines

get_and_convert_out:

for Times = 1 to 3

high DS_RST

shiftout DATA_n,CLK,lsbfirst,[RTEMP]

shiftin DATA_n,CLK,lsbpre,[theTEMP\9]

low DS_RST

gosub getPat

‘gets temp data from DS1620 “OUT” and converts

‘Displays temperature 3 times

SEROUT2 SOUT,84,["{A}"]

‘Clear Screen’

Pause 10

SEROUT2 SOUT,84,["{C2007}"]

‘locates display at the indicated position

SEROUT2 SOUT,84, [SIGN,dec theTemp,LABEL,," out",cr]

‘displays outside temperature

C_or_F = ~ C_or_F

pause 3000

next

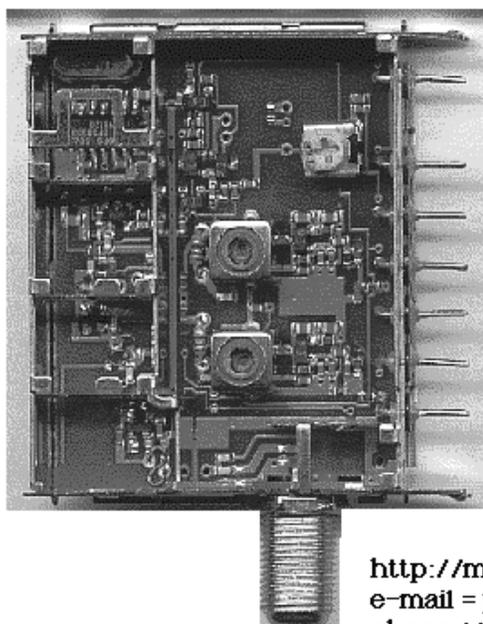
return

get_and_convert_in:

‘gets temp data from DS1620 “IN” and converts

for Times = 1 to 3

high DS_RST2



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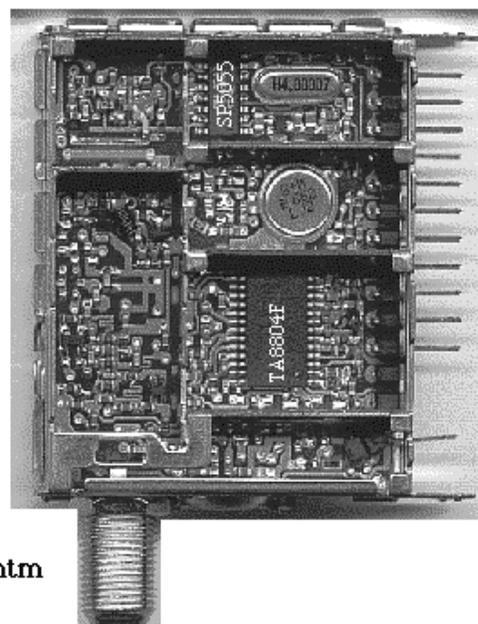
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phone ++49 177 447 3022



```

shiftout DATA_n,CLK,lsbfirst,[RTEMP]
shiftin DATA_n,CLK,lsbpre,[theTEMP\9]
low DS_RST2
gosub getPat

```

```

SEROUT2 SOUT,84,["{A}"]           'Clear Screen'
Pause 10
SEROUT2 SOUT,84,["{C0007}"]
SEROUT2 SOUT,84, [SIGN,dec theTemp,LABEL," in",cr]

```

```

C_or_F = ~ C_or_F
pause 3000
next
return

```

getPat:

```

mySign = tempSgn           ' Copy the sign bit.
theTemp = ABS (theTemp | (tempSgn * $FF00))
if C_or_F <> 1 then noConvert ' Convert to F if C_or_F = 1.
theTemp = theTemp * / $1CC ' Conversion step 1: theTemp=1.8*theTemp.
if mySign <> 1 then noNeg   ' Restore the sign to theTemp.
theTemp = -theTemp
noNeg:
theTemp = theTemp + 64     ' Conversion step 2: Add 64.
mySign = theTemp.bit15    ' Save sign in mySign.
theTemp = ABS theTemp     ' And take absolute value again.
noConvert:
theTemp = theTemp/2       ' Convert half degrees to whole degrees.
' At this point, theTemp contains the absolute value of the temperature,
' in C or F as dictated by the bit C_or_F, and mySign contains the sign bit

```

```

IF C_or_F = 0 then
  LABEL="C"
Else
  LABEL="F"
Endif
IF mySign = 0 then
  SIGN = "+"
Else
  SIGN = "-"
Endif
return
END

```

ATVQ

MPEG VIDEO SYSTEMS

HELLO GUYS,

I have been hearing via the ol' grapevine that there have been some 64 mile QSO's on the 900 mhz, band using mpeg systems. We are itching, here in WNY, to learn more about this. If anyone can point out some info sites, it sure would be appreciated.....can you help us scratch this itch.

tnx de

DENNIS J. LANGHEIER - K2CEC k2cec-1@juno.com

20 Years ATV Repeater DB0CD

From DB0CD in Gelsenkirchen, Germany. The first Digital-ATV motion pictures in GMSK modulation were transmitted on April 2, 1999. The video ran from an MPEG-1 video CD, but no-one was able to decode it at this time (only watch the eye diagram after FM demodulation). The regular test transmissions were three days a week and went on until June 18th, then the video CD had reading errors.

Working report 1999: new video/audio controller installed; both

3 cm and 23 cm inputs have equal rights, the first detected signal is put onto both outputs on 13 cm and 3 cm. The 3cm input has text inserted "3 cm-Eingabe." DTMF control is reactivated with some functions like test beacon on 70 cm or 13 cm for 15 minutes, 23 cm directional receiving antenna active and turning left or right etc.

In 1999 we had to switch off the 13 cm output several times, as the primary user announced TV transmissions from bicycle races and from a helicopter night fly around the "Arena Oberhausen".

On december 16th 1999 Prof. Uwe Kraus, DJ8DW, at the "Bergische Universitaet Wuppertal" handed over Digital-ATV equipment to teams from the 4 DARC districts G, L, O and R. The DATV TX for district L is to be used from the location at DB0CD, but these units are not remote ready yet (for use at repeaters) and have to be completed for this.

DB0CD usage data 1999: 33 working actions of 4 supporters, 276 different users received (and 40 repeaters with manual RX handling on location), around 54 per week, 39 repeater openings per day. 70 cm-AM-ATV TX active 1512 hours, 13 cm-FM-ATV TX active 1916 hours, 3 cm-FM-ATV TX active 8708 hours.

(from TV-AMATEUR 116, translated by DL4KCK)

Comet CYA 2412 2.4 Gig Yagi Antenna Review

by Henry AA9XW - Email: KB9FOHAM@aol.com
5317 W. 133rd. Street
Crown Point, IN 46307

If you are looking for a nice rugged and compact 2400 MHZ antenna and don't want to go the dish route, here is an alternative. It also makes a great portable, rover or point to point antenna.

From my shack, its about time that the manufacturers started offering product for bands above 2 meters, or 450, well try and find a 900, 1200 or 2400 product. Very few except from speciality supplies run from garages. The big guys just don't bother. So imagine my surprise when I went to the local ham store (AES Milwaukee) and while buying an Icom 706MKIIG, auto tuner, and 8 band vertical for my rover, I spotted on the shelves, two Comet antennas for 1200 and another two for 2.4 Gig. Unheard of! I immediately grabbed a pair of the 2.4 gig yagis to augment my 20 dBd dish for my rover. Another reason to **VISIT** the ham store and keep them in business vs buying on the **WWW** to save a few lousy bucks from a place that has no store, no tech support and may be out of biz tomorrow. But hams not supporting ham stores is another topic.

These antennas are nicely made with a type N connector on the end of the boom and a fiberglass radome over the entire active portion of the antenna. The typical "muffler clamp" mount fits the general range of poles likely to be used for support. But even nicer, the antenna boom has no holes and is rear mounted. That means you can use it H or V or slip it through a rotor if you want to have both or any angle in between.

If you look at the cover, there are two small "weep" holes in the bottom. That is the only clue as to what side is up or down. With the holes down, the yagi is vertically polarized. This works with the companion 2400 MHz vertical omni that was hanging right next to it. But if you want to go horizontal, just rotate the boom in the clamp to what ever angle you want. I would suggest a piece of tape over the holes and adding two more on the new "bottom" if you do. The boom is kept centered in the radome by a disk at the front and rear that are bolted into the boom.

Performance.

I had an opportunity to test the antenna in a commercial RF antenna anechoic RF chamber with calibrated goodies. I was testing some 14 other antennas for a scientific investigation of DTV broadcast reception, and slipped in an additional test antenna. We were able to test both the E and H plane patterns at the design frequency and also went in intervals to frequencies where the antenna pattern basically flew apart. Also we used a network analyzer to check the impedance vs frequency response of the antenna. The results were both good and bad.

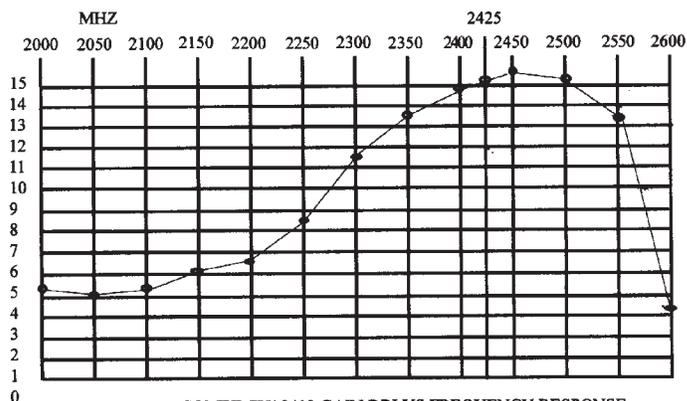
The Smith chart shows the entire sweep from 2 Gig to 2.6 Gig. The surprise was how reactive the antenna was at the design fre-

quency range of 2400-2450. At 2.4 Gig, test point 3 on the chart, we are well off in both resistance and reactance at 30.77 ohms resistance and 24.31 ohms reactance. . At 2.45 Gig (chosen as being close to 2441 frequency in popular use) the resistance is on the 50 ohm circle, (50.818) and only slightly reactive at 12.45. At 2.5 Ghz, resistance drops to 42.6 ohms but the reactance drops to 2.7. I found it curious that at no frequency was it optimized to 50-j0. However, within the range of interest, the values are not absurdly bad, and shouldn't be a significant problem unless you are trying EME! For TV, plenty good!

We chose a test reference frequency of 2425 MHz for pattern comparison. The pattern shows the performance to signals that would be from higher or lower sites, i.e. ground reflections and stuff from the mountain top where you didn't tilt to get dead on. This was the first rotation and we were off about 5 degrees from having the maximum at zero reference, so rotate the pattern left 5 degrees to normalize. The scale is voltage ratio below peak. So .5 = -6db voltage. .1 = -20 db voltage, etc.

The pattern is very reasonable, although a bit asymmetrical. With the two biggest side lobes being roughly at 100 and 190 degrees. We then turned the antenna to match the polarization of the source and rotated again. The performance for this size antenna was excellent. Gain was measured at 15.1 dBi (12.96 dBd) at the 2425 MHz frequency and the side and rear lobes are all insignificant. Again some asymmetry is noted with the lobe at 42 degrees about double the one at 315 degrees.

We ran the antenna from 2000 to 2600 MHz with pattern and gain measurements at 2000, 2050, 2100, 2150, 2200, 2250, 2300, 2350, 2425, 2450, 2500, 2550, 2600 MHz. The frequency/gain table was generated. The peak gain was 15.33 dBi at 2450 MHz, 13.10dBd. As expected it peaks to the high side. Still it is above 15dBi from 2400 to 2500, and only down about 1.5 dB at 2550 and 2350.



COMET CYA2412 GAIN DBI VS FREQUENCY RESPONSE
5-23-2000 AA9XW

The tests on out of the ham band frequencies were to see how it would serve as a commercial ENG antenna. For \$179, it's about 20% of the commercial units for that use. The tests showed that it would be useable as a low gain (vs the 20 db silhouette antennas ENG trucks normally use) for portable use. It compares well with a tripod mounted horn (horn is rated 8.2 dB) and a longer disk on rod (rated at 12 dB) from a commercial source. The patterns also show that it will work fine for any ham frequency, or the 2.4 Gig band. The gain and pattern begin to fall apart above 2550 and 2100 where use might be for emergency replacement.

So if you need a nice compact, lightweight, rugged directional antenna for the 2.4 Gig ham band, this fills the bill, and likely can be left on that snowy mountain top with no worries.

Model tested: Comet CYA2412

Purchased from: Amateur Electronic Supply, Milwaukee

Price \$179.

Best gain measured 15.33 dBi @ 2450 Mhz. (13.19 dBd)

Comet CYA2412 Yagi antenna

Frequency dBi dBd

2000 5.47 3.33

2050 5.2 3.06

2100 5.24 3.1

2150 6.04 3.9

2200 6.55 4.41

2250 8.5 6.36

2300 11.54 9.4

2350 13.48 11.34

2425 15.1 12.96

2450 15.33 13.19

2500 15.23 13.09

2550 13.33 11.79

2600 4.39 2.25

Reference H and V patterns

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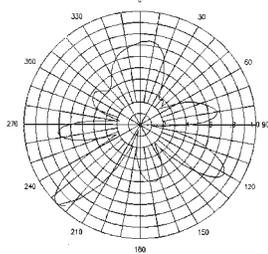
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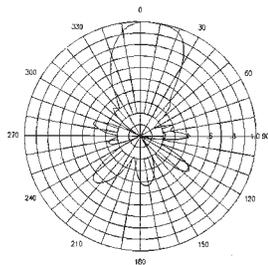
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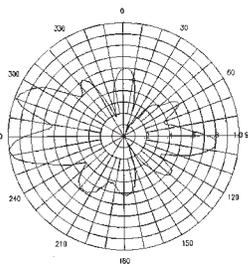
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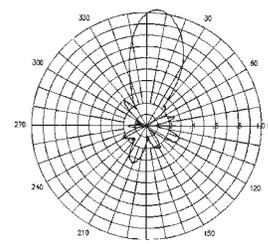
2000 MHz



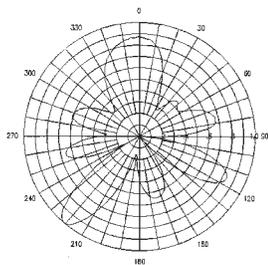
2250 MHz



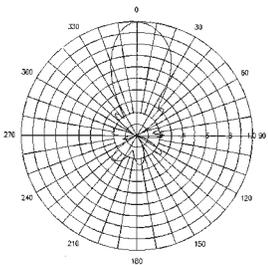
2600 MHz



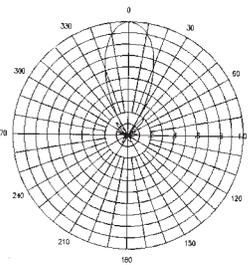
**2425 MHz
Cross Polarized**



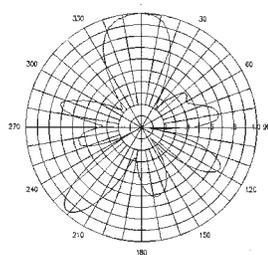
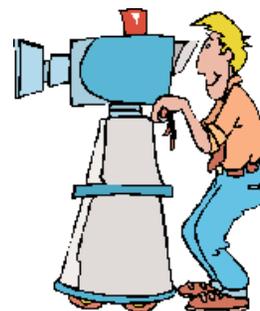
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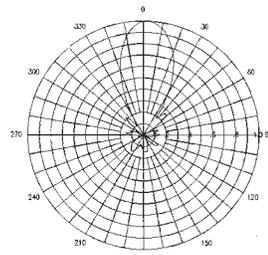
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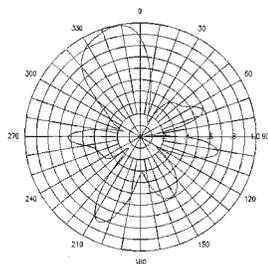
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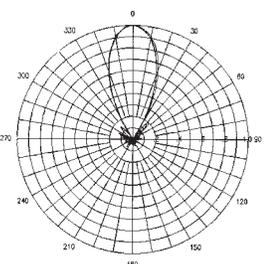
2100 MHz



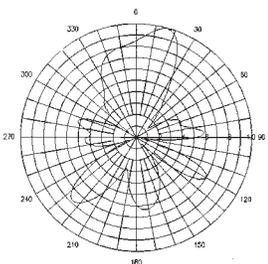
2350 MHz



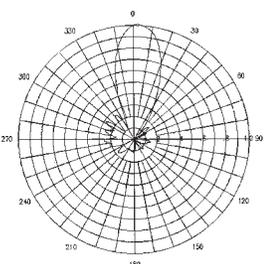
2150 MHz



2500 MHz



2200 MHz

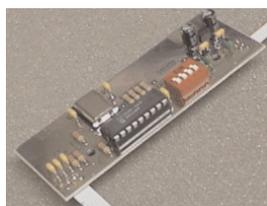


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<http://www.burnabyradio.com>

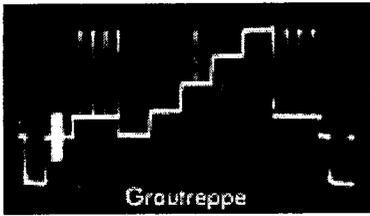


RW-03 Wavecom channel modification board

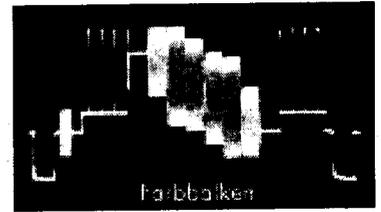
RW-04 Repeater controller for Wavecom



LCD 1.0 Wavecom / Supercom LCD frequency board



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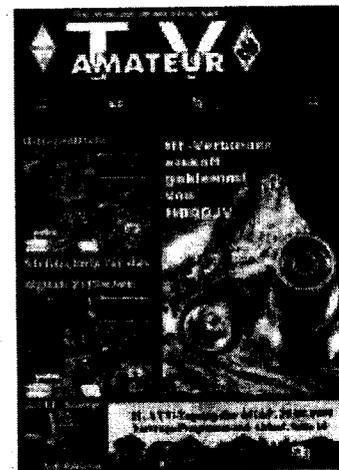
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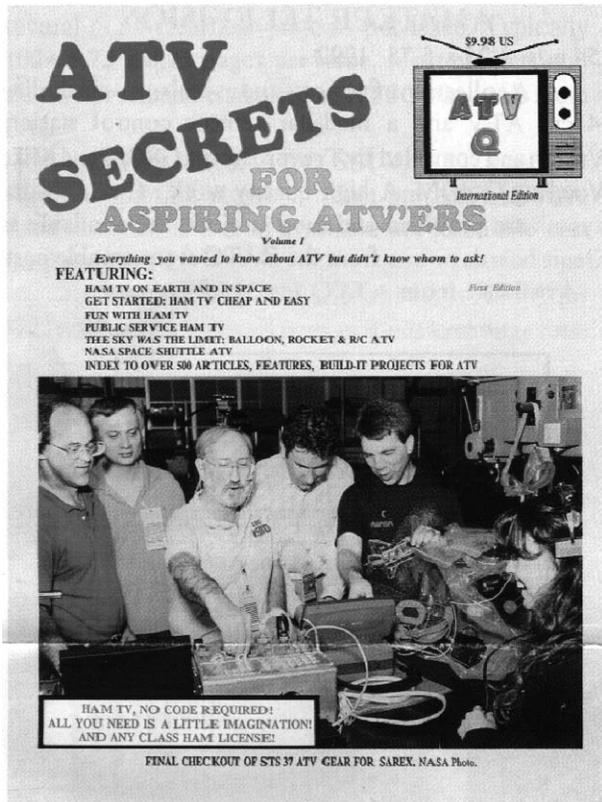
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Man gönnt sich ja sonst nichts ...

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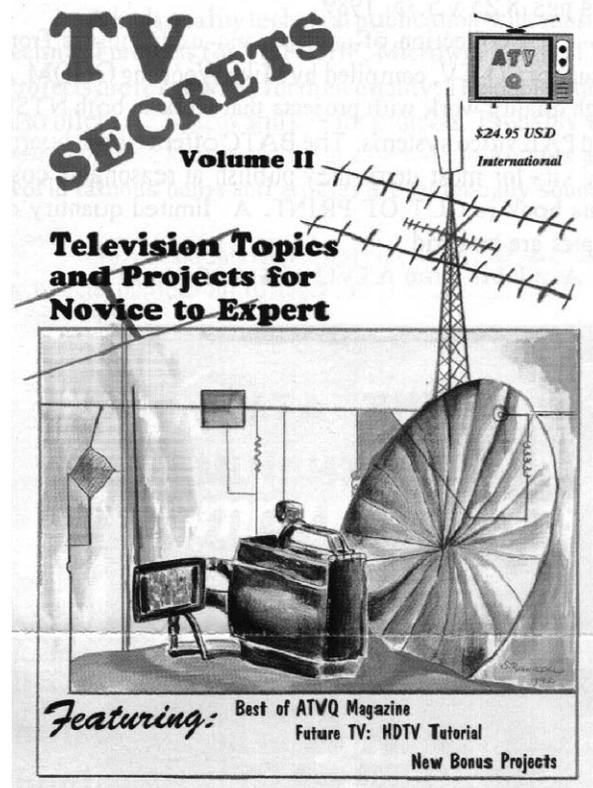
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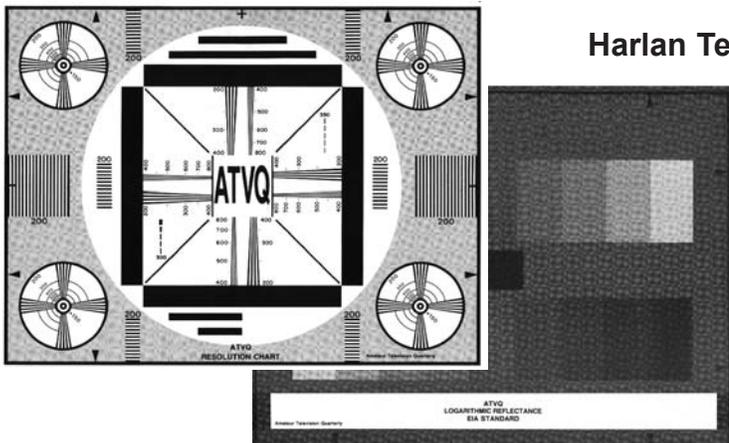
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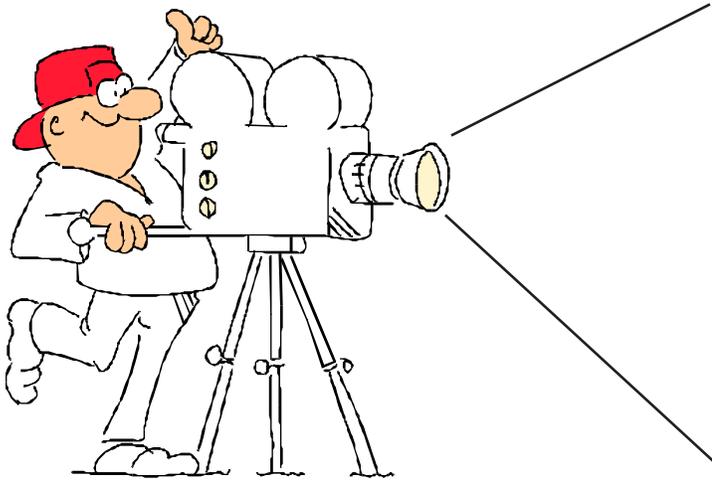
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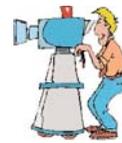
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What is Amateur Television?

Amateur Television is fun and can be inexpensive. But like any part of the ham radio hobby, you can spend about as much as you care to. There is always that other piece of equipment that will make the TV Station Ham Shack really neat. So you can start small and grow as the \$\$\$ permit.



ATV from a hang glider

Amateur Television is REAL LIVE TV! Just like the television that you watch on your TV at home, you can make your own broadcasts to other hams, to show off your ham shack, your latest project that you have built, your beautiful wife (handsome husband), your puppy doing tricks, or just about anything, within the ham radio rules and regulations that you might want to broadcast. One of the special items that we can do as hams is to rebroadcast the NASA channel that is available on "C" band satellite receivers as a free program, and also now available on some of the smaller dish services as well.

Since ATV is allowed only on frequencies above 420 MHz, you can not make the pictures "skip" around the world, so your transmissions will be pretty much line of sight. However, during



W8ZCF working DX with ATV

<http://www.hampubs.com>

a band opening, you can work other ATV'ers that are hundreds of miles away. DX ATV can be lots of fun, but have the VCR ready to record those long distance contacts! Then you can take them to the next radio club meeting to show others how it works. 500-mile contacts are not that uncommon, and more than 1000 miles has been done several times. ATV has even been sent back and forth to a space shuttle, on mission STS 37! I'm willing to bet there will be more shuttle missions in the future with ATV and maybe on the International Space Station. Personally, I can't wait.

Portable and mobile operation are easy, just do not watch ATV while you are driving! Ham TV operators have found how easy and fun it is to operate in a variety of ways including hot air balloons, helium balloons, kites, cars, trucks, trains, planes, gliders, back packs, canoes, boats, ships, mountain tops, and ATV Repeaters. Seeing DX from a 1-watt transmitter at 110,000 feet up in the air will allow stations to see live video from a camera hung under a helium balloon for up to 500 miles in any direction.

Many Hams are using ATV for valuable public service assistance. Disaster scene information can be sent back to public safety officials, parades, athletic events, boating contests, and marathons.

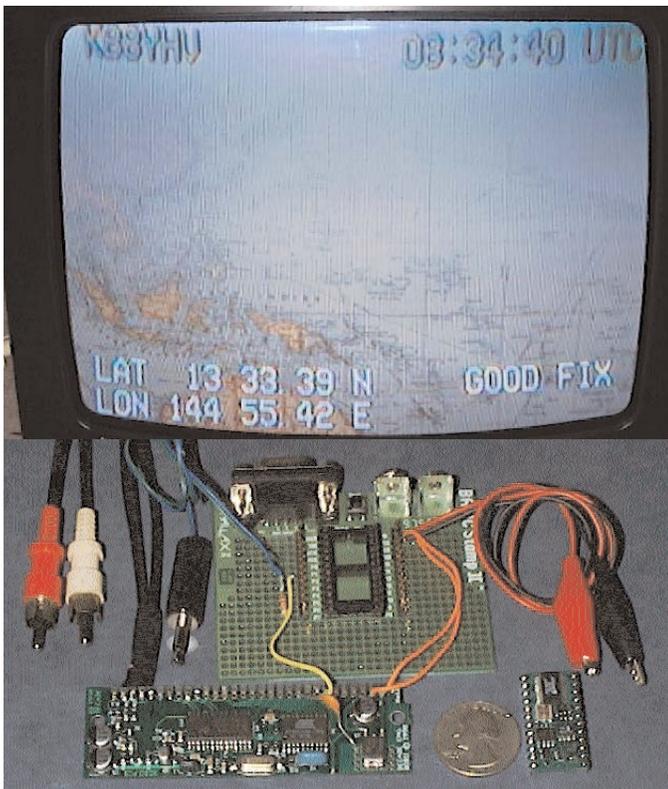


R/C control plane with ATV camera

If R/C control also has your interest, why not put your Ham TV in your R/C plane, helicopter, or boat and fly from the pilot's seat. Add real adventure to your earth bound self as your vehicle takes you to places that you cannot go yourself.



View of landing area from R/C airplane



Using the Basic Stamp with ATV

If you like to build things yourself, ATV is one place where you can have fun as there are lots of articles in Amateur Television Quarterly (ATVQ) to help you along. Projects range from small to large, so take your pick and get started. We sell many past issues of ATVQ due to the quality of the articles that have been published. As this is written, ATVQ copies are still available from 1994 to present. ATVQ is also available on CD-ROM in Acrobat PDF format, so even the older issues can still be acquired. We keep an index of all articles from day one on our web site, <http://www.hampubs.com>, so if you are looking for a special subject you can search for it very easily. We do not provide this in paper form as it is around 80 pages of information.

So ATV is a lot of fun. All you need is your Ham License and the desire to have fun. The following pages will give you a little more insight on how to get started.

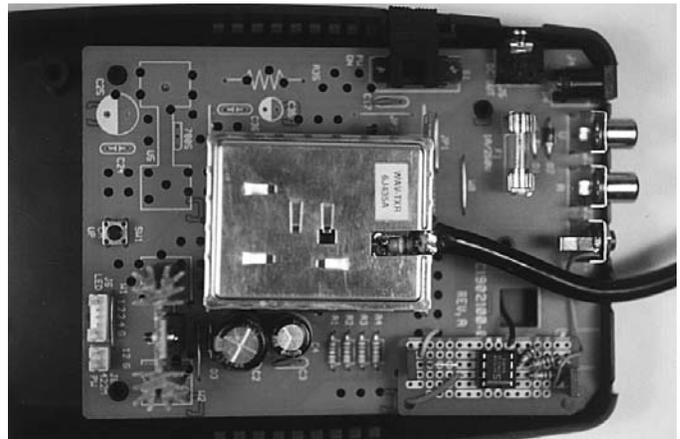
What is Slow Scan TV and how is it different?

Many people that I talk to think that Slow Scan TV (SSTV) is the same as Fast Scan TV (ATV), but they are very different. SSTV is a method of sending still pictures that are converted to sound through your microphone connection on your transmitter. Since it is just an audio frequency, it can be broadcast on the HF bands and pictures can be sent all around the world. Fast Scan TV is a very wide bandwidth, which allows you to see people/things live with motion, and is only allowed on 420 MHz and above.

What do you need to get started in ATV?

Since ATV is used on frequencies from 420 MHz and higher, all Amateur Radio operators can participate, regardless of the class of license.

By convention and agreement, ATV is operated on set frequencies. The popular frequencies are 439.25, 434.00, 426.25, 421.25, 910.25, 1253.25, 1265.00, and 1289.25 MHz. In the last few years, there is also increased activity on 2.4 GHz (due to the low price of WaveComm transmitter / receivers) and also on 10 GHz. By far the most popular is 439.25 MHz and in the southeast US and Florida 434.00 MHz. ATVQ publishes news of station and repeater operation which includes frequency information. As an example, in southern California, there are 7 ATV repeaters linked together to provide coverage from San Diego, to Los Angeles, to Las Vegas (NV), to Santa Barbara. There are plans to reach San Francisco and Phoenix, AZ. ATV is also on 913.25 MHz and 919.25 MHz. Hams share the 900 MHz band with 6 different radio services, including automatic vehicle location systems, and low power part 15 TV transmitters for home use. These new consumer TV transmitters can provide low cost ham TV exciters/receivers for the band as well as a potential audience.



Inside of a WaveComm transmitter for inexpensive ATV on 2.4 GHz

One of the most popular bands for ATV is the 420 MHz band. One of the reasons is that the higher frequencies will not give as good a distance. Another is that most people have a receiver in their home already! Cable channels 57 through 60 are on different frequencies than channels 57 through 60 that are broadcast over the air. Therefore if you have a cable ready TV, and connect it to an outside antenna, you can receive ATV as follows:



ID screen of San Francisco ATV Repeater

Channel 57 = 421.25 MHz

Channel 58 = 427.25 MHz

Channel 59 = 434.00 MHz

Channel 60 = 439.25 MHz

It will help to know the polarization that is being used in your area, as you can easily loose 15 db by having the antenna set to the wrong polarization. Most of the 420 MHz ATV is done with horizontal polarization except in the southwest US and Florida where they use mostly vertical.



Homemade camera remote position control

Where do you get information about ATV?

Your best source of information about ATV is **Amateur Television Quarterly**, as the publication is devoted entirely to ATV, SSTV, and projects. **ATVQ** contains an assortment of articles and features covering technical topics in both the beginner and advanced flavor, build it projects, station operations, and repeater news. **ATVQ** is the **ONLY** publication devoted to ATV in the US.

There are some European publications that are also very good such as **CQ-TV**, **VHF Communications**, and **Der TV Amateur**



ATV in Munich, Germany

<http://www.hampubs.com>

(in German only). The first two can be subscribed to through Harlan Technologies for your convenience or through their web site.



ATV used for Field Day

Ham TV can do more than any other mode of operation. It offers all the fun, thrills, excitement, learning opportunities and public service that ham radio offers, plus the added advantage of visual communication.

What frequencies are used for Ham TV?

Ham TV, live television that you can watch at home, is mostly on the 420-450 MHz band (70 cm), but there is also activity in the 902-928 MHz band (33 cm), and in the 1240-1300 MHz band (23 cm), in the 2.4 GHz band (13 cm), and also on 10 GHz.

70 CM ACTIVITY

Video Carrier	Audio Carrier	Use	Cable TV Channel
439.25 MHz	443.75 MHz	Simplex and repeater inputs	60- 439.25 MHz
		also a few repeater outputs	
434.00 MHz	438.50 MHz	Simplex and repeater input	59- 433.75 MHz
426.25 MHz	430.75 MHz	Repeater output & some inputs	58- 427.25 MHz
421.25 MHz	425.75 MHz	Repeater output	57- 421.25 MHz

ATVQ editor, Gene - WB9MMM doing a little public service work on 2.4 GHz.



Since the Cable TV channels are so close in frequency to our ATV frequencies, you can take your cable ready TV, leave it set for Cable, but connect it to an outside antenna instead. If someone is broadcasting ATV in your area, and you have a sensitive input on your TV with a good antenna, you just might see video! Generally, TV sets are not as sensitive as an ATV receiver, but it is one way to get on cheap.

What does 144.34 MHz have to do with ATV?

In many areas of the country, ATV'ers use two meters, 144.34 MHz simplex, as the talk frequency. When I go through a city where you know there is ATV activity, I know most of them are monitoring 144.34 MHz and I will give a call. They are usually just waiting for someone to send pictures to!

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- An Introduction to Amateur Television** by Mike Wooding G6IQM. Another great technical book with projects useful to UK and US (PAL. NTSC) TV hams. **\$16.95** (shipping \$5 US).....
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Many issues of ATVQ are now available on CD ROM.

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- CD 3 contains 1992 & 93 (8 issues), CD 3 is \$24.95**
- CD 4 contains 1994 & 95 (8 issues), CD 4 is \$24.95**
- plus \$5.00 shipping (\$6 for two, \$7 for three, \$8 for all four - Other than USA - higher)**.....
- Previous ATVQ issues** that are still available (most from 1994 to present) sell for **\$4.95 each** (postage included for USA). Quantities are limited. Some real good articles exist in these issues!
- Color Test Chart** including Color Bars, Resolution, Grey Scale, Registration **\$5.00** (shipping \$3).....

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SUBSCRIPTIONS :

- CQ-TV**, the quarterly ATV publication of the BATC 1999 rate **\$27.00**
- VHF COMMUNICATIONS**, a super quarterly publication from KM Publication in England - **\$35.00**
- OSCAR Satellite Report**, a newsletter published twice a month with the latest news on Ham Satellites. **Mailed FIRST CLASS - USA \$35 - Canada \$38 - Elsewhere - \$46**.....
- Amateur Television Quarterly**

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Signal Strength Meter Video Note

Chris at Intuitive Circuits has come up with a neat new board primarily aimed at being used at a repeater site with an ATV receiver. However, there is a possible dangerous situation you should be aware of if you intend to connect the OSD-SSM video signal strength board to a TV sets IF AGC.

It is important to note when hooking up the new OSD-SSM video signal strength board to the receivers IF AGC that if you are using a hot chassis TV, sparks could fly. Many TV sets have one side of the AC line connected to the chassis. The side of the AC line that goes to the TV chassis that gets plugged in will not be at true ground and will have some voltage between it and true ground. Most ham stations will have their chassis grounded directly or indirectly through the antenna coax and tower. Soon as you touch either of the AGC voltage leads from the OSD-SSM board to the hot chassis TV this voltage will be connected to the ham system and probably blow some stuff out if not give you a shock. Make sure you are not

connecting anything external to a hot chassis TV that would find its way back to an actual ground! Check out the TV with an ohm meter first to verify that there is no connection between either side of the AC plug and the TV chassis or ground with the TV power switch on - not plugged in of course. There is no problem connecting to the video IF test point in our ATVR, VRC-45, ch 3 receivers, Bensat or 33/23FMR receiver. 73,
Tom O'Hara W6ORG - TOMSMB@aol.com
P. C. Electronics

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Shari Harlan - Editor

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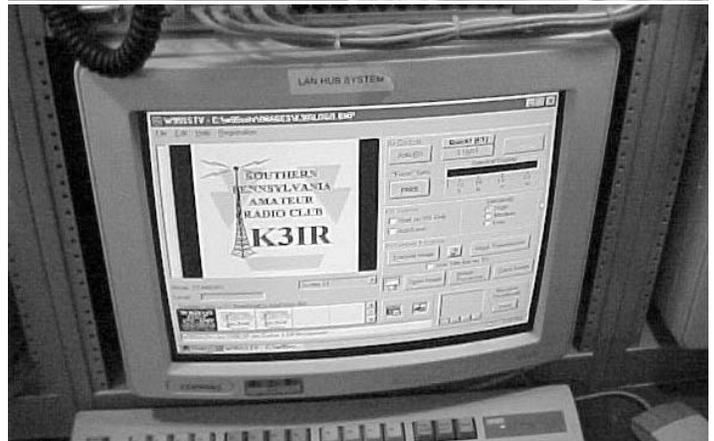
Elsewhere \$46.00/Year (US Funds)

SSTV, Packet, APRS, GPS Operation Demos For Field Day 2000

Club name is SPARC, Inc. (Southern Pennsylvania Amateur Radio Club Inc), mailing address is Lancaster, PA. However, Field Day was done at our club site in Ironville, PA., adjacent to the Susquehanna River in the western side of the county, thus our club call K3IR, King Three Iron Radio.

We demonstrated slow scan, fast scan, packet, aprs/gps within our mobile Field Service Van. This unit was featured in CQ magazine several months ago under public service. We sent pictures from the van to the adjacent building where we operated our 3A category for Field Day and vice versa. It was a most interesting experience for the visitors to our location and we had quite a crowd.

Thanks, J Yogi Bear, WB3FQY, Pres, SPARC, Inc.
wb3fqy@juno.com



NEW from Amateur Television Quarterly!

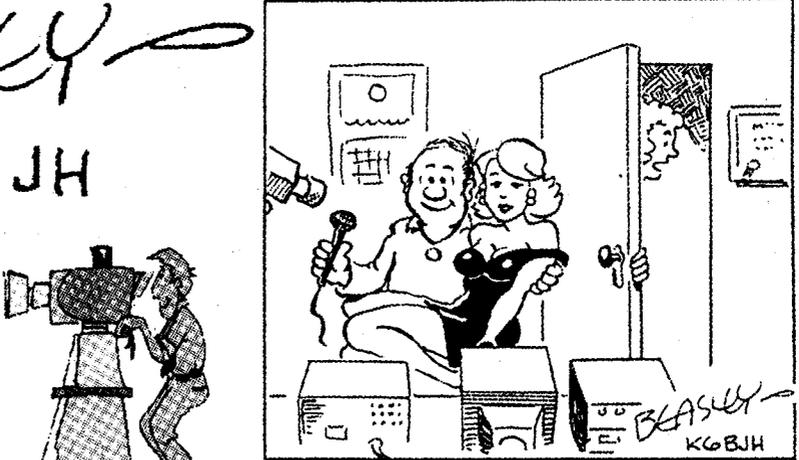
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Callsign Changes

KB9FO is now AA9XW (for now,
requested another)

From: KB9FOHAM@aol.com

Also Shari has changed her call - was
KB9SH, now N9SH.

Gene Harlan - WB9MMM



VERSATILE VIDEO TEXT OVERLAY

Decade's easy-to-use BOB-II module is still only \$79.95, including a compatible 30-pin SIMM socket. Much like a serial printer, it's controlled through an RS-232 data link at speeds up to 19,200bps. BOB-II gen-locks to standard NTSC (PAL optional) video, or generates background video locally, with fully automatic mode switching. Commands are in plain ASCII, so basic control is even possible through a terminal keyboard. New BNAB-GP host board for BOB-II is now shipping! Order from Decade by web, phone, or fax using your Visa or MasterCard. Fast delivery in USA, only \$5.00.

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Picture DX Bulletin #50 July 2000

by Danny Van Tricht - ON4VT - email: ON4VT@ping.be
Hulshoutveld 2
B-2235 Hulshout
Belgium

SSTV Website <http://www.qsl.net/on4vt>

Hello SSTV friends,

This is a special bulletin as it is number 50. In the past 4 years we reported more than 1000 different SSTV stations in more than 150 different countries. I hope to continue this work in the future, even though my SSTV activities are a bit reduced. I hope to keep receiving your SSTV info in the next years. SSTV DX is a real challenge!

Information this month came from: SM5EEP, PA3AXU, VE1AMA, SWL PIERRE (DXA-6), JA0SC, HA5DW, ON4PL, FRA1AB, J28NH, KT1J, JA6QT/1

AFRICA

J2 - DJIBOUTI After J28NH also J28EX became QRV in SSTV.

7Q - MALAWI G0JMU, Harry, should be active from 16 July on (for about 6 weeks). QSL via G0IAS.

7X - ALGERIA 7X2WOK, Mehdi, showed up on 20M. Has anyone the right key to get a SSTV QSL card from 7X??

ASIA

AP - PAKISTAN AP2MIZ is new in SSTV

BV - TAIWAN Real big activity lately : BV4AH, BX4AK, BX4AJ, BV4QI, BX4AB

BY - CHINA BD8SN and several others are very frequently seen on 15M SSTV.

XU - CAMBODIA Hiro, JA0SC, is active until July 2nd as XU7ABE. Mainly QRV on 10 and 15M SSTV. QSL via buro or direct to 722-1 shiba matsushiro-cyo, Nogano-city 381-1214 Japan

EUROPE

LY - LITHUANIA Look for LY2BOK and LY2GC

T9 - BOSNIA + HERCEGOVINIA T99C, worked and seen on 15M SSTV! QSL via buro or CBA

9A - CROATIA HA7WFG, Gyuri was active as 9A/HA2WFG from IOTA EU-136, Krk Island.

NORTH AMERICA + CARIBBEAN

CY9 - ST PAUL ISLAND Look for CY9/KT1J, to be active 6-10 July 2000

FG - GUADELOUPE Look for FG5AK, Peter. Worked on 20M SSTV.

FM - MARTINIQUE FM1FV, Manuel, is almost daily on 10M SSTV.

FP - ST PIERRE + MIQUELON Look for TO0DX to be active 14-19 July 2000. Operator is KT1J (Henk)

KP2 - US VIRGIN ISLANDS NP2JV, Roberto, is active from this rare spot. Worked on 20M and 10M SSTV! QSL via buro or via CBA.

ZF - CAYMAN Look for ZF1DG, Durl, the only active SSTV station in ZF.

OCEANIA

KH6 - HAWAII KH6HH was worked in Europe on 21.340 Mhz.

T8 - BELAU T88HQ; Oji, was worked by SN5EEP on 15 meters. QSL info?

YB - INDONESIA Much activity from here lately! YC0GRF, YB0ZDC, etc...

ZK1 - NORTH + SOUTH COOK PA3AXU is ready to go! Look for him from South Cook from July 3rd until July 8th and from July 15th until July 24th. Activity from North Cook is from July 8th until July 15th. QSL via home call! Good luck!

SOUTH AMERICA

SHORT NEWS

*MIR made a two way phone contact with schoolkids in Pennsylvania USA (12 June 2000). But no SSTV. In the meantime the crew returned safely on earth...

*I visited HAMRADIO 2000 in Friedrichshafen Germany. Pictures of my meetings with SSTV stations are now on my website (PDX bulletin #50 page). Some of the SSTV stations I shook hands with: DL4KCK, VK9NS, S57TTI, OE2WR, LY2CG, OK1NH, HG5BSC, etc..

SSTV QSLs RECEIVED

Direct :ZA/OK1JR, XZ0A,

Buro: BD8SN(!), DL8ULO, EA1PC, EA5HG, EA9AK, IK3LDL, IN3EEF, I5RFD, IZ6BTN, I6DHY, IK1BXZ, UA3ACE, VE5UA, YV1DIG, YV1AVO

Amateur Television of North America(ATNA)

What are you doing to help advance the technology and popularity of ATV operation in your community?

Are you a member of an active ATV club that needs more clout with the local frequency coordinating body?

Do you have questions about the legality of transmitting some specific type of video via ATV?

Do you believe ATV operators interests are being well represented by the ARRL or anyone else?

Who is your liaison to the FCC or local coordinating body for technical ATV related issues?

Who is working to tie together all the regional ATV groups to combine forces for a common cause?

If you aren't doing these things yourself then you need to join us and become a member of the national ATV organization that can provide all of these services and more !

You, and your club can become a member and affiliated member club of Amateur Television of North America (ATNA), the national organization dedicated to the future of Amateur Television in North America. ATNA will be the central focus to promote ATV operations and technological advancement for North America. Among other activities ATNA's members will support ATV presentations at amateur conventions around the country, including the Dayton Hamvention.

Our Mission:

- * Protect our ATV interests and frequencies.
- * Use video transmission methods to support public service.
- * Plan for the amateur radio adoption of new technology.
- * Advance the state of the art of video and video transmission methods.
- * Work with National Frequency Coordinators as the official coordinating body for Fast Scan ATV in North America
- * Associate in an equal role with other like minded societies

If you want ATV to prosper in North America, please fill out the application on the other side of this form and join us as members of ATNA.

More information about ATNA can be found on the Internet at World Wide Web page <http://atna.ampr.org>, by email to atna@qsl.net or by regular mail to:

ATNA c/o Harry F. DeVertter Jr., N3KYR 303 Shultz Road Lancaster, PA 17603-9563

Email messages about ATNA operations will be distributed on the following Internet list server atv@atv.talhassee.net

Please see the instructions on the ATNA web page about subscribing to the ATV Tallahassee list server.

INDIVIDUAL MEMBERSHIP APPLICATION FOR ATNA

NAME _____ CALL _____ (Please Print)

ADDRESS _____ CITY _____

STATE _____ ZIP _____ + _____ E-MAIL _____

TELEPHONE #() _____ Please check here if you want it kept private _____

Member of any other ATV club? _____

Select all bands you are active on:

440 Mhz _____ Simplex _____ Repeater _____ AM _____ FM _____ 900Mhz _____ Simplex _____ AM _____ FM _____
 1200 Mhz _____ Simplex _____ Repeater _____ AM _____ FM _____ 2300Mhz _____ Simplex _____ AM _____ FM _____
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Indicate Frequency and check those that apply to you.

Individual membership (USD) \$5.00 per year.

Enclosed (USD) \$ _____ for _____ years dues.

Individual membership (USD) \$8.00 (Non-North American)

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ORGANIZATION APPLICATION FOR ATNA

NAME _____ CALL _____ E-MAIL/WEB SITE _____

ADDRESS _____ CITY _____ STATE/COUNTRY _____ ZIP _____ + _____

NUMBER OF ACTIVE MEMBERS _____

ORGANIZATION DUES:

Category "A" Club is 3-9 members and dues are \$10.00 per year.
 Category "B" Club is 10-24 members and dues are \$20.00 per year.
 Category "C" Club is 25 members or more and dues are \$30.00 per year.

Signature of Applicant _____

Make checks, M.O., etc. payable to:

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FOR ATNA USE ONLY: ATNA # _____ CLUB CATEGORY _____ CHECK# _____ AMT. _____

Membership card sent / / _____ Certificate sent / / _____ (ORG. ONLY)

ATNA at Dayton 2000

By John Jaminet, W3HMS, Immediate Past President , ATNA.
EMAIL W3HMS@aol.com
912 Robert St.
Mechanicsburg, PA 17055 USA

by John Jaminet, W3HMS, Immediate Past President, ATNA.

I believe that most ATV'ers look forward to the Dayton Hamvention for the traditional three ATV events which encompass the Friday Night Lions Club ATNA General Meeting and Technical Session, the Saturday Afternoon Technical Session moderated by Bill Parker, W8DMR, and the Saturday night dinner. In addition, we in ATNA, held our Thursday night Executive Board meeting which is about the only time each year that we can get most officers together. This year was no exception and I think most folks enjoyed these events; we even managed to quit the Friday night session at a much more reasonable hour! Many photos were taken by Art Towslee, WA8RMC, of ATCO and ATNA, which are/were available for download at: <http://psycho.psy.ohio-state.edu/atco>

We started at 1900 which may be a bit early as many could not arrive until about 1930, a much better time for 2001.

Bill Brown, WB8ELK, Mr ATV Balloons, was the MC again this year, and he lead a well-deserved ovation for Art Towslee, WA8RMC and John Hey, W8STB, for their efforts with, respectively, obtaining the prizes, and making arrangements for the hall and foodstuffs for the intermission. Bill also kicked-off the introduction of all members event.

I (John, W3HMS) conducted the ATNA session and noted that ATNA progress was slower than desired, by many I suspect and certainly by me, in 1999/2000.

The reason: people are so very busy and hobby clubs are so very low on the personal priority lists as cited on pages 38-39 of ATVQ for Spring 2000 and also in the ATNA Newsletter members received in early April 2000.

But some very nice things did occur, so lets look at them:

1. John W3SST, our Senior VP, has led effort to work with frequency coordinators in East PA for betterment of ATVers.
2. Art WA8RMC, our VP for Membership, has put in place a fine data base of ATNA members and clubs which he shares with officers quarterly.
3. Harry N3KYR, our Treasurer, has worked up good data exchange procedures with Art to ensure data base is accurate for members joining.

4. John W3SST, our Senior VP, has served again this year as the Editor of the Newsletter and members received two newsletters...even though we wanted to do four.

5. Ron, K3ZKO, has kept the By Laws current and available to members. He also published the last Newsletter and has agreed to continue this role.

6. Ron, K3ZKO was the instigator and is now the NCS of the Friday night ATV Net on about 3932 at 2100 EDST.

7. John, W8STB, our Sergeant-at-Arms, has again taken the lead to arrange the logistics for this Friday night session and also the Saturday night dinner.

8. Once again Art, WA8RMC, our VP for Membership, has arranged for prize donations for tonight.

9. Thanks to efforts by John, W3SST, SR VP, we have filled the Area Rep positions for W2 and W6 with a new W5 Rep.

10. We have grown.....we now have 105 members/clubs.

11. We elected a new group of officers effective from 1 June 2000....but we still need a Vice President for Public Relations and Area Reps for W1, W8, W9, VE, XE.

12. For our Central PA group of ATVers, I sent complaint message to FCC with follow up on an unidentified but very strong signal causing interference to our ATV repeater input. We received no replies from the FCC, but the interference stopped!

For the ATNA future:

1. We need to share the work in ATNA...we can't afford attitudes of WE and THEY...we must have only WEs.
2. We have vacancies for VP of Public Relations....and Area Reps....we really need to fill these posts.
3. Every officer needs committee members!
4. We need articles for the Newsletter.
5. We will grow at a faster pace if each member will do something.....please see an officer and propose something.
6. We need more creative thinking.

I said that this was the last time I would speak as the ATNA President. There have been many moments in this 2 year period when I felt like saying...NUTS...as memorialized by General Mac Aullife at Bastogne in Dec 1944...dumping my files in the river...and conversing with Old Grandad! But there have been other moments of pride when it seemed that some results were being obtained AND we are a functioning group though less successful than I had hoped 2 years ago!

Our new president is John Shaffer W3SST, who is a well known ATVer of long standing and much enthusiasm. For ATNA to grow and do more as we want, he will need YOU to show more action and do more sharing of interest and work.

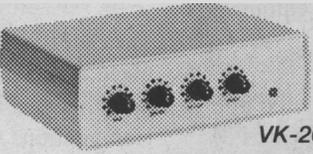
We then asked the group how they would support the following point: "Should ATNA petition the FCC for primary status in the 1240-1300 Mhz band for amateur service with all others less possibly Federal services as secondary?" Although "Yes" was the most popular vote, it was not the near 100% I had envisioned.

Next, I presented a strong plea for ATVers to get out in the countryside and participate in a fun contest with an objective of work-

ing as many ATVers as one can. This was based in considerable part on my pleasant experiences in the countryside as a QRPer and microwaver. I was most surprised to find very little interest...so little in fact that the idea died for ATVers; I will continue my own ATV fun with microwaves in the country!

During a discussion of ATV activities, I was intrigued by one idea as one chap said that his group had a weekly contest where the camera was pointed at a scene and the question is posed: "where am I"this sounded like fun.

This was followed by the technical presentations, (for which





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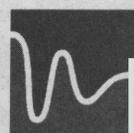


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hard copies were NOT available as ATVers don't do that!).

Chris, N8UDK and Jeff, N8QPJ addressed "Shuttlelevision via ATV Repeater" in the first presentation. They talked about the extraordinary interest generated, among ATVers and the general ham public, from putting the Dishnet NASA Channel video on their 430 Mhz ATV repeater, after making suitable arrangements with Dishnet. They do this during the periods of shuttle flights. The sound is on 2 meters so it can be readily available to the general ham public. For info, as was mentioned, the NASA Channel is also available on C band (big dish) satellite on transponder GE 2, I believe, and TR9. I was amazed at the level of interest they found among hams and the good will it generated for ATV. Chris and Jeff could not have been more enthusiastic.

The Atlanta Crossband ATV Repeater System was briefed by Ralph Fowler, N4NEQ. They have video input on 1.2 Ghz FM and 430 Mhz AM outputs. They also send NASA launch data audio and video out via this repeater. They call up weather pictures via the Internet.

Following the break with refreshments and lively discussions, we saw a video tape made about the ATV Network of Southern California for which the short title could be: Mountains Make It Happen!

"Mobile ATV Adventures" were covered by John Hey, W8STB, as he had in the recent past motored from Ohio to Illinois/Indiana making ATV QSOs from his mobile station. He offered tips to the assemblage on how to do this without killing yourself the most notable step being to avoid ATV'ing while in motion.

Next, Bill Brown, WB8ELK, showed an interesting video about "Catch a Falling Star" detailing the results of an ATV balloon focused on relaying video of meteor trails to the ground.

Prize drawings were nicely interspersed by Art throughout the evening.

The final event of the evening was a brief look at ATV operation on 10 Ghz by yours truly, John, W3HMS, which was based on my article in ATVQ for Fall 1999. One highlight we noted from the past April was a 19 mile reception of 24 Ghz ATV signals from Joe, WA3PTV using just 5 mw and an 18 inch offset dish.....which we have since moved out to 28.5 miles.

As to attendance, we had 39 signed in but Art estimated about 85 so some folks did not see the sign in log. The evening was targeted to close at 2300...we made it at about 2310 and most in attendance pitched in with clean-up...certainly shows how much can be done quickly when people join forces!....before all left, so very tired.

One event of special interest which occurred Friday afternoon at the ATNA Booth 107 was a meeting with Heinz Verhaus, DC6MR, the Chairman of the German ATV society, AGAF, and his most attractive translator! He presented me with a copy of

their excellent magazine "TV Amateur" and their AGAF CD ROM #1 "Classics" from 1983 to 1986. Heinz is also the Editor and Layout Manager for this excellent magazine. As I told him, in spite of the fact that I do not read German, I knew his magazine was of the highest quality from the schematics and the article content alone. As Heinz reads English, I have exchanged EMAILs with him and, indeed, he sent me his planned article for their post-Dayton edition on his visit with us and he quoted my comments in German and in English. We note that their magazine is called TV Amateur yet the word "amateur" is not English but derives from the French verb "aimer", to like or to love. Thus an amateur is not one who is sub-professional but one who really likes something, amateur radio for example.

The Saturday afternoon ATV Forum from 1300-1500 was organized, planned, and chaired by Bill Parker, W8DMR and was held this year at a local high school quite close to the Hamvention. Attenders could arrive by frequent shuttle buses or car as parking was suitable.

The presentations included my key points as presented at the Friday night session as already described in this article and the contest....for which there was equally little interest.

The ATCO repeater was presented by Art Towslee, WA8DMR. It is a most formidable repeater with outputs on 13, 23, and 70cm bands and inputs on more than one band.

The general informational needs of ATV'ers were addressed by Gene Harlan, the Editor of ATVQ. Gene addressed his own magazine and the British magazines for which he is a US Agent. They are "CQ-TV", the magazine of the BATC, British Amateur TV Club, and "VHF Communications" which is the English translation of a very high quality German publication. I was most surprised when Gene asked for a show of hands of those who have subscriptions to each magazine.....and mine was the only hand in the air!

Next, Bill Parker, W8DMR, gave an in depth presentation on getting on ATV using some very good slides to make his point. Bill really knows his stuff! The afternoon terminated with Bill Brown, WB8ELK, showing his video on the Leonids as he did Friday night.

The annual Saturday night ATV dinner as organized by John Hay, W8STB, was a more relaxed way to discuss ATV in which the smaller numbers permitted round table type discussion.

In summary, I enjoyed the ATV events again this year and hope we can do even better next year. As Activities Vice-President of ATNA for the next two years, I hope we can plan topics that people want to see addressed matched with those who could make the presentations.

For example, I would like to see topics addressed for which a handout of slides presented is available, preferably in a bound

ATNA Continued on page 42

Bright Ideas For Monitors Using An Ordinary Light Bulb As A Dummy Load

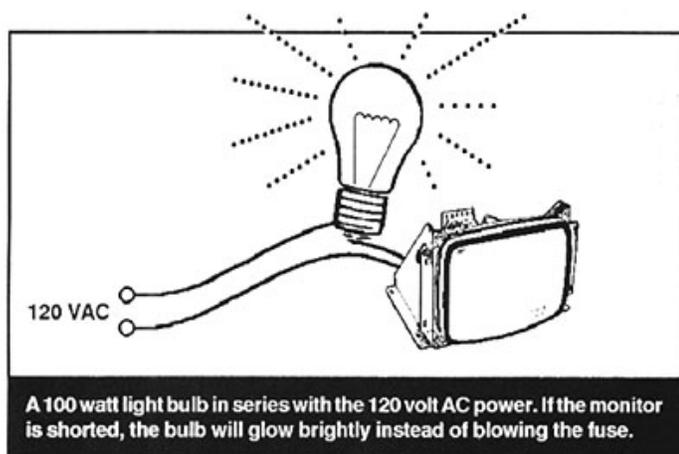
By Randy Fromm - Email: randy@randyfromm.com
<http://randyfromm.com>

Short circuits blowing fuses can be a vexing problem. This is especially true on those rare occasions when the monitor seems to fire up but blows the fuse some seconds or even minutes after power is applied. By the time you get around to making some observations about what the monitor is doing, the fuse blows again. Replacing the fuse over and over again can get expensive, especially with slo-blo type fuses.

One way around this problem is to perform the "smoke test. You simply bypass the fuse with a clip lead or jumper wire, energize the monitor, and replace the parts that smoke. I don't recommend the smoke test, as it usually puts excessive strain on the voltage regulator and other components. This often results in even more damage than that of the original failure.

Another troubleshooting technique is to use a circuit breaker in place of the fuse. Just use a pair of clip leads to connect the circuit breaker in place of the blown fuse. A 3-amp circuit breaker is available from Radio Shack that serves this purpose well. However, as with the smoke test, repeatedly energizing the monitor can cause further damage to other components in the monitor.

So how do you find the problem? In general, most short circuits that are severe enough to blow the fuse can easily be located with the power turned off and your digital multimeter set to measure resistance. However, some monitor problems will only show up when the power is applied. Problems such as bad voltage regulation, off-frequency horizontal oscillators, or other tuned circuits cannot be located with static testing. Dynamic testing with the power applied may be the only way to go here.



How can you test the monitor without overloading the circuits? Try using an ordinary incandescent light bulb in place of the blown fuse. The light bulb limits the amount of current passing through the monitor. A 100-watt bulb works great. I just use my work light and a couple of clip leads, but you can get fancy and make a dedicated unit if you want. When you connect the bulb in series with a perfectly good working monitor, you'll see that at first the lamp lights fairly brightly, then dims as the monitor begins to fire up. This is due to the automatic degaussing circuit in the monitor. Remember that the degaussing circuit operates for only a short time and only when the monitor is first powered up from a cold start. Subsequent cycling of the 120 volt AC power to the monitor will not energize the degaussing coil until the monitor (specifically, a component in series with the degaussing coil called a "Positive Temperature Coefficient Thermistor" or "Posistor," a component that increases in resistance when it gets warm) cools down. Once the degaussing circuit has shut itself down, the bulb will dim considerably and you'll hear the monitor's high voltage come up with its characteristic high-pitched squeal.

With the bulb in series, the monitor will take a bit longer to warm up. This is because the voltage drop across the bulb will cause a low B+ output from the monitor's power supply. Often the raster will exhibit a bit of "hula" as the input voltage to the regulator will be below the minimum required for proper voltage regulation. This allows the ripple that is normally present in the unregulated side of the power supply to be passed directly to the monitor circuits. This is normal.

If the bulb glows brightly, you have a problem. For the bulb to glow brightly, there must be something in the monitor that's drawing too much current. Usually, this can be traced to a shorted horizontal output transistor, a bad high-voltage unit (also known as a flyback transformer), or a degaussing coil that is shorted or has rubbed and shorted to the frame of the monitor.

Note: This troubleshooting technique will not be as valuable for troubleshooting the latest. Hantarex brand "Polo" monitors or the Kortek "free voltage" monitors. These monitors use a switching power supply that automatically shuts down when the monitor experiences a current overload condition such as a shorted horizontal output transistor. In this case, only primary power supply problems or degaussing circuit failures will light the lamp.

There's another way to use the incandescent light bulb when

troubleshooting monitors. Specifically, the bulb can be used to test the monitor's B+ power supply for proper operation. Some monitors use a power supply design that includes "Over-Current Protection" or OCP. In fact, all monitors that use a switching regulator power supply have an OCP circuit. The OCP circuit reduces the B+ power supply voltage (in many cases, cutting it off completely) when it detects a short on the B+ supply line.

A classic example of OCP in action is when some bad high voltage units were installed in the early runs of Hantarex's popular MTC 9000 monitor. Normally, a bad high-voltage unit also will take out the horizontal output transistor and blow the fuse when it fails. The voltage regulator is often damaged as well, a victim of the excess current drawn by the shorted transistor and high-voltage unit. But the OCP circuit in this monitor shuts down the power supply as soon as the high voltage unit fails, preventing further damage. In fact, the monitor doesn't even blow a fuse! After replacing the defective high-voltage unit, most monitors fire right up.

In a situation like this, anything that causes an over-current condition can trigger the OCP and shut down the power supply. Naturally, the symptom is: dead monitor. B+ power supply measures 0 volts. But what is the cause of the problem? Is the B+ power supply bad or has the OCP been triggered, shutting down the power supply? Isolating the B+ power supply from the rest of the monitor circuitry is not enough to verify proper power supply operation. In order to test a power supply properly, it must have a load. In fact, the voltage regulator in many monitors will not work properly or will not function at all without a proper load.

Here's how to test the monitor's B+ power supply by using an ordinary 40-watt light bulb as a "dummy load":

1. Disconnect the collector of the horizontal output transistor or remove the transistor entirely.
2. Use a clip lead (jumper) to connect one side of a 40-watt lamp to the circuit where the collector of the horizontal output transistor used to connect. You can usually find a place to connect the jumper. If not, solder a small piece of wire to the solder pad where the collector of the transistor normally goes and use that as a connection terminal for the clip lead. Do not connect to the collector of the transistor. The transistor is now out of the circuit and actually has nothing to do with this test.
3. Connect the other side of the lamp to the chassis of the monitor (ground).
4. Apply power to the monitor. The bulb should light at pretty close to normal brightness. If so, you know your problem is not in the power supply. A short circuit elsewhere in the monitor must be causing the power supply's OCP circuit to activate. At this point,

you can measure the B+ voltage just as you would if the monitor was working normally. You also can verify that the B+ voltage adjustment (if it exists) is working properly and adjust the voltage if necessary.

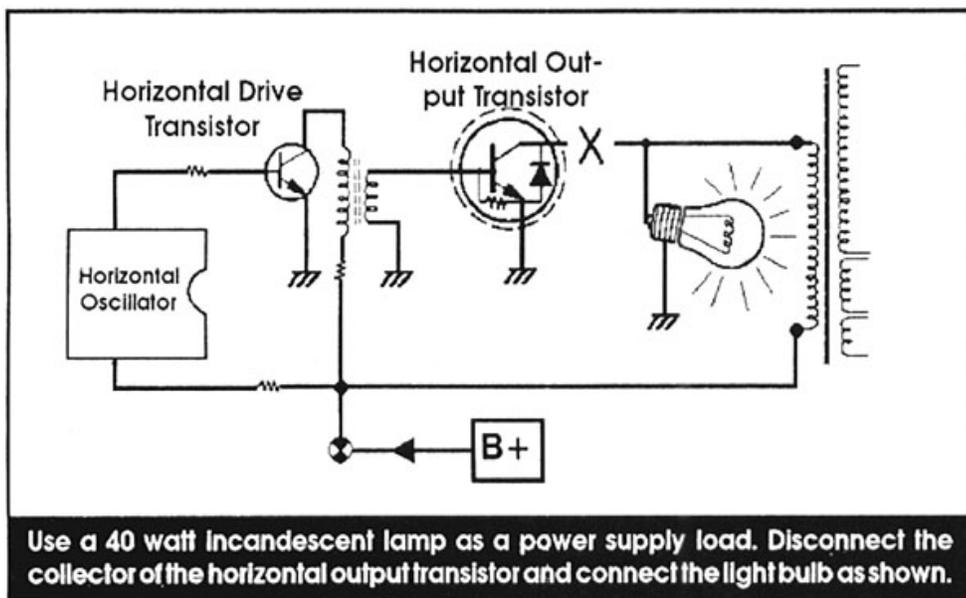
However, if the bulb doesn't come on, the B+ power supply is not working properly. You don't have to waste time looking for an overload on the B+ line some where. You know your problem lies in the power supply.

Experienced monitor technicians recall a similar situation with the X-ray protection circuit in a monitor. Unlike the OCP circuit that shuts down the B+, the X-ray protector kills the horizontal oscillator, thus shutting down the entire horizontal deflection circuit and the high-voltage as well. In this case, the B+ is too high (usually around +160 VDC). Again you have to ask the question, "Is my B+ too high (causing the X-ray protector to activate), or is my problem elsewhere?"

In this case, you don't have to disconnect or remove the transistor. Simply connect the 40-watt lamp between the collector of the horizontal output transistor and ground. The bulb will load the power supply, allowing you to measure the B+ power supply voltage. If the voltage is still too high, the voltage regulator is bad. If the output voltage of the regulator circuit now measures properly, the problem is probably a bad electrolytic capacitor on the B+ line (look for a capacitor with a value of 22-100 microfarads, 160 VDC) or the retrace tuning capacitor that's connected between the collector and emitter of the horizontal output transistor.

Warning: Never connect the lamp to the collector of the horizontal output transistor if the horizontal deflection circuit is working (you can hear the high pitched squeal or a neon lamp lights when held against the high voltage unit or you can measure the high-voltage at the second anode of the CRT with a high voltage probe).

ATVQ



SSTV Guidelines

The increasing popularity of SSTV has made that it's very often very busy on the bands ! And many SSTV operators seem to have a rather poor operating practice in this mode. I started a discussion about it on the internet SSTV reflector and the following hints are the result of many mails I received. I hope this rules/hints will be spread all over the globe and even translated in foreign languages. I have the feeling that always the wrong people read this stuff. So talk about it on the bands ! Shouldn't it a good idea if those who make SSTV software add these suggestions to their manuals ????

***VERY IMPORTANT** Before starting to TX a picture on a frequency, please ask in PHONE "Is this frequency in use for SSTV ??" Never transmit if you hear any other signals !

***SSTV is a lot more than only "TX picture".** Take your mike between sending pictures ! Give comments about the RX/TX pictures! Ask if the station is ready for your next picture! When you like to answer to a CQ picture, first ask the CQ'ing station in PHONE if he's ready for your picture! This will avoid a lot of doubles and QRM!!!!

***Never BREAK IN a SSTV QSO by sending a picture!** Again BREAK IN in PHONE!!! Transmitting "QRZ?? QRZ??" pictures is also not the right way to get contact if there is much QRM. Try a PHONE contact!

***28.680, 21.340 and 14.230 are calling frequencies.** Try to make a QSY on a clear spot when you like to make a QSO to a station. The chance your QSO is disturbed by a CQ picture is a lot smaller!

***20 meter is really overcrowded (and not only with SSTV!).** Try the higher bands. 10 meters for example has a sea of space (and unused !!). My favorite challenge is to send a CQ picture on a "dead" band. Very often surprised about the answering stations!! And mostly QRM free!

***Very important is to use the suggested SSTV frequencies with 3Kc spacing!!!** Here are the suggested SSTV frequencies :

-10 Meters : 28.673 28.677 28.680=calling frequency 28.683 28.686
28.690=K3ASI repeater 28.700=ON4VRB repeater

-15 Meters : 21.334 21.337 21.340=calling frequency 21.343 21.346 Avoid SSTV around 21.350 because there is a Phone DX Net running!

-20 Meters : 14.230=calling frequency 14.233 14.236 14.239 Avoid SSTV on 14.227 because there is a Phone DX Net running ! 80% of all SSTV traffic is done on those frequencies so please don't transmit SSTV pictures BETWEEN those suggested frequencies, it will QRM a lot !!! 3Kc spacing is really a must for not interfering on nearby stations!!

***Try to be original in your pictures !** Station related pictures (shack, antennas, QTH, area, family etc) make SSTV really attractive ! Please don't transmit pictures containing PORNO, politics, commercials etc. *Don't hesitate to help (and sometimes even blame) stations who are not having the right operating practice. And think about that everybody makes mistakes (I'm really not the super operator .. I surely make my mistakes!!!).

***If you have suggestions for additions or changes, please drop me a mail!**

Danny Van Tricht - ON4VT E-mail ON4VT@ping.be
Hulshoutveld 2
B-2235 Hulshout
Belgium

SSTV Website <http://www.ping.be/on4vt/>
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On-Screen ID Overlay



OSD-ID (PC) is an on-screen display board that overlays user defined text onto either an incoming video source or self generating background screen. Every position on the 28 column by 11 row screen (308 characters total) can contain a user selected character. All information is stored in non-volatile eeprom memory so even with loss of power OSD-ID (PC) retains all screen information. The on-screen text is created using a robust editor called IdMaker which runs under Microsoft Windows. IdMaker includes an integrated upload utility which sends the user created screen to the OSD-ID (PC) board through a supplied RS-232 serial cable. OSD-ID (PC) has two screen modes, a "mixed" (black and white text overlaid onto an incoming video source) mode and a "full page" (OSD generated color background) mode. OSD-ID (PC) supports screen background, character border, and character background color selection. Character border and pixel offset can be set for each of the eleven rows. In addition, programmable character zoom levels, horizontal and vertical pixels positioning, individual color and blink character attributes can also be set. And finally, the user can define OSD-ID (PC)'s text triggering method. 3.5" x 2.5 \$139 includes serial cable and 3 1/2" diskette.

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Ein zweistufiger 13 cm - Leistungsverstärker mit 2,5 Watt Ausgangsleistung or Two Stage 2400 MHz Power Amp

by Harald Fleckner, DC8UG
Marksburgstr. 58
D-56132 Becheln, Germany

1. Introduction

This power amplifier uses the well known GaAs-FETs CLY5 and CLY15 by Infineon (late Siemens). The layout is made for amateur usage, i.e. it is not minimalised and gives an opportunity to divide the stages. Gain is 15 dB over all, with 100-150 mW input it is loaded and gives 2-3 Watt output depending on drain-source voltage. With software help it was developed as a "no tune" circuit for simple construction. A kit is available at "Giga-Tech", D-68542 Heddesheim, Germany.

2. Construction

Pic 1 shows the circuit drawing, both stages are transformed to 50 Ohm at in- and outputs for single usage. Power supply comes through a 78S75 regulator in combination with a DC-DC converter ICL7660 for negative gate voltage.

Pic 2 and 3 show layout of both sides of the printed circuit, pic 4 the list of components.

On the print side are only hf capacitors, drain- and gate-resistors and the regulator at the side wall. All other components are placed on the ground side of the printed circuit, gate and drain contacts are put through with hollow rivets. The CLY15 must have additional cooling with a sheet of copper (40x10x1,5 mm)

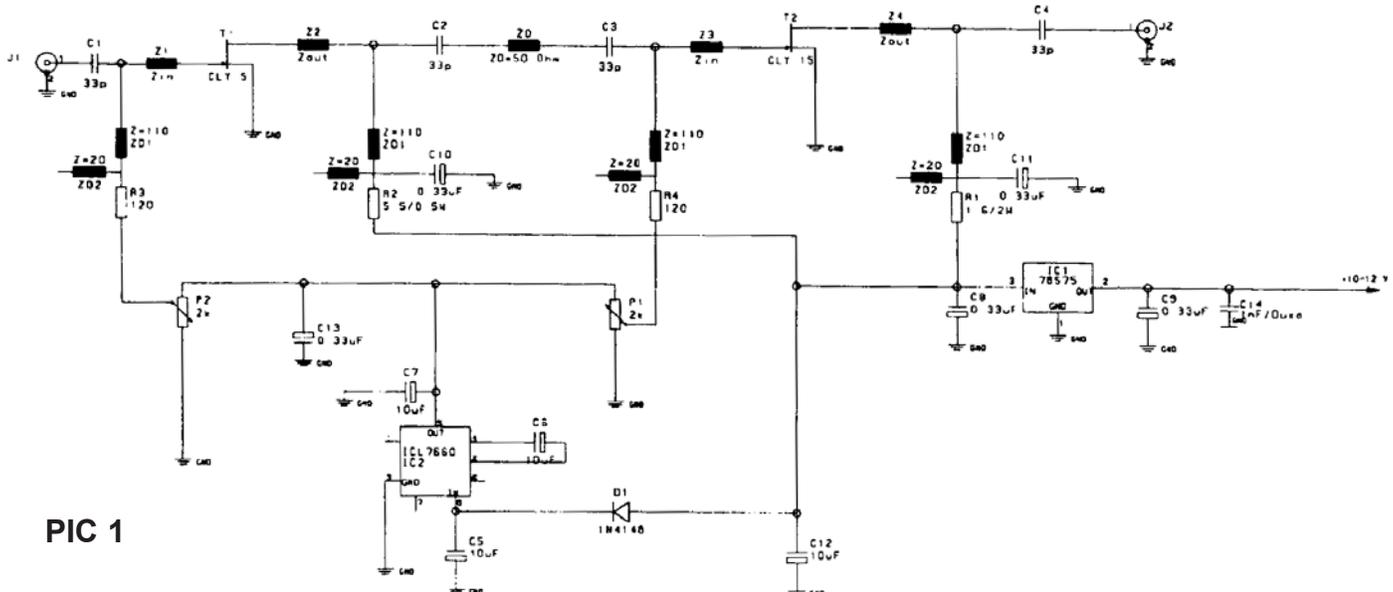
having stable heat contact to the transistor body. The copper sheet is soldered to the side wall of the metal case, additionally an IC heat sink (51x19x4,8 mm, shorted to 42 mm length) is glued onto it. To ensure the heat contact a bow of 2 mm CuAg wire presses the sheet onto the transistor (see pic 3).

The regulator's power loss is dissipated to a heat sink (97x50x25 mm) at the case's outer side (fixed by 4 M3-screws), the regulator is fixed by one of the screws. The case is a standard tinplate case 111x54x50 mm, because of heating the cap should get holes or slits if the amplifier is on continuous duty.

3. Putting into operation

At first the gate voltage at both stages should be set to -4 V with P1 and P2 before drain voltage is applied (made at best before putting in the transistors). The zero-signal current of T1 (CLY5) is set to 300 mA with P2 and at T2 (CLY15) to 1 A with P1, so the total current is about 1.3 - 1.4 A. It is advisable to supply only 10 - 12 V to the amplifier in order to minimize the power loss of the regulator. Output power is increased to 3 W if the drain-source voltage of T2 is raised to 6 - 7 V (R1 only 1 Ohm), but then good cooling is important.

4. Measurements



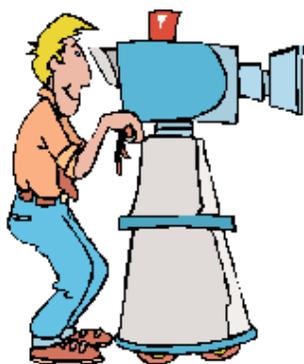
PIC 1

Picture 5 shows the gain characteristic curve of the two stage amp with 5 V drain-source voltage at 2350 MHz. It is linear until 1,5 W output and makes compression of 1 - 1,5 dB from 2 W on. Picture 6 shows the measured gain characteristic over frequency.

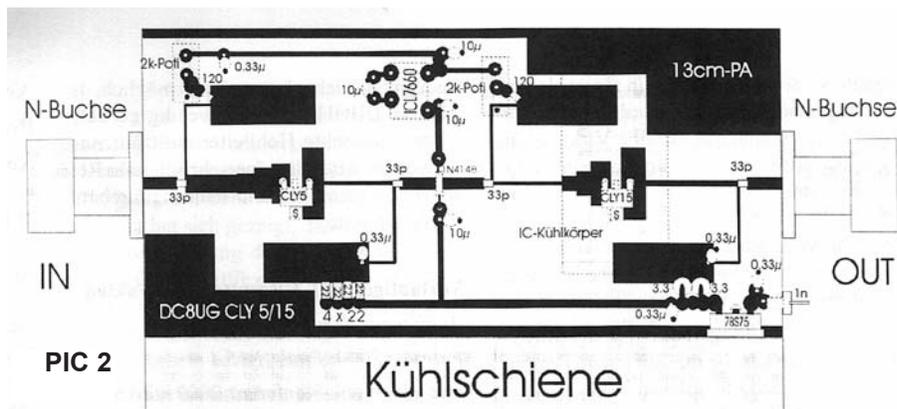
5. Dealer reference

Giga-Tech, Friedrichstr. 8a, D-68542 Heddesheim
Homepage: www.giga-tech.de

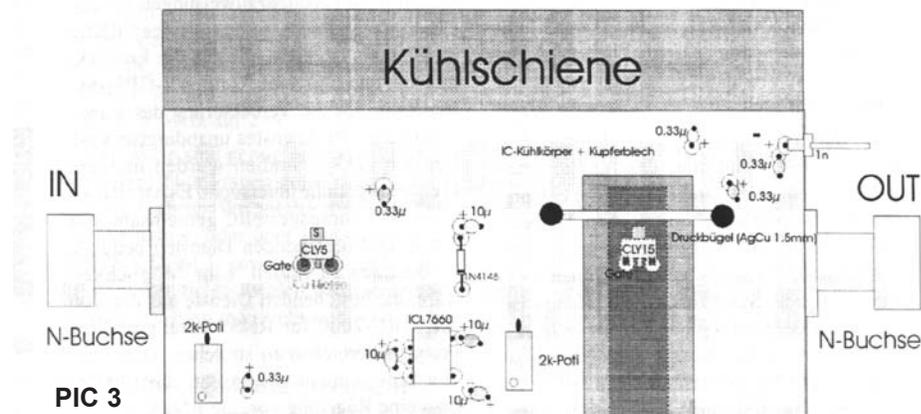
(translation from TV-AMATEUR 117: DL4KCK)



PIC 4

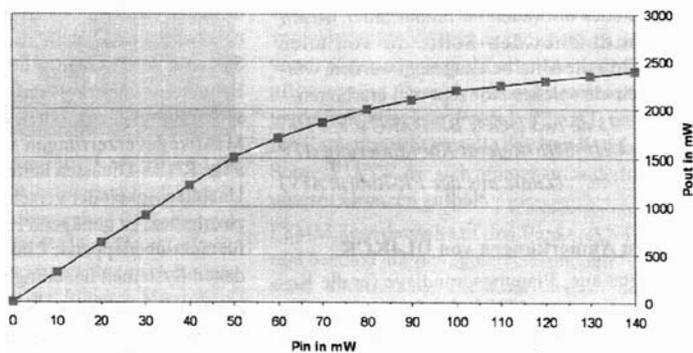


PIC 2



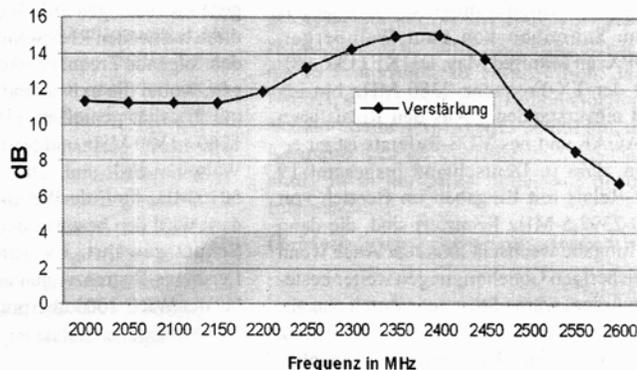
PIC 3

Bild 5 : Zweistufiger 13cm-Verstärker mit CLY 5 und CLY 15 bei Uds= 5V



PIC 5

Bild 6 : Zweistufiger 13cm Verstärker mit CLY 5 und CLY 15



PIC 6

Bild 4 : Stückliste 13cm PA mit CLY 5 und CLY 15

St.	Typ	Bauform	Bauteil
1	CLY 5	SMD, GaAs-FET	T1
1	CLY 15	SMD, GaAs-FET	T2
1	78S75	T0 220, Spannungsregler	IC1
1	ICL 7660	DIL 8, Spannungswandler	IC2
1	1N4148	Si-Diode, 3,9mm	D1
2	2K-Spindeltrimmer	Spectrol, 64W	P1,P2
2	3,3 Ohm	1 Watt, Metallfilm 0414	R1
4	22 Ohm	Chip-R 1206	R2
2	120 Ohm	Chip-R 1206	R3,R4
4	10µF/16V	Tantalelko	C5-7,C12
5	0,33µF/35V	Tantalelko	C8-11,C13
4	33pF	Keramik-Chip, 1206	C1-4
1	1nF	Durchführungskondensator	C14
2	N-Flanschbuchse	kleiner Flansch	J1,J2
1	Kühlkörper	51 x 19 x 4,8 mm	IC-Kühlkörper 8,5°C/W
1	Kühlkörper	97 x 50 x 25 mm	Kühlschiene 1,6 °C/W
1	Weißblechgehäuse	55 x 110 x 50 mm	
4	Hohlnieten	Cu, l = 1,5 mm, d = 1,2mm	
1	Platine	RO 4003, 0,81mm	
1	Kupferblech	40 x 10 x 1,5 mm	

ATV REPEATER INFO

The following form is for all the repeater owners to fill out so we can keep up to date information available for all ATV'ers. The information is available on the web at the address listed below.

I need someone, preferably the repeater owner, to keep us informed on a regular basis so we can have the ATV information available, especially for the new people that Shari & I get inquiries from saying what is in my area. We really want to help the new ATV'ers as much as we can.

Please advise us of any corrections. I have all of the information in Microsoft Access Database, so it will be easy to keep current. The reason we want the ZIP code of the repeater is so we can plot YOUR repeater on a USA map. I know that some repeaters (on mountains for instance) do not have a zip code, so just give us one as close as you can.

You may download the complete file on the Internet at:

<http://www.stevens.com/atvq>

The following is the complete form with all the information that I would like to have. Any suggestions for additions will be appreciated.

Repeater Callsign _____ Sponsor Callsign _____
 Sponsor (Club or Individual) _____
 Repeater City _____ State _____ Zip _____ Country _____ Postal Code _____
 Tower/Building Name _____ Coordinated? _____ Linked? _____
 Input 1 Freq _____ AM/FM _____ Upper/Lower VSB _____ Polarity H/V _____ Access _____
 Input 2 Freq _____ AM/FM _____ Upper/Lower VSB _____ Polarity H/V _____ Access _____
 Input 3 Freq _____ AM/FM _____ Upper/Lower VSB _____ Polarity H/V _____ Access _____
 Input 4 Freq _____ AM/FM _____ Upper/Lower VSB _____ Polarity H/V _____ Access _____
 Output 1 Freq _____ AM/FM _____ Upper/Lower VSB _____ Polarity H/V _____ ERP _____ Omni? _____
 Output 2 Freq _____ AM/FM _____ Upper/Lower VSB _____ Polarity H/V _____ ERP _____ Omni? _____
 Output 3 Freq _____ AM/FM _____ Upper/Lower VSB _____ Polarity H/V _____ ERP _____ Omni? _____
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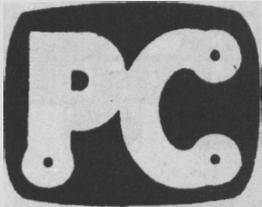


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ELECTRONICS

Channel 3 Receiver for ATV Applications

The channel 3 ATV receiver enables getting composite video and line audio output when connected to an ATV downconverter in order to drive a video monitor, camcorder or VCR that only has these inputs. This app note describes how to get the added features of powering with an external 13.8 Vdc for portable or mobile use, S-meter and audio squelch. Using this receiver instead of a TV set eliminates the danger of shock or possible damage if a S-meter or squelch is an attempted addition to a hot chassis TV set.

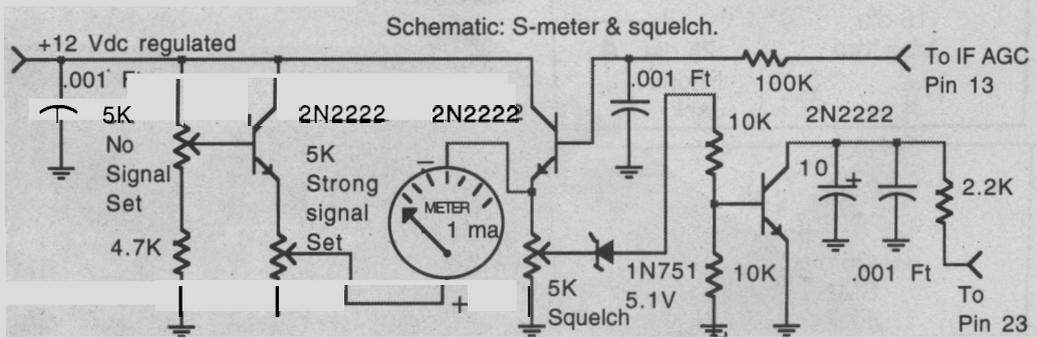
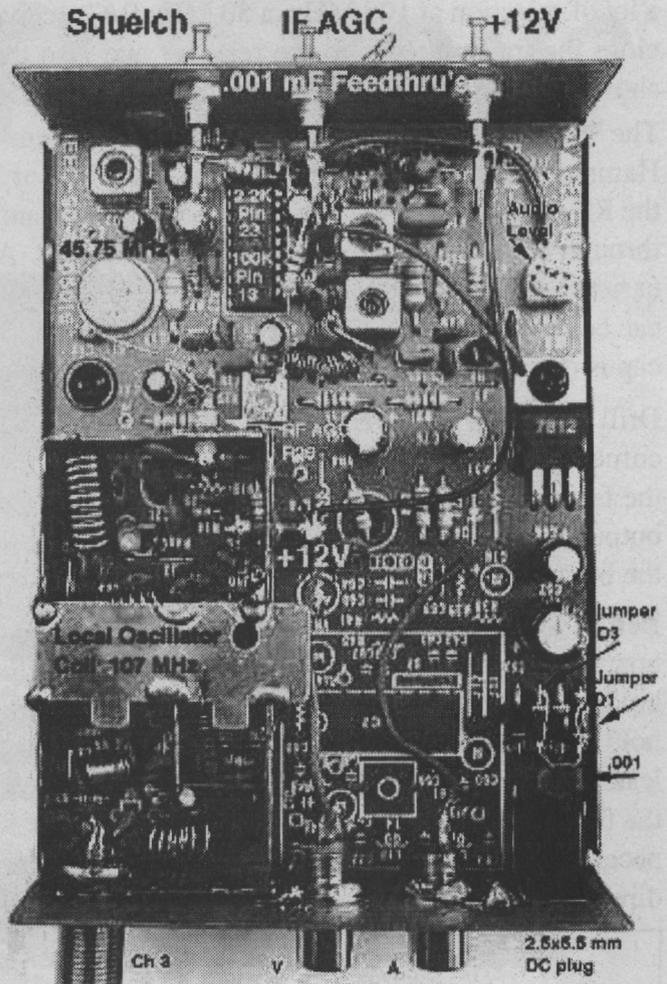
External 13.8 Vdc: Your channel 3 ATV receiver can be easily modified to operate from a 13.8Vdc power supply rather than from the 16 Vac wall plug power supply that came with it for mobile or portable applications. Remove the cover and find the 4 rectifier diodes near the power connector. Solder a jumper across D1 using one lead of a .001 disc cap. Then jumper D3 with the other lead. This will directly connect the center pin of the 2.5 x 5.5 mm connector to the input of the 7812 12 Vdc regulator IC. Use a 1/2 A fuse in series with your 13.8 Vdc power cord to prevent blowing up the receiver if the leads are connected up backwards. Verify your changes with an Ohm meter before first applying power.

S-Meter: The OSD-SSM video Signal Strength meter board can be connected to this receivers IF AGC pin 13 on the Sanyo LA 7555 IC through a 100K resistor and feed through capacitor. The IFAGC voltage on pin 13 varies from about 11.5 Vdc no signal (depending on downconverter gain) to 7.5 Vdc P5+ signal. External load cannot exceed 300K total on this pin. The leads need to be well bypassed to prevent strong TV RF from getting in. If not interested in the less than P5 signal strengths, you can connect to the end of R26 and get the RFAGC voltage for indicating the P5 and stronger signals.

If you want to use an actual meter, use the schematic below and Radio Shack parts. A 1 ma meter is shown, but any meter of less current can be used as long as a higher value strong signal set pot is used by the same inverse ratio. ie, 100uA = 50K. If you dont want squelch also, use a 4.7K resistor in place of the 5K squelch pot.

Squelch: The IFAGC can also be used for audio squelch. The IFAGC voltage is negative going from +11.5 volts to +7.5 V. By sensing this level change a transistor connected to pin 23 can be turned off and open the audio. If you dont also want S-meter, eliminate all the parts to the left of the meter. The line audio output can be loaded as low as 500 ohms and VR2 set for as high as 3 Vp-p.

AFC: There is a dual AFC range of initially +/- 2 MHz that switches down to +/- .8 Vdc. You can monitor the AFC voltage atop resistor R28. When locked, pin 22 has an open collector that goes low which could be connected to a LED thru a resistor to indicate lock. However, if you have a strong channel 2 or 4 in the area, the AFC might try to pull off to its limit when no signal is being received, and not be on frequency when a station comes back on. This is the reason we used feedthru caps for the external S-meter and Squelch circuit. You can either try to better shield the case by scraping the paint under and around the screw heads, etc., or defeat the AFC by grounding pin 14. Grounding pin 14 puts 6.5 Vdc on the AFC line to the local oscillator varicap. You may then have to fine tweak the LO to 107.0MHz by carefully moving the oscillator coil turns closer or farther away from each other with a plastic tuning tool. The coil is in the smallest shielded can section.



Verify with an ohmeter no adjacent IC pin shorts before applying power.

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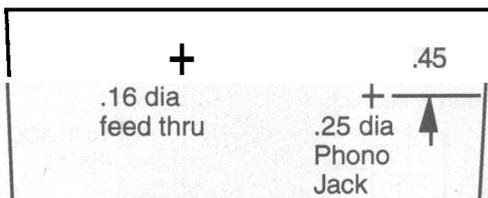
Packaging the ATV Transmitter Board for R/C

One might be tempted to not package the TXA5 transmitter for placement in a R/C vehicle in order to save weight, but it is necessary to minimize radiation from the crystal oscillator between 105 and 110 MHz and other stages through to the final output from getting into the close by R/C receiver. A 72 or 75 MHz R/C receiver does not have a lot of rejection at 105 MHz, a 50 MHz R/C receiver will do best but still might not be enough depending on how close the transmitter is to the receiver and also the respective antenna separation. The die cast aluminum box shown here only takes the weight from 2 oz. to 6.5 oz but provides great shielding.

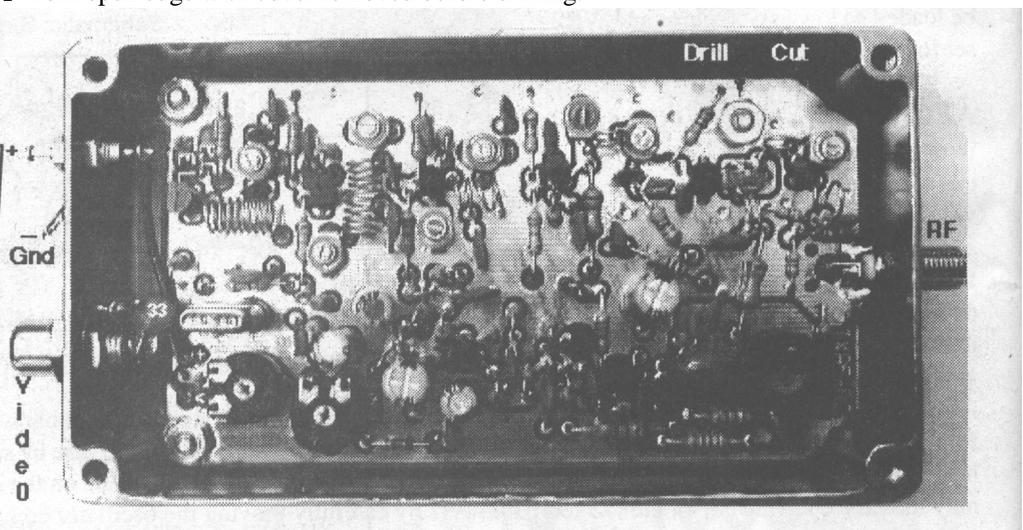
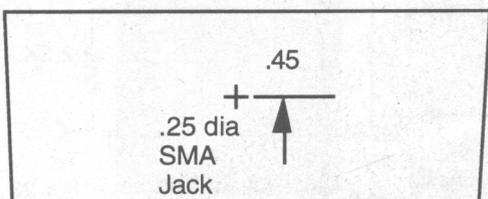
The Eagle 4591 4.5x2.5x1.2" die cast aluminum box is slightly larger than the similar size in LMB, Bud or Hammond and will accommodate the TXA5-70 or TXA5-RC transmitter boards by just cutting the corners off on the RF output end. Two mounting holes are left and only one more is needed which is drilled out at a ground feed through hole next to the MRF555 final amplifier. A gold plated SMA jack is used for the RF output as the shell is easier to solder between it and the board ground plane. RG58 or RG174 coax cable with a SMA plug on the end can be made or purchased from Nema Electronics (305 893-3924) to connect to the antenna. A .001 mF feedthrough cap is used for the DC input and a RCA jack with a 33 pF disc cap for RF bypassing on the camera video input.

Drill templates are given for the connector ends, but the best way to drill for the board mounting is to first cut the corners off the RF output end of the board about 1/4". Then carefully drill a 1/8" hole through the ground plane at the feed through hole next to the MRF555 collector on the TXA5-RC board or opposite the 5 pF cap near the RF output pot on the TXA5-70d board. Then place in the box with the boards output end not quite touching the end of the box, and mark or center punch through the board holes for best alignment.

Before mounting the board, solder in a 1" video lead, 1" ground lead and 1.5" DC power lead to the respective board solder pads. Finger tighten the 4-40x1/2 screws, lock washer and double nuts. Mount the board, and while holding the board down in place with your hand, tighten the screw heads. Then put the lock washer and nuts to hold the board. Mount the RCA jack and bend the ground solder tab so that the 33 pF disc cap has practically no leads when attached. Connect and solder the video and ground leads to the RCA Jack, then the DC power lead to the feed thru cap. Mount the SMA jack and then solder fillet the jacks body to the boards ground plane. This is necessary to prevent a VSWR current flowing all through the box. Run a #22 buss wire from the RF out solder pad directly to the SMA center pin by wrapping around the solder pin right up next to the insulation.



Cut out drill template and center punch indicated hole locations. Check .45" dimension from open edge with cover removed before drilling.



Parts List;
TXA5-RC ATV TX, P. C. Electronics
Eagle 4591 box, P. C. Electronics
.001 Feedthru cap, P. C. Electronics
RCA Jack, Mouser 161-1052
SMA Jack, Mouser 530-142-0701-401
Mouser call 800-346-6873

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EXPERIENCE

At the dawn of the microelectronics revolution in 1978, Steve Ciarcia led the way with Ciarcia's Circuit Cellar, a column that was a favorite in BYTE for over ten years. In 1988, Steve saw the need to step up to the challenges posed by ever more complex embedded technologies, and Circuit Cellar magazine was born. Today, each issue of Circuit Cellar brings you over 50 years of combined design experience-and that's just from our columnists! Add in the practical engineering knowledge and experience of our feature article authors and you've got a lifetime of engineering experience behind every issue.

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“proceedings”. I know I would be willing to pay a reasonable sum to get one. The Microwavers produced a 600 page book from their October 1999 meeting in Texas. I just attended an AMRAD Technical Session on 17 June 2000 from which attendees received a nice spirally bound note book. This was also the case with Seigy 1998 in France. If these groups can do it why can't we.....are they better people than we are?....have they more hours available each week than we have.....are they smarter than we are.....are they more motivated than we are? I have not the answers but do wish I did have them.

What do you think? Substantive comments invited to John Jaminet, W3HMS, at W3HMS@aol.com or by mail per QRZ; my call letters are valid since 1973.73, John, W3HMS

ATVQ

Article by Randy Fromm

I hope you enjoy the article written by Randy Fromm. I have met him through my REAL job, which is in the coin operated game industry. Randy puts on seminars at our major shows, and is entertaining (slammed himself into a wall once to demonstrate a point) and knows how to get technical information across to the audience. He has good information on his web site, and has CD ROM's available with complete sets of technical information. Let me know if you like his articles, as I think he will let us publish a few more if you do.

Gene Harlan - WB9MMM

ATVQ

ATV RFI Filters

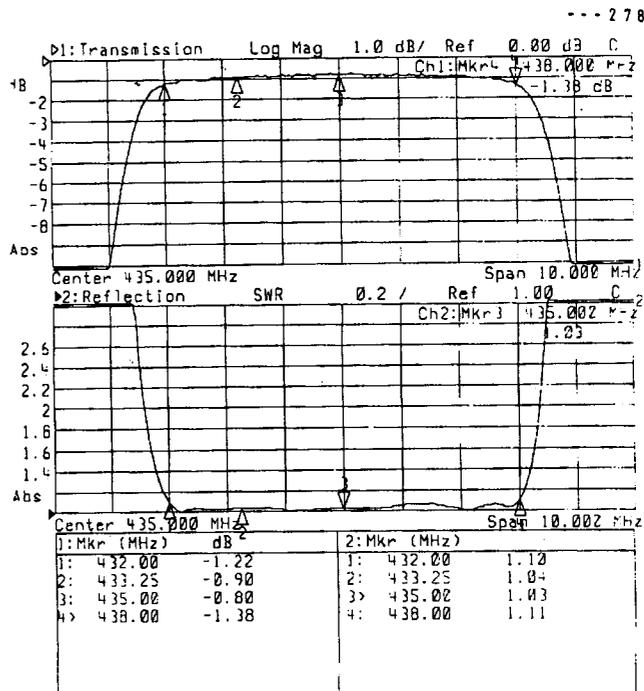
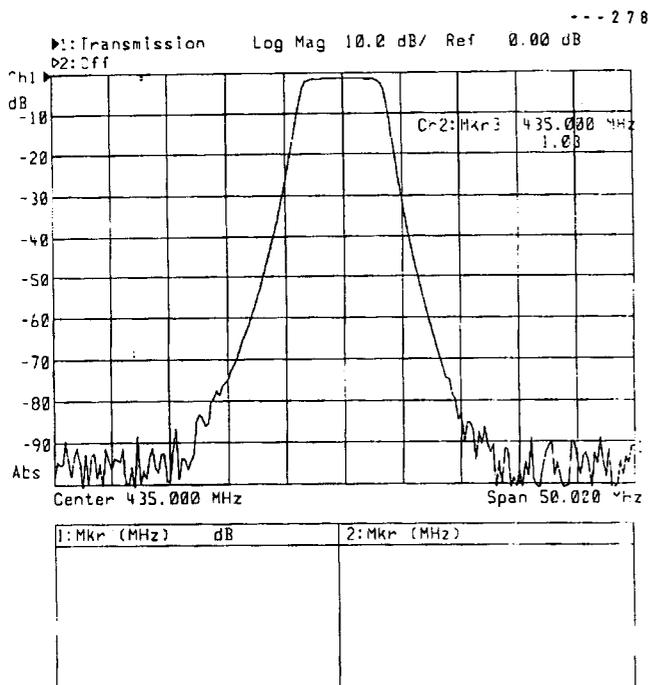
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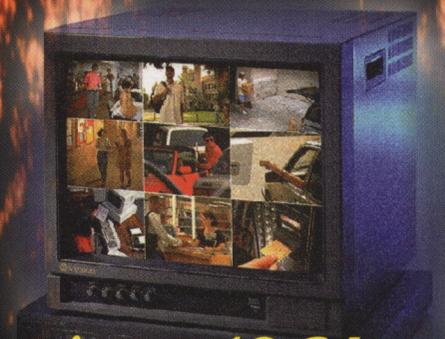


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