

Spring 2002

Volume 15 - No 2

ISSN 1042-198X  
USPS 003-353

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# Amateur Television Quarterly

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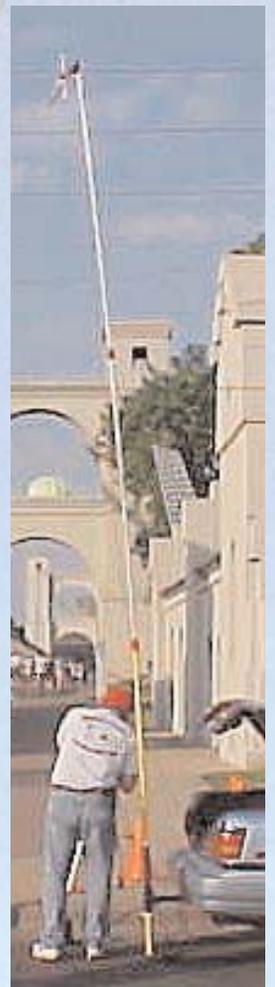
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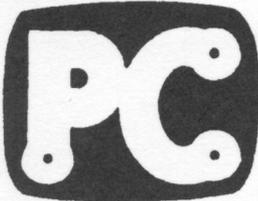
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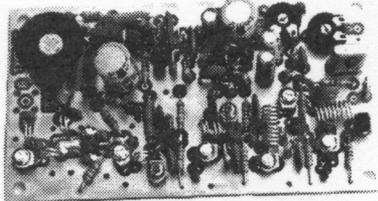
App notes available  
on our web page 3



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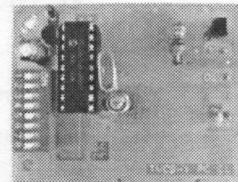
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# AMATEUR TELEVISION QUARTERLY

**Published by**  
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**Publisher/Editor**  
Gene Harlan - WB9MMM

**Editorial Office**  
5931 Alma Dr.  
Rockford, IL 61108  
(815) 398-2683 - voice  
(815) 398-2688 - fax

Internet:  
<http://www.hampubs.com>  
email:  
[ATVQ@hampubs.com](mailto:ATVQ@hampubs.com)

Amateur Television Quarterly (ISSN 1042-198X) is published quarterly, in January, April, July, and October for \$20.00 per year by Harlan Technologies, 5931 Alma Dr., Rockford, Illinois 61108-2409. Periodicals Postage Paid at Rockford, IL and additional mailing offices. POSTMASTER: Send address changes to Amateur Television Quarterly, 5931 Alma Dr., Rockford, IL 61108.

Amateur Television Quarterly is available by subscription for \$20.00/yr in the USA; \$22.00/yr in Canada; \$29.00/yr elsewhere. Single issues \$5.50/USA; \$6.00/Canada; \$8.00 elsewhere. Send all address changes to Amateur Television Quarterly, 5931 Alma Dr., Rockford, IL 61108

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## From WB9MMM

You may notice that Shari's (N9SH) name is not listed at all starting with this issue. Before the rumors start, it is only due to the fact that she ran for Section Manager for the ARRL Illinois section. She had this position years ago, and decided to run again to see what would happen.

When the current SM heard that Shari was running, he decided to remove his name from the running, therefore Shari will win by default. And here she was looking forward to all the political speeches (just kidding)!

With Shari in the position, we need to remove her from being attached to a commercial ham radio venture. It is not like she was paid for being the editor of OSR or being involved with ATVQ, but we want to keep it from being a problem.

I would like to wish Shari the best of luck when she takes over her new position. Sounds like we will be going to more hamfests in the future!

There are lots of good articles in this issue such as the Rhombic antenna, the trailer hitch mast mount, another Sparks from the Bench column, ITVLP - which I think we will hear much more about in the future, IVCA information on SSTV, more on Digital TV from Germany and here in the US, more good articles from Tom O'Hara including some on 900 MHz stuff which I have not heard much about since I took over, and more.

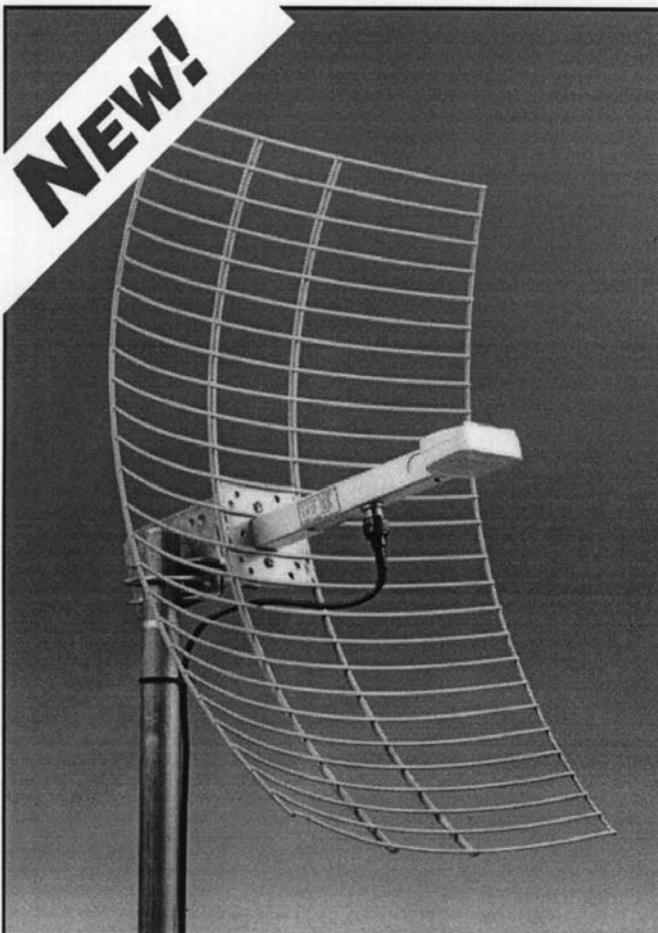
As of June 1, 2002 we will no longer have an 800 number to call. The reason is that very few of our wonderful subscribers use the 800 number, and the phone company is tacking on a charge due to low usage! I used to think that having the number was important, but with less than 10 calls per month, and several of those are WRONG NUMBERS. We get more calls for Harland Checks than anybody. So, I guess what I am saying is THANKS for using the postal system and or calling the regular phone number.

The Dayton Hamvention is coming up quickly, and we hope to see many of you there. Harlan Technologies will not have a booth ourselves this year, but instead I plan to have time for seminars and be able to see the show myself. However, you will still be able to subscribe to ATVQ or OSCAR Satellite Report. I have worked out an arrangement with ATCO which will help them pay for the booths that they will have. I will also plan to spend time at the ATNA booth so we should be able to meet at some point.

It seems to be that many clubs are getting interested in ATV, as I have had many calls asking if I could speak at a hamfest or a meeting. On page 32 I mention a couple that I will be attending, and it looks like there will be at least two more that I will be able to announce later on. I love to do it, and if the drive is not too bad, and I can get time off from the real job, I am willing. So if your club would like a presentation, let me know.

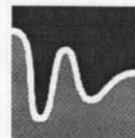
Gene - WB9MMM

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# FCC Amateur Radio Service Website Redesigned

New design provides faster access to licensing and filing information

As part of the continuing effort to enhance web-based services for the public, the FCC's Wireless Telecommunications Bureau announces the creation of a new layout for the Amateur Radio Service website at <http://wireless.fcc.gov/services/amateur>. The retooled structure breaks out topics more clearly, emphasizes the more frequently sought information, and uses distinct sectioning and summaries to help users scan the site more quickly. This new site launched on Wednesday, February 20, 2002.

ATVQ

## FCC Proposes To Raise Vanity Fee

The FCC has proposed raising the regulatory fee it charges vanity call sign applicants from \$12 to \$14.50 for the 10-year license term. The FCC included the proposed new fee in a Notice of Proposed Rulemaking (MD Docket No. 02-64) released March 27 to set Fiscal Year 2002 fees.

The effective date will be announced in the Report and Order that terminates the proceeding. If it's approved, the new fee likely will become effective sometime in September.

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, 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!

ATVQ

## CONTRIBUTORS GUIDE

Preferred method of receiving articles is from **Microsoft Word**, however **Wordperfect** is OK too. Next preference would be **ASCII 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 FASTSAVE OFF 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](mailto:atvq@hampubs.com)  
Also note our web page address: <http://www.hampubs.com>  
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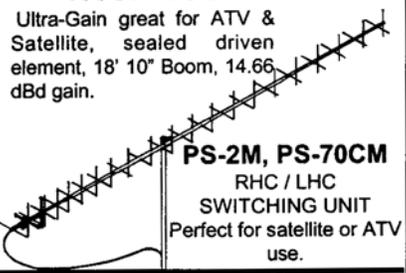


**YOUR ATV AND SATELLITE ANTENNA SOURCE...**

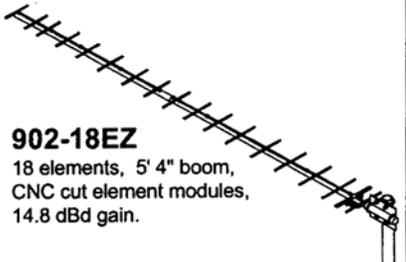


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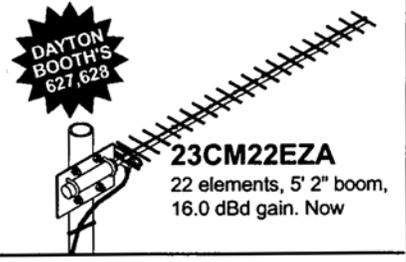
**436CP42UG**  
Ultra-Gain great for ATV & Satellite, sealed driven element, 18' 10" Boom, 14.66 dBd gain.



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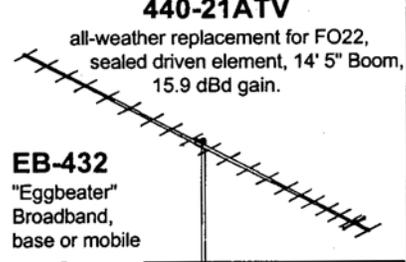


**902-18EZ**  
18 elements, 5' 4" boom, CNC cut element modules, 14.8 dBd gain.

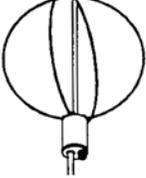


**DAYTON BOOTH'S 627.623**

**23CM22EZA**  
22 elements, 5' 2" boom, 16.0 dBd gain. Now



**440-21ATV**  
all-weather replacement for FO22, sealed driven element, 14' 5" Boom, 15.9 dBd gain.

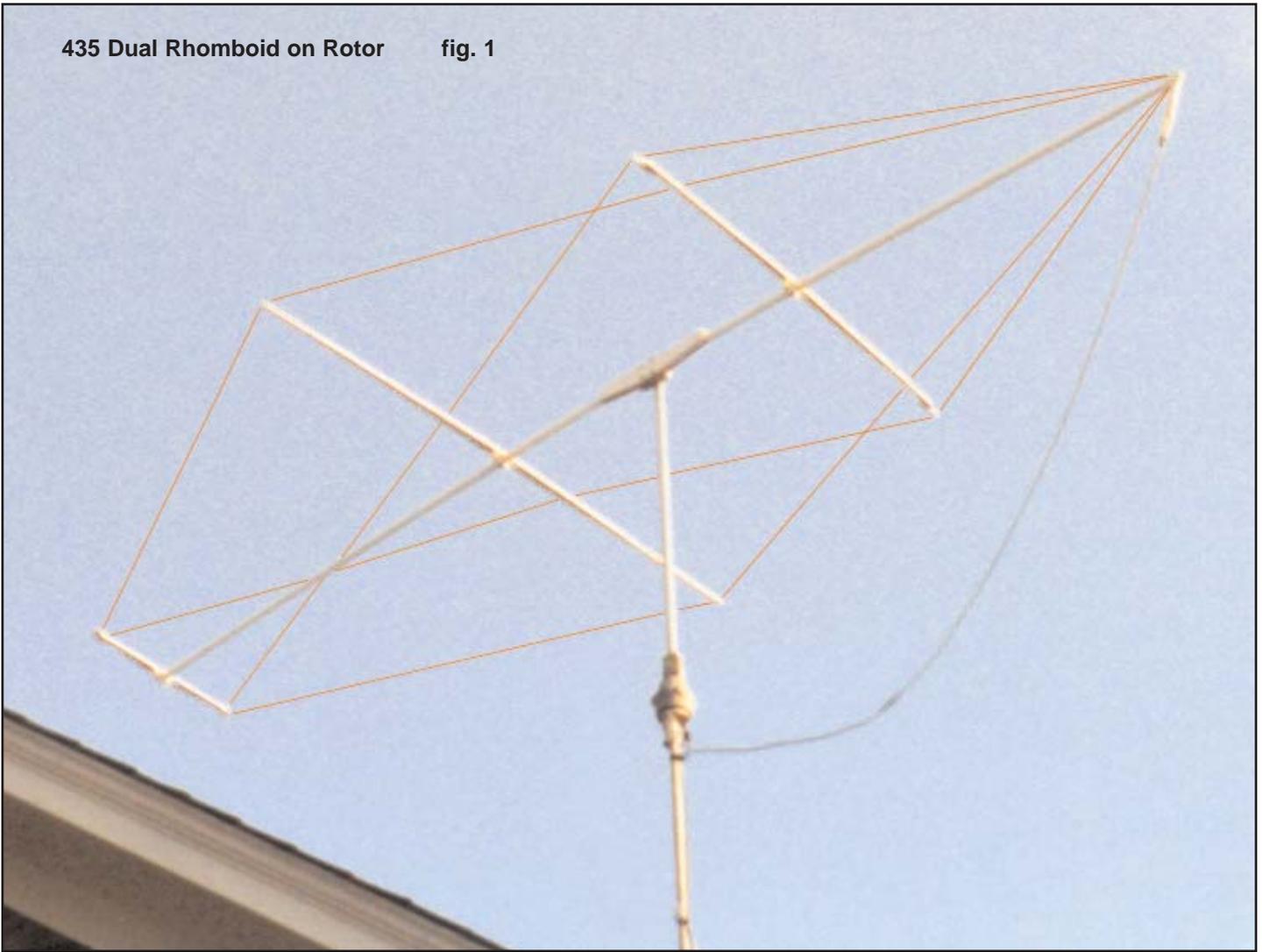


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## ANTENNA MAGIC WITH WIRES

by Dayton Johnson, W0OZI - Email: [daytonj@pclink.com](mailto:daytonj@pclink.com)  
835 Fox Path CT  
Medina MN 55340

Early historical work with wire antennas by Radio Pioneers such as Harper of Bell labs lead to the design of the classic Rhombic HF antenna for the really long haul communications. Marconi Radio, RCA Communications, the Military in WWII and others made extensive use of Rhombics. In the recent Desert Storm conflict with Sadam, our locals in Minnesota provided phone patch service for the GI's between Iraq and states using Rhombics.

In the March 1960 RCA Review LaPort and Veiduis article "Improved Antennas of the Rhombic Class" suggests their use for VHF and UHF.

As an ATV'er fighting a cluttered 20 mile path to the Twin Cities KB0GL 421/439 repeater, I found an article 'Dual

Rhombic for VHF-UHF' in Aug 1977 73 Magazine by Bill Parker, W8DMR, that appeared to be a solution with his Dual Rhomboid antenna. I tried it and it worked! I've had a 435 Dual Rhomboid up for 7 years on ATV with excellent results. In fact it worked so well I've rescaled the concept for 900 and 1200 operation and have been winning the 1296 class in several Antenna Measuring Contests results in fig. 2. The 435 version being about 20 feet long would also prove to be a winner but its too hard to get to the antenna party.

The antenna frame is made of clear fir (use trim lumber no knots). Using a good waterproof glue assemble the cross frames to the main boom. Paint same with a good exterior paint (I like white as it blends well against the sky) for waterproofing.

**Central State VHF Society**  
**Antenna Gain Measurements**  
 Bloomington, Minnesota  
 July 26, 1996

Band	Call	Description	HB/Comm*	Gain dBi
1296 MHz				
	W0OZI	Dual rhomboid	HB	17.3
	KB0PYO	M2 35 el	Comm	16.6
	W3XO	Short backfire	HB	14.6
	WA2VOI	Narda 15RH	Comm	13.8
	W6OAL	11 turn helix	HB	12.4
	WA5VJB	9 el Moonrabbit	HB	21.1
	DJ9HO	Dual quad/reflector	Comm	11.3
	DJ9HO	Dual feed loop/reflector	Comm	10.7
	N8KWX	Dual coffee can	HB	9.7
	W0UC	Create LP	Comm	9.1
	K9FYV	6 el End-fire	HB	8.0
	W6OAL	Yagi 6 el w/VJB feed	HB	7.5
	N8EHA	Conical Spiral	Comm	4.7
	K9FYV	Conical Spiral	Comm	2.5
	K9FYV	Log periodic	Comm	0.5

**Aurora**  
**Antenna Gain Measurements**  
 Brooklyn Park, Minnesota  
 April 19, 1997

Band	Call	Description	HB/Comm*	Gain dBi
1296 MHz				
	W0OZI	Quad Rhomboid	HB	22.6
	W0OZI	Dual Rhomboid	HB	21.4
	N0ATV	23 el Tonna	Comm	20.0
	WA2VOI	Horn	Comm	12.0
	KA0VYB	15 el Quagi	HB	12.0
	WA2VOI	10 el VJB design Yagi	HB	11.9
	K0GCJ	Dual 10 T Helix	HB	8.0
	W0UC	Log Periodic Create	Comm	7.1

\*HB = home brew    Comm = commercial

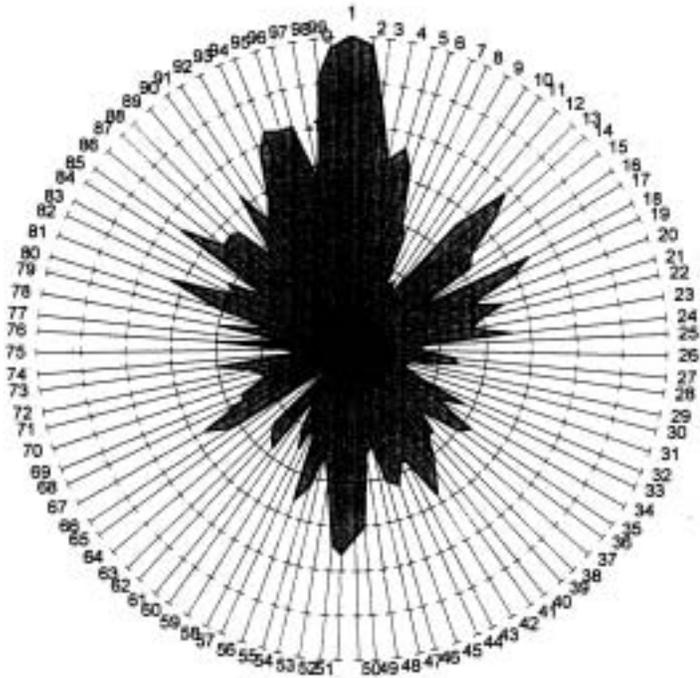
**Gain Measurements    Fig. 2**

The Rhombic wires (use #12 enameled) are assembled on the upper and lower sides of the frame. On the plexiglass insulator (use stainless bolts and nuts) the 4-1 balun also parallels the wires. Figures 5 & 6 The balun is a variation of the of the classic 1/2 wave line section. By slotting the brass replacement of braid 1/4 wave makes the coax do double duty as the missing 1/2 wave.

The final tune up is achieved by adjustment of the shorting sleeve to the point of minimum VSWR or return loss.

Figure 6 Shows a down side wooden extension of the main boom that latter proved desirable for fastening the downlead providing strain relief for the balun.

The terminating loads are assembled on four plexiglass insulators. Each rhombic wire pair requires a 600 ohm load and for transmitting they dissipate one quarter of the transmit power. Use non-inductive resistors (I use the old Ohmite style 2 wattors and make a parallel network).

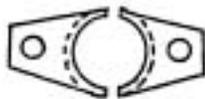


Radiation Pattern Fig. 3



Balun Strain Relief Fig.6

**UHF ANTENNA BALUN**



Slit both walls of brass tube for lenth slightly longer than 1/4 wavelength plus about 1/2 inch for the foldover mounting tabs.

Bend over and solder the center conductor to one mounting tab



$$1/4 \text{ wavelength} = \frac{234 \times 12''}{\text{Freq MHz}}$$

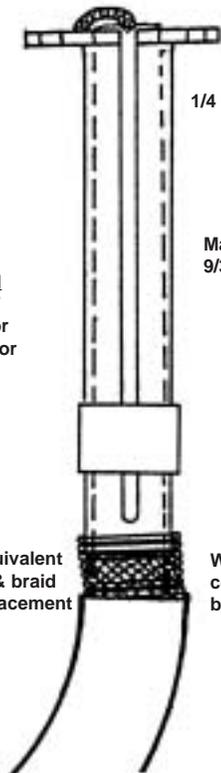
Main balun sleeve  
9/32" hobby brass tube

**TO TUNE THE BALUN**  
Adjust the position of the shorting sleeve for minimum return loss or VSWR

Shorting sleeve  
5/16" hobby brass tube

Coax should be flex equivalent of 9913. Strip its' shell & braid to the length of the replacement brass balun assembly.

Wrap tinned wire winding over coax braid and replacement brass balun assembly and solder.



Balun Dimensions Fig. 5



Terminating Loads Fig. 7

Example: five 300ohm yield 600 ohms and dissipate 10 watts and good for 40 watts input. (I use D100 amplifier with average video power of about 40 watts with no problems)

Some interesting Email sources on Rhombics:

- <http://www.neca.com/~commings/index.html>
- <http://funnelweb.utcc.utk.edu/~cebik/rhhh.html>





1260 Mhz Dual Rhomboid Fig.8  
Note the relative size.

### 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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# K0HEO, SK

Date: Thursday, March 14, 2002

It is with deep regret that I share this announcement with you.

Don Rotier, K0HEO passed away on March 11, 2001 at the age of 69.

Obit from the St Paul Pioneer Press, March 14, 2001 is below.

For those who did not know Don, he was the author of WinPix Pro and WinPix32 SSTV programs. He will be missed by many friends, hams and SSTV operators.

Regards,

Jerry - K0HZI  
jrocky@attbi.com

## Donald J. Rotier

Rotier - Donald J., age 69, of Roseville, MN passed away on March 11, 2002. He is survived by his mother, Violet of Glendale, AZ; loving wife, Marilyn; 5 sons, Michael (Marianne), Robert (Denise), Kenneth (Merry), David (Mimi); Steve; 3 grandchildren, Lacey, Aleana 'Tina', Matthew; sisters Jean (Gene) Lang of Scottsdale, AZ; a niece and nephew, and other caring relatives. Member of the Norwegian Elkhound Club of MN and a retired American Kennel Club obedience judge, active in amateur radio and an inventor who holds 19 U.S. patents. Funeral service 1PM Saturday March 16 at the ROSEVILLE MEMORIAL CHAPEL, 2245 N. Hamline Ave., Roseville, MN 55113 with visitation Friday 5-8PM and also one hour prior to the service Saturday at the chapel. In lieu of flowers, memorials preferred to Our Lady of Good Counsel. 651-631-2727.

## Dear SSTV Friends

Walter, PT2TG, and I Teresa, PT2TF, join in the deepest regret for Don, K0HEO's, passing away. He was to come to a ham meeting in Brazil next May and was to stay at our home for a week as he and his XYL had done a couple of years ago.

We all have lost a very proficient, capable, fine ham operator, a gentleman and a good friend that we have met personally and learned to appreciate. Certainly it is a great loss to the SSTV community.

PT2TF Teresa  
teresa@cidsid.com.br

## From The Editor

Don & I got to know each other as we had each written our own version of SSTV program that used the Sound Blaster. Don's program was a newer version of the DOS program that I had written and he took advantage of using the Windows environment that many were looking for.

Don was a great guy, even though we only met and talked on the phone a few times. I remember the first time we met at the Dayton Hamvention when he introduced his new program, that was a hit, of course.

As has been said above, Don will be missed.

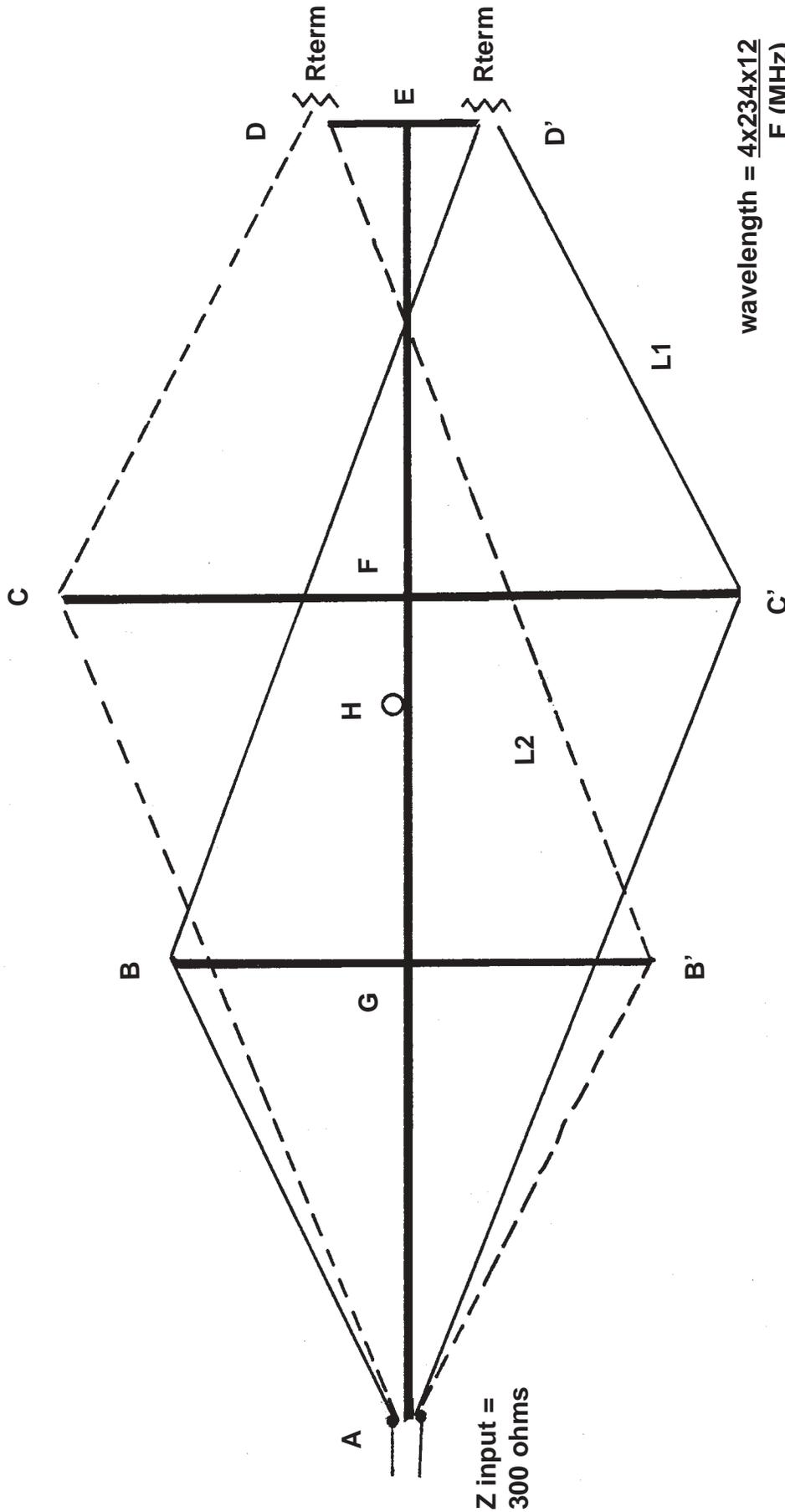
Gene Harlan - WB9MMM

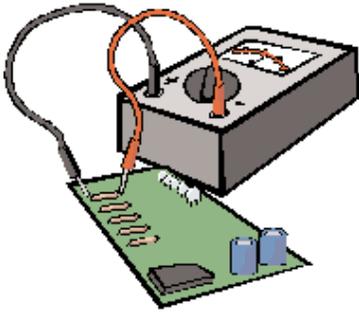


	For 435 MHz	For 910 MHz	For 1260 MHz	Rterm = 600 ohms (non inductive)
<b>Main Boom</b>	A-E 234	112	81	Wattage dissipated 1/4 of power input
	A-G=F-E 84	40 1/2	29	
	G-F 66	31 3/8	23	
<b>Approximate balance</b>	A-H 128	61 1/4	44	I use 5 parallel 3000 ohm 2 watt carbon resistors on D100
<b>Cross Booms</b>	B-G-B' 87	41 5/8	30	Mirage with no prob- lem
	C-F-C' 125	59 3/4	42 1/2	
	D-E-D' 36	17 1/4	12 1/2	
<b>Wire Legs</b>	L1= 3.5 wavelengths 93 5/8	44	31 1/4	
	A-B=C-D=L1			Z input approximately 300 Ohms balanced (use balun for coax)
	A'-B'=C'-D'=L1			
	L2= 6 wavelengths 161	77 1/4	53 1/2	
	A-C=D-B'=L2			
	B-D'=C'-A=L2			

Dual Rhomboid Dimensions Fig. 4

Say you saw it in ATVQ!





# Sparks from the Bench

by Ron L. Sparks - AG5RS - Email: [atvq@sparkles.com](mailto:atvq@sparkles.com)

P.O. Box 945

Katy, TX 77492

## Regular Featured Column!

In the last column I discussed the development of the simple heater and temperature controller for use in repeaters or on towers where temperature stability was significant. We had gotten up to the point of building the prototype and checking the performance of our design. The plan was to have that part completed and continue the discussion in this column. But, if that were to happen, the promise to discuss how to get started with PIC microcontrollers would go unfilled.

So, those of you curious about how the temperature controller project turned out will have to wait just a bit longer.

### PICKing a Path

When we last discussed PICs the multiple options, compact package and ease of use were all described as benefits to taking the plunge and learning how to design with PICs. Another reason to make this change is the increasing difficulty of obtaining parts to do specific tasks. For example, DTMF encoder and decoder chips have become virtually impossible to obtain. This trend is continuing at an ever-increasing pace. In addition, the chips available for specific tasks are now physically shrinking to record levels. Many of the new IC packages have lead widths of 10/1000ths of an inch and a spacing of 25/1000ths of an inch. This means that you must solder a lead that is the width of three human hairs without affecting another lead that is only four or five hair widths away. Even with the steadiest of hands and a wonderful microscope, this is an incredibly difficult task.

Just as has happened when electronics moved from tubes to transistors, and from hand wiring to printed circuit boards, and from transistorized boards to integrated circuits a new transition is occurring. And as in the past a number of people will, validly, choose to not make the transition.

On the other hand others will find it interesting, challenging, and fun. Making this transition is not really that hard. You can get started with PICs in a very comfortable manner for less than you would have to pay for a good microscope to solder all those SMD parts.

### Each Person is Motivated in a Different Fashion

The way it works around here is that I find an interesting thing I wish to accomplish and then develop the steps necessary to get

to that goal. One of the main reasons I created the special, whiz-bang, do-all Sparks Digital Design Laboratory (*SDDL*) was to put together an on-screen display for ATV projects. While the on-screen display system is probably still at least six months away, it is now something that can be done.

For the exercise of building *SDDL* I went through the following steps:

1. investigating PICs
2. looking at what was necessary
3. digging through the junk box several times
4. putting together a useful, but not necessarily pretty, test set up

Photo 1 shows the *SDDL* in all its homely, but useful, glory. The major components of this system are an ancient Heathkit microprocessor training board, a surplus computer power supply, several surplus multi-point breadboards, some used computer

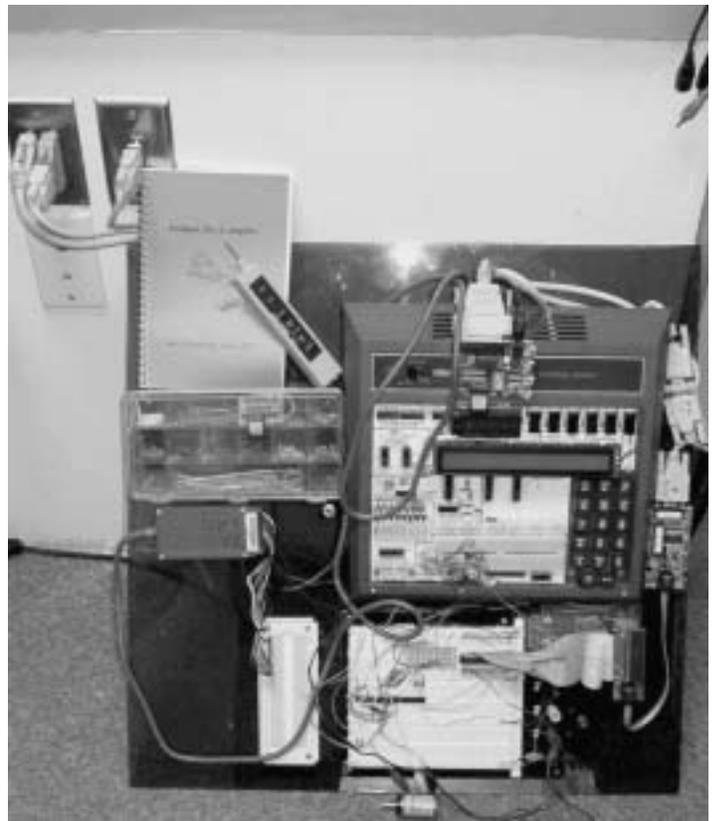


Photo 1

Say you saw it in ATVQ!

<b>Key Objective</b>	<b>My Recommendation</b>	<b>Challenges</b>
Lowest Cost	Choose a Microchip or Atmel PIC. Build your own programmer and serial hookup. Program using downloadable software from their site	Requires homebrewing hardware and a lot of understanding of programming
Easiest Entry and Learning Curve	Choose the Basic Stamp from Parallax. Buy one of their starter kits (like the BS2).	Designs require the Stamp modules and will be a bit more expensive. Speed may become an issue for some things. Flexibility of design may become an issue.
Moderate Speed and a design that might be produced in quantity.	Choose the Microchip, Atmel, or Ubicom chips and buy a one of their development kits. If possible buy a compiler for the language of your preference (BASIC, C, etc.)	Learning Assembly might be necessary unless you buy a compiler
Speed sensitive designs	Choose the Microchip, Atmel, or Ubicom chip that best fits your needs. If you can get enough speed, compiled code may be possible.	Learning Assembly may be necessary to meet speed requirements.

**Table 1**

cables, and the Microchip in-circuit debugger (ICD). Also, I added a surplus LCD readout which is hooked to a Seetron serial backpack (BPK-000 LCD driver). Not shown but equally important is the software. This consists of the MPLAB software that comes with the in-circuit debugger as well as the PicBasic Pro compiler from microEngineering Labs.

There are other items in the photo that I find useful, but not required initially. A microEngineering Labs EPIC programmer is at the top of the Heathkit, but it doesn't get much use. If you get the ICD you can skip the EPIC for a while. There is a little box with nice pre-cut breadboard wires for prototyping. I also use the little digital probe a lot. It lets me see if a pin is low, high, or pulsing. And finally, if you are old enough, you may also recognize the Tektronix P6451 input probe for my logic analyzer.

You might choose to use a few different components in your set up, but they will have the same functionality. For example, if you are a hard-core miser with a well stocked junk box you may choose to build your own PIC programmer. You could then download the free software from the Microchip's web-site and program the PIC in assembly language. This would get you started for virtually no cost. You could take a similar approach using microcontrollers from Atmel, Ubicom (formerly Scenix), or any number of other manufactures.

If, on the other hand you are not really interested in spending the time required to program at an assembly language level the

software tools available and their cost may end up determining which microcontroller you ultimately settle on. If you want to program in C there are compilers available for both the microchip PIC and the Atmel PIC which will allow you to do this. If you prefer BASIC then you have a couple of choices, first you can go with a BASIC interpreter which allows you to program in BASIC and have the PIC respond directly. This is how the BASIC stamp, and others, works. It is certainly an easy approach and is arguably the thing that launched the current popularity of PICs in amateur radio projects. The drawbacks to an interpretive system are that it executes your programs slower, and the individual PICs are slightly more expensive because of the internal BASIC interpreter.

All of this makes selecting which PIC and development system to use, much like asking the question "what is the best radio for me to buy?" The correct answer is "it depends". You need to decide whether you want the lowest start up cost, the highest execution speed, the most convenient language, or an easy learning curve. My recommendations are shown in table 1.

For the type of projects I am most interested in the best choice was a BASIC compiler that can be used with reasonably fast PICs that have a lot of flexibility in number and types of inputs and outputs. The microEngineering Labs compiler when coupled with the Microchip in-circuit debugger and MPLAB was a "best fit". The total cost for this set up was about the same as a small FM rig, but it allows lots of convenience and capability straight out of the box.

## SDDL is Born

The ICD is the heart of the system. Actually, by using this component and a small breadboard you can do virtually all of your projects. The ICD connects via an RS-232 serial connection to your development computer, which can be a fairly simple Windows machine. That old Pentium 90 will probably work just fine. The next component that was added was a surplus computer power supply. The old laptop supply replaced the wall wart supply for the ICD as well as providing extra +5v and ±12v supplies for projects. This allows easy experimentation with both digital and dual supply analog circuits. The old Heathkit trainer was a convenient way to add LED indicators, various TTL clocks, a keypad, buffers and various displays. You could add these components individually however you see fit. The Seetron backpack was added to a junk box LCD screen so that it can receive and display serial data from the project PIC. The last piece of this system is a simple TTL to RS-232 level shifter added to the old Heathkit project space. It consists of a Maxim MAX-232 chip and a few resistors and capacitors. The output of this circuit is then fed to the other serial port on the computer.

Using this arrangement, the PicBasic Pro compiler can be hooked into the MPLAB development software where a program can be written, compiled and downloaded to the PIC through one easy program. The first thing that I always write is a simple "hello world" program. When run, the PIC sends "hello world" out one of its data pins. This goes through the level shifter and back into the development computer where I run HyperTerminal to see the information coming in from the serial line.

Once this is successful you are ready to begin your experimentation. You can then develop a program, download it to the flash memory in the PIC, run the program and use various output statements to send messages back to HyperTerminal so that you know you where your program is and how it's running. From that point forward adding sensors, reading voltages, and driving displays becomes a fun and habit-forming exercise.

There you have it, you now know whether or not you want to make the transition to PICs and how to choose which system is best for you. You also know the components necessary to build the development system. Whether it is a simple or complicated or fancy system is entirely up to you and your needs. That should remove many of the obstacles keeping you away from wiring your projects in software. I look forward to your e-mail with questions or just a nice note about your current PIC project.

Next time we'll go back and pick up on the temperature controller for your repeater components. After that, who knows, we may even have an on screen display. Until then, stay on the bench. In our hobby that's a good thing!

Referenced web sites:

— Compilers for Microchip, Programmers, Prototype boards

- Microcontrollers (PICs), Debuggers, Emulators, Software, Prototype boards
- LCD and LED displays and serial adapters
- Microcontrollers (PICs), Debuggers, Emulators, Software, Prototype boards
- Very fast microcontrollers (PICs)

ATVQ

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## Amateurs Summon Help After Sailboat Runs Aground

Vigilant members of the Maritime Mobile Service Net on 20 meters relayed calls for help from a sailing vessel that ran aground March 26 off the northern coast of Cuba. Aboard the sailing vessel Tao were Dave Beane, G0TAG, and his wife, Sara, whose frantic calls on the Net frequency got a quick response. Unconfirmed reports via Amateur Radio indicate the couple has been rescued and that efforts to salvage the vessel were under consideration.

"She was in a big panic, and then they just stopped transmitting," reported Ed Petzolt, K1LNC, US Virgin Islands ARRL Section Manager John Ellis, NP2B, said that less than an hour earlier, Beane had checked into the MMSN to say the couple had enjoyed a visit to Cuba and was planning to sail around to the south side.

Ellis said the vessel had run aground on a reef. The couple called for help from the Cuban authorities but got no response. Mike Pilgrim, K5MP, notified the US Coast Guard. Petzolt contacted the Swiss Embassy, which put him in touch with the Cuban mission in Washington, which, in turn, contacted authorities in Havana by radio. The US Coast Guard was only able to contact the Cuban authorities via telex.

It's not yet known what agency was able to assist the Beanes or where they are now. Petzolt reports that he received "third-hand" information via the Waterway Net March 27 that the couple had been rescued and was safe.

Ellis said the MMSN had "excellent cooperation and assistance" during the incident from net control Frank Kelly, N3FK, Petzolt, Pilgrim and Dave Dalziel, N4ICE. "There were a number of others on frequency available to help, but all maintained top-notch order and control," he added.

ATVQ

From ARRL bulletin

# Trailer Hitch Mast Mount No Welding Required!

By David Bush - KC5UOZ - [kc5uoz@bigfoot.com](mailto:kc5uoz@bigfoot.com)  
and John Chamberlain - AC5CV - [ac5cv@arri.net](mailto:ac5cv@arri.net)  
Waco, TX

With the arrival of warmer weather, it seems we have more and more opportunities to “go portable” with our ATV equipment at special events. To get our 440-band signals over people, vehicles, concrete embankments, and other structures, we’ve found that antenna altitude is a must. Inexpensive fiberglass push-up poles (sold as 15 to 20-foot painter poles at local hardware stores) serve this function very nicely. They collapse to about 6-feet, transport very easily in car or truck, and quickly and single-handedly can be extended or retracted in a matter of seconds.

As nice as these poles are, you must resolve the question: “How can you mount them?” Well, here’s a solution that can be constructed for a few dollars in local hardware parts and requires no welding! The version we’ll discuss here mounts into the 1 1/4-inch trailer-hitch receiver on your vehicle. (We’ve also adapted this design to a drive-on mount version.) The push up pole then snugly fits into a vertical length of pipe, and provides plenty of support for the fully extended pole with a 6-element yagi and coax, as shown in Figure 1.

The parts for our no-weld trailer-hitch mast mount are listed at the end of this article, and shown in Figure 2. While we can get by with no welding, you will need access to a drill press and good, sharp 1/4- and 1/2-inch drill bits. Here are the assembly steps.

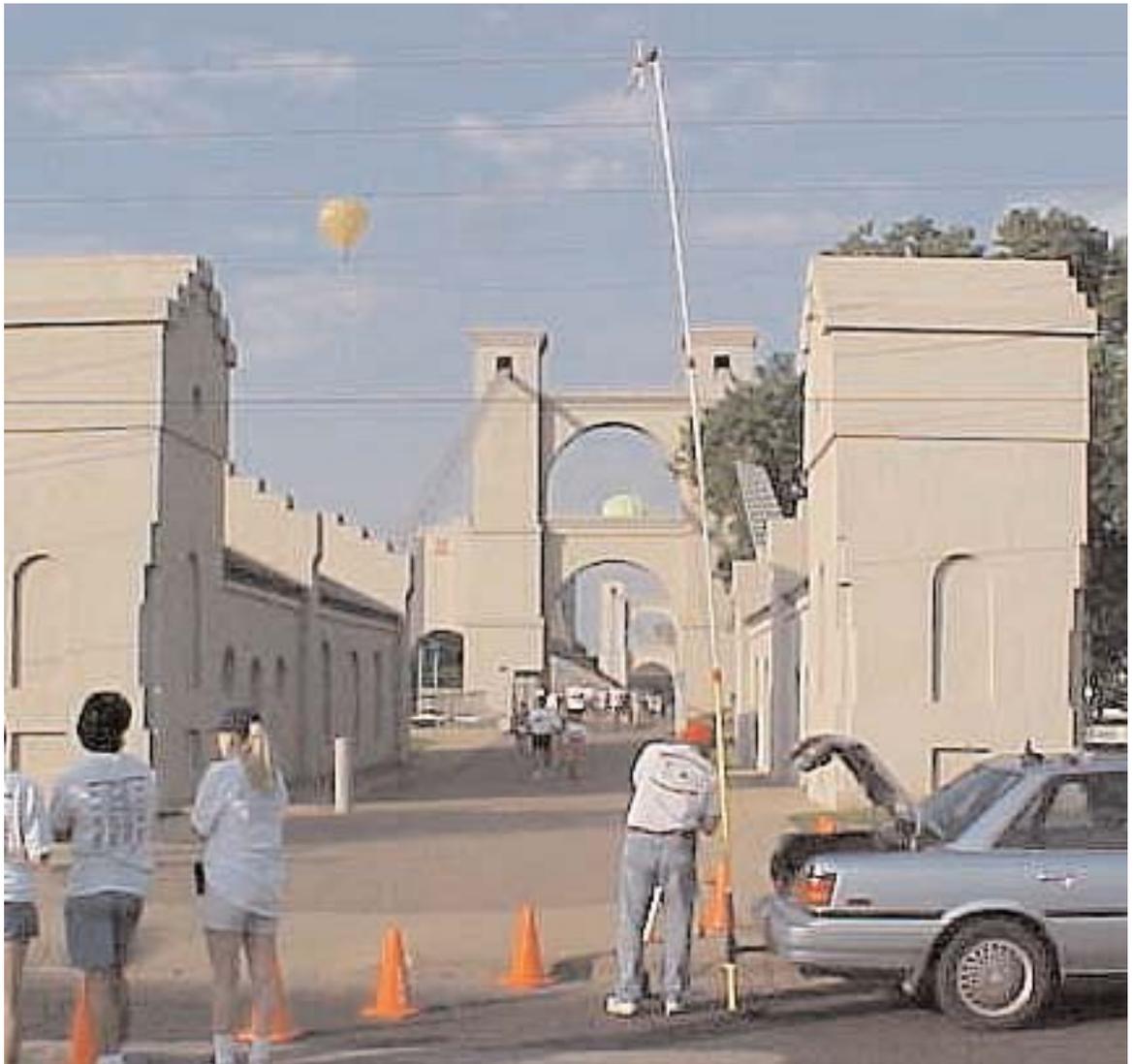
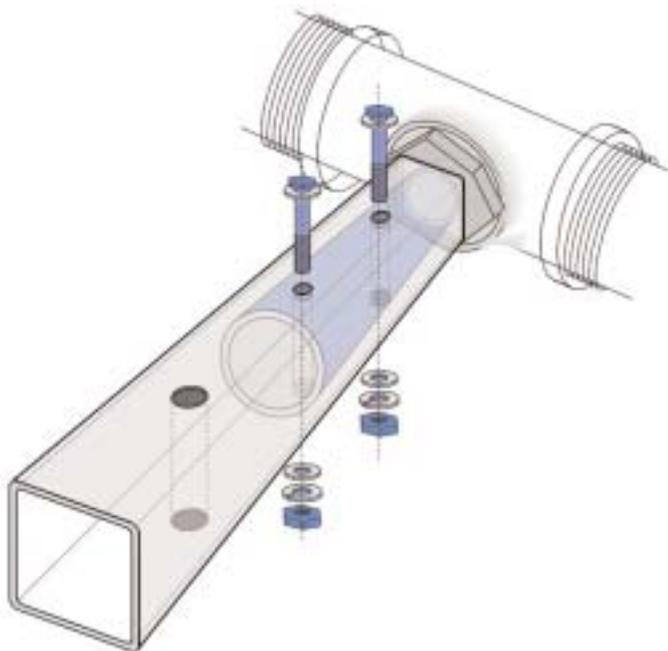


Figure 1. AC5CV using mount and mast at special event



**Figure 2. Easily obtainable parts for mast mount**

1. Cut an 8 1/2" length (or longer, if needed) of square tubing from 1 1/4" square by 1/16" walled tubing stock. Make sure the ends are square and deburred.
2. Insert the tubing into trailer hitch receiver to make sure that it fully penetrates. Mark the hole for the hitch pin. Center punch and carefully drill the hole for the hitch pin, usually 1/2" diameter, through both walls of the tubing, and deburr.
3. On the opposite end of the square tubing, drill two 1/4" bolt holes all the way through, on a centerline and approximately 1" and 3 1/2" from the end. See Figure 3.



**Figure 3. Holes in square tubing and nipple**



**Figure 4. Threaded pipe assembly**

4. Assemble threaded pipe joints. Refer to Figure 4.
  - a. Screw 1 1/4" by 12" pipe nipple into 1 1/4" tee end.
  - b. Screw 1 1/4" by 1 1/2" nipple into opposite tee end.
  - c. Screw the 1 1/4" by 3/4" reducer bushing into the tee center.
  - d. Screw 3/4" by 6" nipple into the reducer bushing.
  - e. Tighten all joints-especially the pipe nipple. A few drops of "lock-tite" will help keep things tight.
5. On a flat working surface, lay the assembly on its side and slide the square tubing over the 6" pipe nipple so that the 2 bolt holes are centered over the nipple.
6. With the square tubing laying flat and flush against the bushing, and the tee-nipple assembly held firmly, drill 1/4" holes cleanly through the existing holes in the square pipe and through the 3/4" nipple as shown in Figure 3. (Hint: Temporarily place

one of the 1/4" bolts through the first hole while drilling the second.)

7. Secure the square tubing to the 6" nipple using the pair of 1/4" x 20 x 2 1/2" bolts, washers, lock washers, and nuts. Securely tighten the 2 bolts. Paint the finished metal assembly, as desired.
8. Finally, install a 1 1/4" plastic slip nut with plastic inserts washer on each end of the 1 1/4" pipe. Hand tighten, and you're ready to try it out!

The completed mount (see Figure 5) can be stored in your trunk or toolbox, and inserted into the receiver in a matter of seconds. The painter pole drops right into the top, extends through the bottom and rests on the pavement, and snuggs up with a hand tightening of the plastic nuts. You can then confidently extend the pole up to its maximum height and enjoy portable operations with your home-made, no-weld portable antenna mount!

### Bill of Materials

- (1) 1 1/4" by 12" by 1/16" walled square tubing
- (1) 1 1/4" by 12" pipe nipple
- (1) 1 1/4" by 1 1/2" nipple
- (1) 3/4 by 6" nipple
- (1) 1 1/4" by 3/4" reducer bushing
- (2) 1 1/4" plastic nuts & plastic washer inserts
- (2) 1/4" by 20 by 2 1/2" bolts
- (2) 1/4" by 20 nuts
- (4) 1/4" flat washers
- (2) 1/4" lock washers
- (1) 1/2" diameter trailer hitch pin with clip

### About the Authors

David Bush KC5UOZ (kc5uoz@bigfoot.com) and John Chamberlain AC5CV (ac5cv@arrl.net) are active members and/or officers in the Waco Amateur Television Society (WATS) in Waco, Texas. Read more about our Club's activities at <http://www.qsl.net/kc5oyn>.

## AA9XW ATV REPEATER BACK ON THE AIR February 28, 2002

As of today the AA9XW ATV repeater (439.25/421.25) is back on the air. Point antennas toward Lowell, IN. HAAT 450 feet. 3 Antennas pointed roughly at Chicago, St Louis and Columbus-Cincinnati, OH. form a roughly omni trilobe pattern.

TPO 60 watts  
550' 1 5/8" heliax,  
Antenna gain 9 DB.  
Horizontal polarization  
1220' AMSL

Henry  
A9xw@cs.com

<http://www.hampubs.com>



Figure 5. Mast-mount ready for trailer receiver

## Midwest Tropo CQ ATV January 25, 2002

Well finally some tropo here in S. Illinois. Where are all of the ATV'ers? I am still looking for serious op's who are willing to schedule for contacts in MS, AL, GA and TX.

When the band finally does open up it would be nice to have someone to run with!

I encourage all ATV DX operators to use the VHF QSO page at DX World.com to coordinate our efforts. It updates every couple of minutes and would be a very effective tool to use if we all watched it.

73, Bob - ka9uvy@hotmail.com

KA9UVY-TV  
Amateur Television Station

Check out <http://members.tripod.com/silatvg> for S. Il. ATV

ATVQ

ATVQ

ATVQ

## Digital Amateur Television (DATV) Field-Tests in Germany Extended

Since November 2001 the DATV transmitter designed by a group around DJ8DW at Bergische University Wuppertal is working properly on 23 cm (1255 MHz) in Cologne at the ATV-repeater site DB0KO. The transmitter, which may be programmed to various digital modulation schemes and data rates, at this site is programmed to QPSK and according to the DVB-S standard. Thus a reception is possible by a cheap digital satellite TV set-top box along with a preamp if required. The repeater FM ATV input signal is demodulated to baseband PAL, converted to MPEG II (5 MBit/s) and digitally re-transmitted.

The repeater output can be switched between FM ATV and DATV by DTMF remote control thus allowing a fair comparison. In a distance of about 50 km the FM signal (repeater output power 20 W, 18 MHz bandwidth) resulted in a rather noisy picture whereas DATV (repeater output power 10 W, 6 MHz bandwidth, same 10dB omnidirectional antenna) showed a perfect picture. Although the set-top box has no echo equalizer there were only very few problems with multipaths reception most likely due to the fact that the repeater is installed on top of a building 150 m above ground and that highly directional receiving antennas are used.

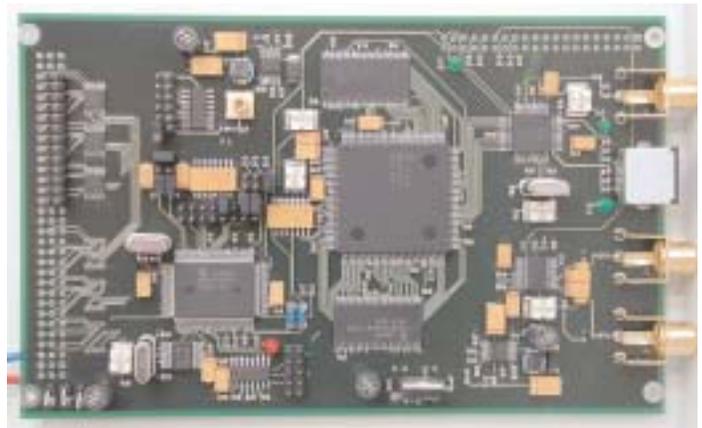
In the meantime the tests are extended in the Wuppertal area to 70 cm (center frequency: 434 MHz, bandwidth: 2 MHz, data rate: 2 MBit/s, transmitter power: some mW through 80 W). Omnidirectional as well as highly directional antennas are used. The tests are covering field strength measurements at various places in rural and urban areas, check the multipath situations as well as possible problems which might be caused by ISM interference. In addition DATV-DX tests are performed.

### DATV-Building blocks in preparation

The MPEG II encoder board and the DATV transmitter board are currently prepared for a small-scale production series organized by AGAF. These boards ready built and tested will be available in some months time for licensed radio amateurs and for amateur applications only, the price is calculated on a no profit no loss base. Ordering information is available from AGAF by fax (+49 231 486 989) or via Internet at [www.datv-agaf.de](http://www.datv-agaf.de) (commercial applications may be possible under a special contract with the Wuppertal University).

### Specifications of the boards

General: Both boards, MPEG II encoder and DATV transmitter, have standard signal input/output interfaces. They may be used together for DATV but also separately for other applications. The various digital modulation schemes and data rates are generated on the transmitter board with 10 mW on 434 MHz and are selectable by jumpers or switches. Modulation schemes generating 2 MHz rf-bandwidth may be transmitted on 70 cm. All others with a higher rf-bandwidth are heterodyned to the GHz bands.



### 1: MPEG II Encoder (Fujitsu encoder IC)

Input: analog PAL/NTSC, Y/C, stereo sound

Output: 2 x standard MPEG II bit parallel, data rate selectable from 2 Mbit/s - 10 Mbit/s



### 2. DATV Transmitter

Input: live MPEG II bit parallel, hard disk recorder, on-board plug-in memory card containing short moving video scenes which may be transmitted cyclically for long time tests or station identification

Output: 434 MHz rf-DATV-signal, 10 mW, 50 Ohm SMA, 36 MHz or 44 MHz if-DATV-signal

Digital modulation schemes available: QPSK (DVB-S), GMSK, QAM, 8-VSB (ATSC)

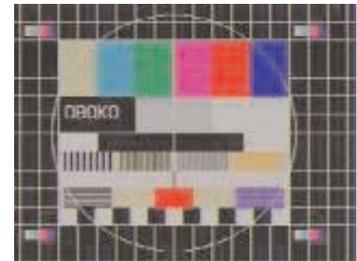
Power: Single 12 Volt (10 V - 14 V), ca. 600 mA each board

Size: 100 mm x 160 mm Euro, 4 layers

Uwe, DJ8DW  
translation Klaus, DL4KCK



FM



QPSK

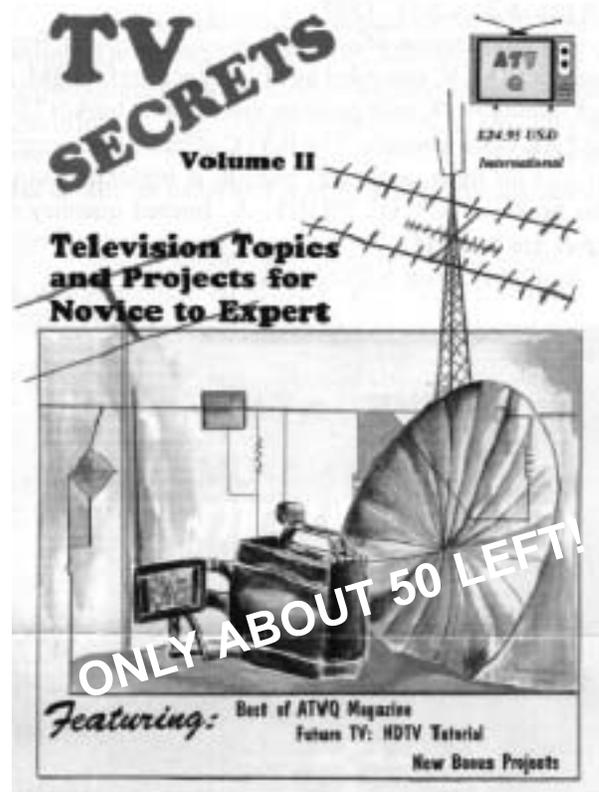
# Do you have these yet?



## ATV SECRETS volume one

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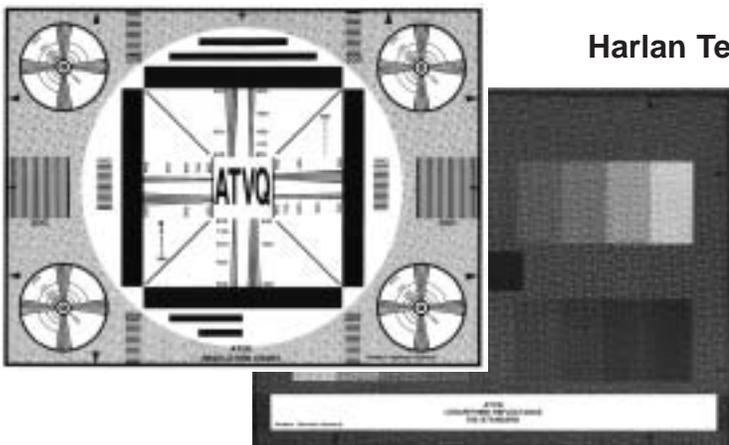
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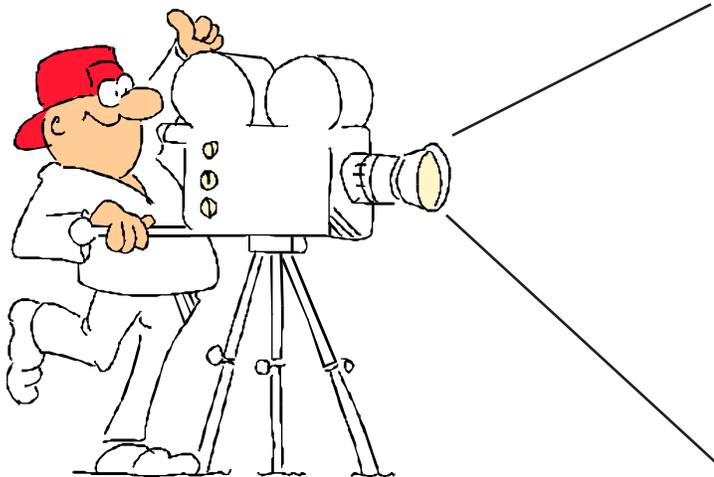
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Gene Harlan - WB9MMM - Editor/Publisher

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published by Harlan Technologies  
 5931 Alma Dr., Rockford, IL 61108  
 tel (815) 398-2683 fax (815) 398-2688

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# IVCA VISION NEWSLETTER

## No. 11, 12, 13, 14, 15 & 16

Keeping Amateurs Informed On Developments In Visual Communication Around The World  
Ray Glidden, W5NOO EDITOR - Email: ray@junct.com

RR1 Box 145  
Vinita, OK 74301

### **New SSTV Modes (build a better Mickey Mouse trap (MMSSTV) and they will come)**

I wish to thank everyone for the replies to my request for information and opinions on the new SSTV modes. I received several interesting e-mails. It is no surprise that I found very little agreement and even learned of more SSTV modes. You may wish to see the information on Charles Franklys web site at <http://www.baldeaglejournal.com/ARA.htm> There seems to be wide range of opinions and several pros and cons on this subject. As I have not had time to evaluate and run some of the new modes like the MP115 and MP125, (we had to first figure how to change Xmit modes using a right click on the mode buttons in MMSSTV Version 1.05e BetaI) HI. So far we see no startling advantage like some report using the new modes with a similar frame time and will reserve judgment for now till we have more experience with the MP and the numerous PD type modes but we believe the cream will come to the top and the best methods will win out. (We also remember when Single Side Band "SSB" was not very popular but is now the most preferred voice/digital method on HF).

### **The Wireless Web/Cell and Video Phones**

As you may be aware America lags behind parts of Europe and Asia in the wireless web market but numerous American web service and equipment manufacturing companies are frantically moving into this market. One big problem so far is the US cell phone connection speeds are only 14.4 k or 28.k or with, say, Sprint that is likely to increase to 56k or even 128k in the near future. Currently with over 30% of the US using cell phones this can become a huge market. (Web wireless device sales are expected to exceed 350 million a year world wide.) So far functions and features on US wireless web cell phones are limited, but is improving fast as new hardware and the web service speed and features are improved and wireless service added around the country. Lot's of new wireless web access devices like the "Blackberry" (small hand held ,key board with TFT screen device) are also becoming popular with the Road Warriors! The new cell phones and devices will soon have the OLED bright, low power consumption screens. Wireless service comes at a price but we believe when video and bright sharp color graphic displays are included it will be a great advancement in personal communications .

### **Computer Tips**

If you are considering an operating system up-grade to the new rugged Windows XP especially with an older PC first check

your hardware and software compatibility at Microsoft or at the "PC Pitstop" at <http://www.pcpitstop.com>. Even some new computers and software are not WinXP compatible! If you are looking for graphic pictures on the web you can also use "Altavista" to locate graphics and video and music etc. at <Http://www.altavista.com> We have lot's of web search engines to use but I find the Google is one of the best general types and is a true spider (does a web site search) and is not just a directory listing like say the Yahoo search engine it also has several nice features like a graphic image search ability and a foreign language conversion function, (the non English speaking may find this useful) It's available at <http://www.google.com>

### **Lighting and Solid State Electronics Protection (Or just unplug that stuff)**

I'm sure most are aware of the possible damage to electronics from lightening and usually use some types of surge suppressor devices. I personally have had more than \$2000 in damage when we had a big lightening bolt hit my power wiring and phone lines etc. I found that with my 3 computers connected to surge protectors I still had damage to all my 56k modems and my phone answering machine and a solid state phone were lost along with the heat/air-condition thermostat and a satellite antenna,. This did not even include the damage to the following items like my flatbed scanner, Zip drive, PK232, View Port VGA, USB adapter card and a TV/PCI tuner capture card and a Pasokon card and a USB to printer adapter cable device. I now turn off all the power and unplug the antennas and phone lines to all my computers and equipment as the surge protectors have so far failed to protect anything. Note: Surprisingly no damage was found to my kitchen sink and its electric disposal unit however!. (I'm lucky a neighbor ham had a computer power supply that shorted and started a house wiring fire that did well over \$60,000 in damage and totally destroyed his home.) Perhaps a few fuses or circuit breakers and some industrial strength UPS devices like the APC or Black Out Busters and a good home insurance policy could also help with these types of problems!

### **IVCA Membership and Dues**

In reply to requests from new VISION News Letter viewers. The VISION News Letter is free but we request that every one that wishes to be a member and support the IVCA to send a \$10.00 yearly fee to the Treasurer James Gaither Jr. W4CR PO BOX 140336 NASHVILLE TN 37214 USA This is necessary to fund the Dayton Ohio meeting expense and the various IVCA awards and functions.

### **New Computer Hardware (You got the need for speed?)**

If you find your older CD R/W slow in burning (recording) a CD, we now have a new fast CD R/W available from the Plexor Co. the Plex Writer model 40/12/40 A that burns a new fast type CD at a speed of 40X. This permits a four-minute burn time and also a slower 24X speed or slower burn on regular CD's and CD R/W's using all of the general burn software programs. The fast 40X CD disks are not generally available yet and the unit is priced at \$209 by the mfg. Note: Some high RPM speed 50X CD recorders and players can shatter a cracked or out of balance or damaged CD even now! (Just when we solved the buffer under run and speed problem now they can self destruct, just like on the Mission Impossible TV show!)

### **The Information Age (Let's get the word out on this neglected mode)**

In the past very little information was available on SSTV and it was difficult to get any thing published in the amateur journals. All this is changing now. One new major information source is the numerous web home pages devoted to SSTV. (A search with Google at <http://www.google.com> for "SSTV" will produce over 67,000 sites. Even the Yahoo search engine will produce over 46,000 SSTV sites. Over the years I have personally given talks and demonstrations at radio clubs and conventions and even talked on broadcast FM Radio and over special long distance telephone line to a VHF repeater link and submitted articles with pictures to the local news papers and even managed to get an article in QST magazine. I strongly encourage the IVCA members to do some of the same. I have made overhead projector SSTV picture transparency slide shows and also used a small computer and monitor slide show using SSTV etc. pictures stored on a hard drive and a external ZIP disk drive for demonstrations. I know some of you sure have all the necessary knowledge and talent as I've seen some very impressive SSTV web pages .

### **Preparations for Dayton 2002 (getting under way)**

Don Miller, W9NTP, the Dayton IVCA Coordinator informs me he has made arrangements for a block of 20 rooms the cost is \$100 plus tax and reservation held till May 1. Contact Don, W9NTP, soon. Also he has arranged for a Saturday meeting room. More details on this later. If you have never attended the Dayton Hamvention I strongly recommend you do. Dayton has usually more that 40,000 in attendance with almost all the electronic and amateur equipment manufacturers represented and a very big flea market . The city of Dayton goes all out and arranges for transportation etc. It runs this year 3 days in May 17, 18 & 19. This is an excellent well run, large convention attended by hams from around the world!.

### **Computer Tips (Or how come this stuff is not in the MS Windows Books?)**

Several useful Windows 95/98 and WinME commands can be typed into the little "Run" window on the windows desk top like even a web URL. When you are online and press enter it will then load the web page. If you click run and type in "sfc" and press enter it will do a System File Check and look for missing or damaged windows files. If you click run and type in

<http://www.hampubs.com>

"sysedit" and enter, it will show your system configuration. If you click run and type in "msconfig" and enter, it will display a window and let you click the startup tab and then uncheck some items that you don't want to be on the task bar as they will cause a slow down of your windows boot up, increasing computer start up time. (Be careful, however, not to uncheck and remove some of the necessary items). With the computer turned off then after you press the computer "power on" and during the boot up process repeatedly keep pressing the "F8" Function Key it will then display a window where you can select the "Command Prompt Only" function that let's you operate in the true DOS mode. If you have some damaged operating system files and wish to make possible repairs when in the DOS mode type "scanreg/restore" at the C:> prompt and press enter, this will then let you select from some previous, undamaged, stored versions of your system registration files. (Note: The Windows95/98 & Win ME is just a DOS program with all those cute little icons etc. that you can view and click that are displayed and running on top of a DOS operating system.) The new rugged WinXP or Win2000 and WinNT operating systems is a different story, however, as they don't run on top of the old DOS operating system but are far less likely to crash!

### **The IVCA SSTV 2002 Contest Rules**

The annual DX SSTV contest this year will be held on April 6 and 7 starting at 0000 UTC to 2400 on the 7th. You must exchange a two-way video transmission in any SSTV mode which includes a number that begins with 001 and receive a number report from the other station (Note: No RSV report required). You will receive 5 points for each station contacted in your zone. You will receive 10 points for each station you contact outside your zone. There are six zones as follows; North America (including Central America and the Caribbean). South America, Europe (including Russia over to the 60 degree East Longitude), Africa, Asia and the South Pacific. For stations worked on bands other than 20 meters you have a multiplier of X2 with the exception of 15 meters which has a multiplier of X3. Satellite exchanges are X3. You can contact the same station on different bands for more points. We will award a trophy to a first time winner in their zone and also a certificate to repeat winners. When the contest is over please send in your log, even if you only had a few contacts to an address to be announced later. We will send the contest results in the VISION News Letter. To be counted your logs must reach the IVCA by May 25 2002. Note: the original proposed contest date was changed to avoid a conflict with the Japan NVCG SSTV contest!

### **Slow Scan TV Timing Problems (Let's get it straight automatically)**

I find as we watch and listen to the popular 14.230 MHz frequency that we have lots of new SSTV operators calling in and trying to adjust their picture timing to eliminate the picture slope. This I believe is the most common problem we have with SSTV. This has plagued us with all the various SSTV computer programs from the early DOS to the newer Windows sound card and hardware setups. I realize most, including me, don't like to read the "Help" information details but the process to set timing for transmit and receive is usually a little complex or confus-

ing. I hope some day a smart programmer will write software that can perform the timing calibration operation completely automatic and we can see more pictures and spend less time getting it all straight. (Perhaps some timing or control information in the frame header. Note: some SSTV programs adjust using WWV as a reference and some software can even set the internal computer clock timing or reset it automatically to N.B.S. time when you go on line) Perhaps we need a new approach to the timing adjustments. Put a different way it seems that software programmers are just smarter than most of us SSTV operators!

#### **Pasokon Interface Board (How lucky can I get)**

After the lightning strike I described in VISION news No.11, where my Pasokon Card was damaged, later while talking with Ron Smith, N4XQN, he indicated he had a spare that he then sent to me. (SSTV operators are just the best) The Pasokon was one of the early hardware/software SSTV setups, It runs in DOS and has all but the very latest modes like MP 115 etc. I personally find Pasokon easy and convenient to operate with lot's of nice features. We, however, still like to try all the new SSTV operating systems and modes and software programs.

#### **Computer Tips (Did you ever empty the Recycle Bin or accidentally hit the file delete?)**

Deleted file recovery is possible using Windows 95,98,ME, NT, 2000 and WinXP operating systems, if you have not written over the deleted files with new data. If you download the free program Drive Rescue at the following location and install it on your hard drive prior to the accidental file deleting action.

[http://home.nexgo.de/christian\\_grau/rescue/index.html](http://home.nexgo.de/christian_grau/rescue/index.html)

The "Drive Rescue" file recovery program shows if recovery is possible and shows the condition of the file as Good or Poor. The file should preferably be sent to a second drive or floppy, etc.that has the necessary storage space for recovery. (The web page gives complete operating instructions and details).

More Google search engine tricks. If you go to

<http://www.google.com> and type in a phone number in the little search window when you are on line it will do a reverse lookup and show the name and location of that phone number!

#### **Digital SSTV ? (The Web with motion color and sound versus SSTV still frame )**

It would seem that as we are able to use a 56k dial up modem to send compressed digital video phone and digital video mail, over a normal home phone line with high color and motion and near Hi-Fi quality audio, that it would also be practical to use digital SSTV for a similar function over HF radio. I have used a number of the video phone and video mail programs like the Ham favorite "Internet Phone 4" by Vocal Tec and "Vmail" program by Chill Soft and also "Webcammail" and "PalTalk" and "Audiovision" by Smith Micro and also several more free programs that are no longer available. Note: Usually these various programs use a compressed streaming video codex or the Real Media compressed format and generally provide a small or medium size screen display (A small video window takes less bandwidth but has a surprisingly high quality color display with reasonable motion at even around 24 FPS and also can have

very good audio). I would like to receive comments on these ideas, or is this just my wishful thinking.

#### **Notice of Resignation**

Due to increasing problems with my eyesight and difficulty with walking I will not be able to attend the next Dayton convention and continue on as editor of the VISION news and also as IVCA Director. I suggest that the members contact me with suggestions and names for a replacement editor and also a separate individual as director this can be voted on at the next Dayton meeting. I'll continue on as Director/Editor until these positions can be filled in June. You can also cast an e-mail vote and send recommendations to me Ramon Glidden, W5NOO, Director/Editor at [ray@junct.com](mailto:ray@junct.com). Also, I'll post the possible nominees in the future VISION news letters. (Old Slow Scanners Never Die We Just Need Large Screen Text.)

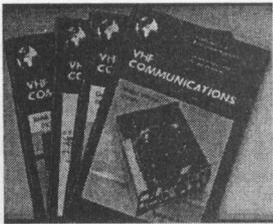
#### **New High Resolution Digital and Movie Cams (Or as the Red Riding Hood wolf said "all the better to see you with my dear".)**

As we reported earlier we now have a new revolutionary high resolution 3 layer X3 capture device that can provide resolutions that exceeds or matches the normal quality of film photography. The inventor Carver Mead of the Foveon Co. is producing a commercial version that is comparable to a 7 meg pixel but has a cost of around \$3000 The new sensor is not only high resolution but is fast and will work equally well in fixed or movie frame rate applications. It is also said this item is economical to produce. It will likely soon be available in consumer models and compete with the single layer CCD and CMOS usually supplied by Sony and STM companies. This new X3 sensor with only 3.53 million pixels not only improves resolution and color fidelity, and has twice the quality or resolution of the present typical CCD devices. Click the following link for more details!  
<http://zdnet.com.com/2100-1107-836268.html>

#### **SSTV Picture Storage (Then and now)**

Thirty years ago we used audio recorders to store SSTV pictures that we could play back and view using an SSTV systems monitor or perhaps take a Polaroid blk&wht time exposure picture of those old P7 CRT screens. Today we have a large number of ways to save and view or replay pictures using the computers hard or floppy drives or use a variety of external storage devices like ZIP and Super Disk and USB or Fire Wire connected hard drives etc.we can even burn pictures to a CD for storage. We also have a large number of computer printers that are now available at very low prices. As most wish to print in color the ink jet types are very popular and can be purchased for as little as \$30 or \$49 with a resolution as high as 1200X1200 . The main problem at present is the high cost of the ink jet replacement cartridges. I personally have tried and usually unsuccessfully to refill my black and especially my 3 color cartridges and it is also very difficult not to spill the Ink. Note: We also have toner cartridge printers and even color laser jet printers but the color laser jet cost is currently at around \$1300 to \$2300. The ink jet inexpensive type printers produce a very good color picture especially on a high quality glossy paper at around \$1.00 a page, that is difficult to tell from a 8 1/2 X 11 in. color photo-

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graphic enlargement, and they can also print transparencies for overhead projector use and even do printing for T- Shirts and clothing with special iron on transfer material. (That's if you feel the need to wear your SSTV pictures)

## Dayton News & Up Dates

I have just learned that the Rigblaster people have kindly agreed to give a presentation at the IVCA Dayton Meeting and I believe it should prove interesting to the IVCA members. So far we have not received a volunteer to be the MC or meeting chairman at the up coming Dayton Hamvention in May. Don't forget to send in any names or suggestions for a new IVCA Director and also a VISION News editor. (Contact me Ray W5NOO at [ray@junct.com](mailto:ray@junct.com)) . (Don Miller W9NTP Dayton Coordinator just returned from Haiti where he operated as HH2RN and informs me to obtain a reserved room at the Best Western Executive Hotel. You can call 1-937-278-5711 or 1-937-275-5039 and ask for one of the block of IVCA- 20 rooms). They will be held until May 1 2002. The cost is \$100 double occupancy. We also have a 40 chair meeting room at the same hotel 6:30 PM till 10:00 PM meeting to start at 7:30 PM The Saturday SSTV Forum will be held in room 1 at the Convention Center at 2:45 PM till 5:00 PM.

## Graphic Program Down Load (No camera or scanner required just create a new world View )

If you would like to try your hand at computer generated pictures you can down load the free "Terragen" program. You can make impressive Bit mapped graphics of all types of landscapes and seascapes. This program let's you change almost any thing like the suns direction or angle and color and the water depth or lands roughness using various types of surfaces like snow or grass or sand and cloud types etc. and do a quick preview of your picture or render it to a BMP in a few minutes that then can be converted to a JPG with several programs like Paint Shop Pro, etc. Do a Google search for "Terragen" or click the following URL. <http://www.planetside.co.uk/terragen/> Note: With a little paint program using cut-out and paste you can even put

yourself in these remarkable pictures of landscapes that you dream up to show the world on SSTV..

## The Kenwood VC-H1 (Some useful tips for fixed operation, big pictures and more storage etc.)

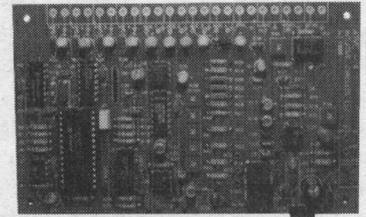
As we live in a small town that has no VHF or UHF SSTV operation I use the little VC-H1 hand held SSTV unit connected to my HF Kenwood transceiver using a special cable to the Kenwood's TS-940 rear DIN socket. For fixed operation I use a power cube supply in place or the VC-H1 internal batteries. As the VC-H1 internal memory only stores 10 pictures we can also use an older model Sony DSC-F1 digital cam with it's NTSC output using a special cable plugged in place of the removable Kenwood VC-H1 cam. (This arrangement then permits a storage of 30 pictures with 640X480 with high quality or up to 108 snap shot quality in 640X480 using more JPG compression). I am also able to use a shielded cable connected to a large screen TV's video in-put using the VC-H1's NTSC video out to view SSTV on the large TV and the small TFT screens simultaneously. Note: If you have a computer capture card or capture device the SSTV pictures from the VC-H1 NTSC output can also be sent to and saved with the computer! (I have also used a capture card and my Sony DSC-F1 digital cam and also a camcorders NTSC output to make AVI video movie files and send them as v-mail on the web.) Perhaps if I just had the ATI All-in-Wonder video/ TV capture card installed with it's NTSC video in and video out functions I could then really do some cute stuff with the VC-H1! Ray W5NOO

## Computer Tips

To obtain SSTV pictures one useful method is the "Screen Grab" approach. Although you can use Windows I-E and

## 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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Outlook Express to capture any graphic displayed in e-mail or on the web using a simple right mouse click with the mouse pointer on the picture. You can also use the key board "Print Screen" key to save the full screen to the Windows clip board and use a program like Paint Shop Pro's clip board function to view or save it etc.. However, several more free windows programs can be used to capture what's on the monitor screen or just part of the screen like the "Area" or the "Full Screen" or "Client Area" or a "Window" or perhaps just the "Object" when using a program like Paint Shop Pro using it's capture functions. One more free screen grab or capture and print program "Hard Copy" is available at

<http://tucows.myriad.net/preview/994.html> when down loaded and installed puts a small icon in the task bar that you can left mouse click on to send the screen display to your printer or use a right mouse click to permit the various capture program functions to be used. (Note: The hard copy program permits a screen display location to also be saved in various styles or shapes like Square, Round, Triangular etc.using various formats like BMP, JPG, etc., and using several types of compression settings!

### **Computer Clock Setting (The easy way)**

A handy free program to set your computer clock when you go on line automatically is the "Dimension 4" program available for down load at <http://www.thinkman.com/dimension4/>. It permits the synchronizing of your computer clock with a choice of several time standard locations. It checks and sets your clock on start-up and then goes away! If we could only just set SSTV program timing so easy!. (Note: Accurate computer time is necessary with programs like Satellite Tracking etc.) Bad computer clock batteries can also fail to keep proper time settings when the power is off and some systems may also gain or loose clock time. Some computers have the battery as part of the mother board and this requires the mother board replacement for a battery repair..

### **Operating Suggestions**

With the increased number of new operators that are joining the ranks using programs like MMSSTV etc., that request technical help to adjust timing or picture slope etc. Several have suggested that we have them move off the popular 14.230 frequency to a different frequency for this activity and free up 14.230 for picture use only. The practices of sending a graphic CQ using only a single SSTV frame should be avoided. (As we have more than 30 SSTV modes and due to weak signals or noise etc. the VIS code detection may not properly sync or start and display a picture. The CQ should be made first with voice giving the call sign and location and SSTV mode to be used so receiving stations can point beams at the calling station for improved signal strength and picture quality with the proper SSTV mode selected, .

### **Saving Pictures**

As a result of my information on saving pictures "SSTV Picture Storage" in VISION news No. 14 we then learned that Oleg N. Silkin, RA3DCT, a programmer, has written a program that saves QSO pictures etc. See his article "CQ Log by RA3DCT"

at <http://www.ra3doa.ru> for details.

### **Winners of the Valentine Picture Contest (Submitted By Tom KA4P)**

1st place = Paul W5LZ

2nd place= Charles K4ZET

3rd place = Jim WB8NNJ

As the result of sending Valentine pictures on the Saturday 14.230 IVCA net, the best pictures were selected and certificates will be sent out soon to the above sweethearts!

### **New 3D Computer Monitors ( No colored Glasses required)**

We have been using several programs in the past to create and view 3D pictures that almost jump out of the SSTV screen when using special viewing glasses. But we now have a new Monitor developed by the Deep Video Imaging Co. that uses stacked LCD screens that puts the background on the rear screen and foreground on the front screen giving the effect of depth. The actual monitor is two LCD screens stacked one on top of the other that requires a dual-head video card or a second video card, (Note: This is similar to the twin screen two monitor function of the standard Windows program except it requires a special \$6000 monitor). The mouse can place a pointer on the front or rear screen. The device is likely to find use in medical and graphic applications but has little advantage in general computer web and mail operation. Note:Years ago before the development of commercial color CRT's for TV, we were trying to find how to develop a flat large panel color TV screen and considered using two plate glass panels with a large number of fine vertical wires or conductors etched on one, and horizontal wires etched on the other, that were sandwiched together and sealed at the edges and filled with a neon gas. Then by a switching or commutating method selecting the various X and Y wire conductor ends with signal voltage, a neon glow would be produced where the two wires intersect. With three of these stacked panels units, using various neon gas types, we could have color TV. Or even use lots of stacked panels to produce a depth or a 3D effect. The larger the screen with more of the X and Y wires the higher the resolution. At the time I figured this was only part of an invention. I made no attempt to obtain a patent but did note that some one did later! ( That's how years ago I almost invented large screen flat panel 3D color TV even before the invention of the laser and holograms, IC chips and LCD screens etc.) HI.

### **Poor SSTV Operating Practice**

Some of the SSTV stations are sending pictures using bad judgment as to subject matter (porn). Let's all try to discourage this practice. See the following URL for some comments.

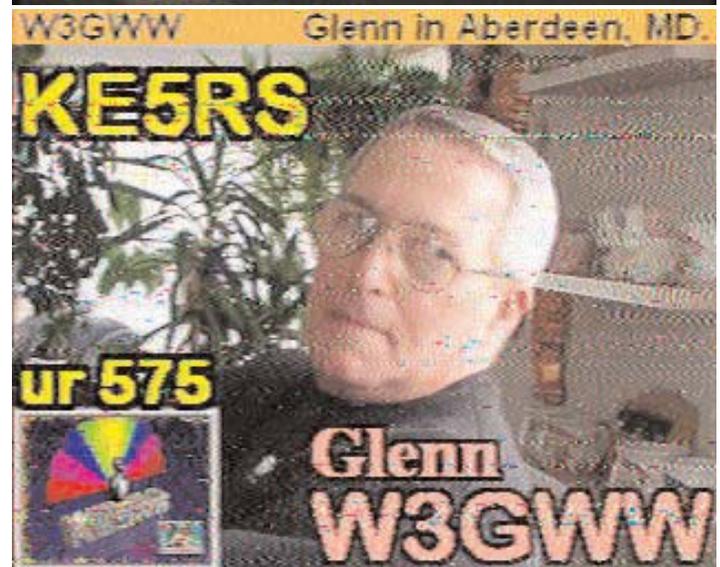
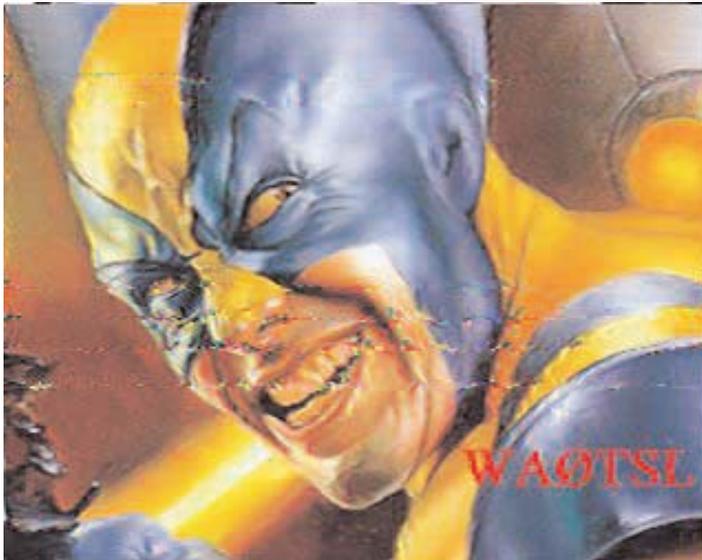
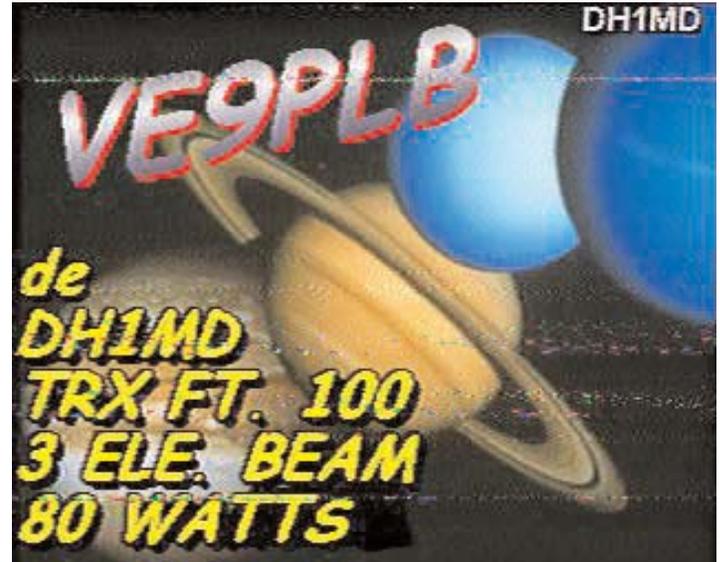
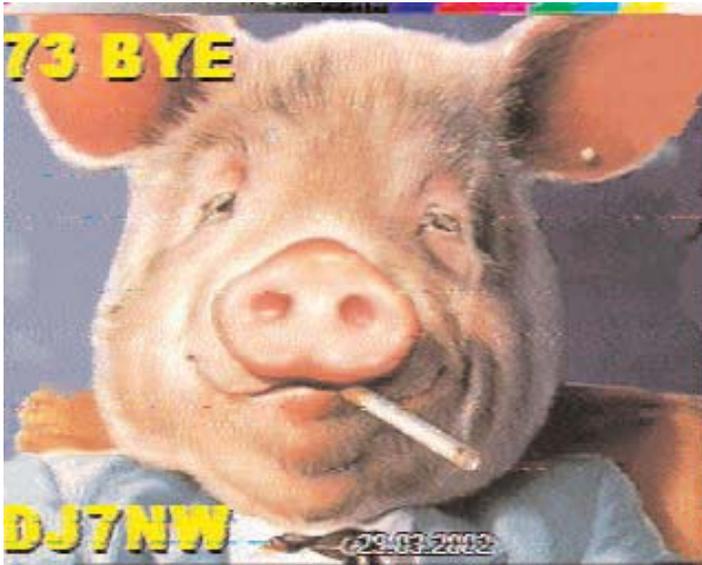
<http://www.qrz.com/cgi-bin/ikonboard.cgi?act=ST&f=3&t=7988>

ATVQ

## ATVQ Editor Gets Back On SSTV

I decided that I had been off SSTV for too long and had to see what was new. So I downloaded MMSSTV to try it out. I would say that it works great! I think it is time to retire the DOS based Blaster SSTV that I wrote back in 1991. Thanks to JE3HHT for writing a program that is so easy to use. The following are a few pictures I copied one afternoon. Gene - WB9MMM

ATVQ



### WATCH!

Keep your eye on  
<http://www.hampubs.com>  
 for  
**WEB  
 SPECIALS**  
 from Harlan Technologies

### 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.

**DECADE ENGINEERING ~ Full info at: [www.decadenet.com](http://www.decadenet.com)**  
 5504 Val View Drive SE, Turner, OR 97392-9517 (USA)  
 Tel: (503) 743-3194 ~ Fax: (503) 743-2095 ~ Email: [mike@decadenet.com](mailto:mike@decadenet.com)

# Great Plains Super Launch 2002 (GPSL 2002)

GPSL 2002 is the third annual summer launch of amateur radio balloons (near space launches) from the Johnson Near Space Center (JNSC), south of the town of Manhattan, Kansas. This year GPSL 2002 will take place over the days of 5, 6 and possibly 7 July 2002. In addition to the launches this year, GPSL 2002 will also feature a symposium on amateur near space, the first since 1993. The symposium is a chance for team members of near space programs to share history and ideas and to advance the state of the art.

GPSL 2001 saw three simultaneous balloon launches (a record number for this type of activity), with one mission reaching an altitude of 91,365 feet. We hope to break the record this year with twice as many launches. Last year's GPSL was covered by Weatherwise Magazine. See the Nov/Dec 2001 issue of Weatherwise for details.

## The Symposium

The GPSL 2002 symposium takes place on Friday, 5 July 2002 in the Hale Library's Global Room on the campus of Kansas State in Manhattan, Kansas.

Visitor parking is located on the west side of the campus. Parking passes are available at the campus police station, inside East Stadium.

Six presentations are planned for the symposium and additional presentations are possible. Currently, the presentations planned are (in alphabetic order):

Bill Brown, WB8ELK - Various Topics  
Mark Conner, N9XTN - Meteorology of High Altitude Ballooning  
Jack Crabtree, AA0P - About The ANSR  
Marty Griffin, WA0GEH - EOSS Tracking and Recovery Processes  
Paul Verhage, KD4STH - TVNSP Airframes and Electronics  
Ralph Wallio, W0RPK - Working Towards More Accurate Track Predictions

## Schedule of events for the symposium

7:30 AM	Setup and social hour
9:00 AM - 12:00 PM	Introductions and Morning Presentations
12:00 PM - 1:00 PM	Lunch at the Gold Fork
1:00 PM - 5:00 PM	Afternoon Presentations and Open Forum

The Gold Fork is located across the south side of the campus, about a ten-minute walk from the library.

After they symposium there will be an opportunity to tour the JNSC. Time will be short, but some equipment can be setup during this time.

## Schedule of events after the symposium

6:00 PM - 7:30 PM	Tour/Setup at JNSC
8:00 PM - ?	Dinner at Sirloin Stockade, Highway 24

Proceedings from the presentations will be available for \$10.00

## The Launch

All GPSL near space launches take place at the Johnson Near Space Center, located 9.6 miles south of Manhattan, Kansas on McDowell Creek Road. This site is also located 1.25 miles north of Interstate 70 on the McDowell Creek Exit, exit number 307. Short tours of the site can be arranged in advanced by contacting Paul Verhage. A more formal tour will take place after the symposium. Helium will be available on-site for launch teams requesting tanks by 1 June. If a total of six or more tanks are required at the launch, they will cost \$45 a tank (240 cubic feet). There will be a Special Events Station and Mission Control at the JNSC. Those individuals interested in helping out are requested to contact Bill All by late June.

## Schedule for launch day, Saturday, 6 July 2002

5:00 AM	Doors open at JNSC
5:30	Begin balloon filling
7:00	Begin launching

Sunday, 7 July will be a backup launch day in case of bad weather.

## About Manhattan, Kansas

A map of Manhattan is available at the Manhattan Chamber of Commerce website at [www.manhattan.org](http://www.manhattan.org) or at [www.manhattan.org/news/article.asp?ArticleId=018-2001-03-08-61713-19&ChamberGroup=cvb](http://www.manhattan.org/news/article.asp?ArticleId=018-2001-03-08-61713-19&ChamberGroup=cvb)

A list of available motels in Manhattan is listed at

<http://www.manhattan.org/cvb/lodging.asp>

Most of the new motels are located on east and northeast side of town on Highway 24. These directions are the easiest way to get to these motels. Exit from I-70 on exit 313 and go north towards Manhattan (about ten miles). This road eventually becomes Pillsbury Drive. Be in the right lane as you approach the bridge. Make the first right after driving over the river and then exit from the bridge. Make a left turn at the traffic light at the end of the exit. This road is Fort Riley Blvd. Get into the right lane as soon as possible. Continue north to the next traffic light. Make a right turn onto Highway 24. Most motels are located on your left as you leave town.

In Manhattan, a full-hookup RV Park is located at the Tuttle Creek Lake State Park. The park is located on Ft. Riley Blvd on the northeast side of town. To get there take the same roads to get to the motels, but do not exit on Highway 24. Drive straight through the traffic light and out of town. The park is located on your right and is well marked.

While in Manhattan GPSL 2002 will monitor the 147.255 repeater.

## About K-State

Maps of the K-State campus are available on-line at [www.ksu.edu/maps/](http://www.ksu.edu/maps/)

## About the Johnson Near Space Center

The JNSC has been used for amateur near space launches since

1996. Located at the JNSC is the Johnson Energy Lab, which is a building sufficiently large enough to fill over one dozen balloons. The main doors are large enough to safely carry filled 3000-gram balloons through. The JNSC is also surrounded by several acres of private land making launches safe for the public. Helium bottles will be delivered to the JNSC for those requesting them. The cost is \$45 for a 240 cubic foot tank if six or more tanks are ordered. Call by 1 June with your requirements. Linweld is providing the helium for GPSL 2002 at a discount.

Check the webpage <http://www.ksu.edu/humec/knsp/blf.htm> for JNSC map and location.

### The Official GPSL 2002 Website

Check the official GPSL website for up to date information and maps. Ralph Wallio has again graciously offered to host the website for GPSL 2002. The latest information on this event, including maps, can be found at:

<http://users.crosspaths.net/~wallio/gpsl2002.html>

### Registration

Register for GPSL 2002 by contacting the Event Coordinator, Paul Verhage. Registration information is due by 1 June 2002. When registering, give the following information:

Name

Number attending

If room for a display is needed

If you want a copy of proceedings

If you need helium and how many tanks

Money for helium (\$45 per tank) and proceedings (\$10 per copy) are also due by 1 June 2002.

### Contacts

Paul Verhage: (208) 631-7162

[paul.verhage@boiseschools.org](mailto:paul.verhage@boiseschools.org)

207 Crestline #3, Caldwell, ID 83605

Don Pfister: (913) 341-1368

[ka0jlf@earthlink.net](mailto:ka0jlf@earthlink.net)



## VE7VTV Repeater

Here's what we're doing in our part of the world. The 2002 Radio Amateurs of Canada Convention is being held here in July and ATV'ers attending may be interested in what's available. I can give you more about VE7VTV if you want. We designed and built our own controller and the whole thing was built for under \$1500 US.

### History

On the air since the summer of 1997, VE7VTV is the Okanagan Valley's only amateur television repeater and one of only three in B.C. operating in the 1200 MHz amateur band. Located on Commonage Mountain, the repeater was built primarily by the Okanagan ATV Group (OATVG): Dave Green VA7DG, Stew Thompson VE7BQY and Ron Seiler VE7VWV.

The OATVG's intent in creating VE7VTV was:

- i) To establish an open ATV repeater for public service and emergency service in the Vernon area;
- ii) To allow local amateurs access to a remote tower cam for recreational viewing of the Vernon area and as a for use as a web cam;
- iii) To establish an amateur presence in the under utilized 1200 MHz band.

Transmitter power is one watt using FM. Input frequency is 1246 MHz and output frequency is 1289 MHz. These frequencies were chosen for maximum in-band separation and are the same frequencies used by the VE7RVA repeater on Sumas Mountain in the Fraser Valley. Frequency coordination was arranged through the BC Amateur Radio Coordination Council in January of 1997.

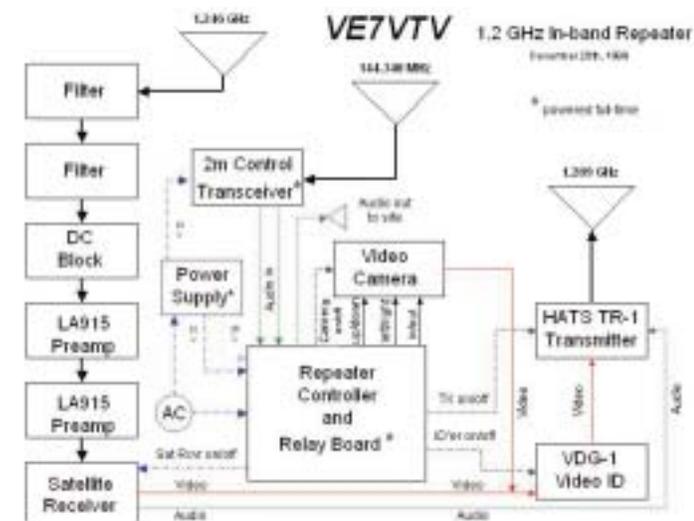
Remote pan, tilt and zoom control of the tower-mounted video camera is provided via DTMF on 144.340 MHz.

The camera has a panoramic view of the city of Vernon, Adventure Bay on Okanagan Lake and the village of Oyama. In order to protect the camera's CCD, the camera box is equipped with a photo sensor that shuts down the camera when the ambient light level becomes too high.

The video from this camera is also currently used on the VE7VWV web cam page.

The transmit antenna is a Comet Model CA-1218G 1/2 wave vertical antenna (\$129) connected into a tower mounted weatherproof box (\$20 at the swap meet) with 26' of 5/8" heliax (\$20).

The receive antenna, a Comet CX-903 5/8 wave tri-band vertical (\$209) is connected into the same box with 15' of Andrew FSJ4-50B 1/2" heliax (\$20).



The 2m antenna is a vertical dipole (worth \$20 but was donated) connected to the kiosk on the ground with 40' of Times LMR 400 (worth \$30 but was donated).

The video camera is a RCA CLC020 (\$50 at a garage sale) it's MOS Image Sensor has high resistance to burns and excellent low light sensitivity. We modified the power and zoom controls for operation via the relay board .

The video camera pan and tilt is done with two Alliance U-110 rotors (\$30 at the swap meet). This is not on the diagram because of space constraints.

VE7HCH built and donated the aluminum camera box.

Aluminum tubing to stand the antennas and camera away from the tower was scavenged at the local scrap yard (\$20)

The controller was built around the MoTron Auto-Kall AK-16 DTMF/X-10 controller (\$149).

The satellite receiver was \$50 at the swap meet

The HATS TR-1 transmitter was \$250 and has been in continuous service for 5 years now.

The two filters were \$250 used.

The VDG-1 ID'er from Elktronics was \$125

We built the power supplies for the controller and the rotors out of surplus parts.

A surplus Motorola speaker (\$3 at the swap meet) is used as a microphone to listen to the site.

Actual cost was under \$1,500 (sorry for the poor US dollar conversion on my previous estimate). If this still looks like the type of thing you are interested in, I will write it up in a more presentable fashion.

Ron Seiler VE7VWV  
r\_seiler@junction.net



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## We have internet radio ( iLINK and IRLP ), now how about Internet ATV??

I have sent this question/idea to folks on several lists on both sides of the fence, one side being knowledgeable about internet linking and the other side being those knowledgeable about ATV or Amateur Television. I know this may seem off topic, but it really isn't when you are talking about combining video with your audio in the case of Internet Radio, and when you are talking about using the internet to link your ATV repeaters to form a network to report Ham radio and TV activities (Might help to have access through internet by Hams who don't have access to an ATV Repeater.

Maybe some Ham would like to produce a show on how to solder or how to homebrew equipment, such as This Week: How to homebrew your own antenna tuner out of junk parts. Or, perhaps we could see feeds from Dayton Hamfest or HamCom in DF/W, which would allow us to see what fun we're missing.

Linking ATV repeaters through the internet might be much easier (financially) to do to create our own ATV network than going through a satellite. We already know that pics and sound can be sent through the internet, maybe it's just a matter of the right people getting together to figure out how to do it and write the software. My software skills are real rusty, so I'm not your guy, but I had an idea, and thought maybe I'd share this one and see what great minds have to say.

Jus' Dreamin.... John KD5INM  
Kd5inm@aol.com

## IRLP TV

Yes I am interested in IRLP for ATV. I helped put up an IRLP node 635 here in Melbourne and I have put a few notes on my web page about ITVLP. I even made a post on this and other mailing lists, but did not get much of a reaction. IRLP uses Linux and modified speak freely software. They use SSH for security, so hackers can't break in, a very important aspect when transmitting on the amateur bands from the internet. I've actually installed a Linux gate way on my cable modem to run IRLP from my place (node 634), but - Mark VK3XXX has kindly offered to run node 635 from his place over the NERG 70cm repeater VK3RMH.

I'm at the bottom of a hill. I can receive my ATV repeater VK3RTV, albeit very noisily. I have a 23cm antenna and partly completed ATV transmitter kit, but until I can afford a tower, I don't know that I will ever get into the ATV repeater. I was going to use an old Amiga 2000 with a genlock to do graphic overlays. An alternative is the use an nVidia GeForce II MX with TV out as the video source and a Miro PCTV TV tuner / frame capture card. Video 4 Linux drivers support the Micro PCTV tuner card, along with a number of other Bt848 based frame grabbers. I was looking at combined frame grabber display cards such as the Hauppauge TVR-PCI and ATI all-in-wonder. I think they have video codecs built in for MPEG 2.

Video conferencing software uses H.323 protocol. I'm not sure if they use MPEG2 for the video codec or not. They may actually use their own codec, which means the more expensive MPEG 2 boards, are probably of no real advantage. You might like to check out the [openh323.org](http://openh323.org) web site to see what video conferencing software is available for linux. I'm pretty sure the open H.323 uses the video4linux drivers for their video conferencing software. You really need a cable modem or ADSL to run IRLP, so you will definitely need that bandwidth to run ITVLP. (ITVLP = the fictitious Internet TV Linking Project ).

John Kent- VK3BIZ.  
vk3biz@optushome.com.au



## HAM DIGITAL TELEVISION

Ever wonder if we hams could use the commercial broadcast DTV modulation scheme?

The ATSC system places nearly all the cost and processing power at the transmit end. The receiver has a relatively modest job of decoding and demodulation. With the Hauppauge WIN DTV module only \$399 or less, and a few set top boxes in the under \$500 category, or my 62" Zenith ATSC hi def receiver in the living room, it is tempting to downconvert the 439.25 ATV RF to channel 3 and look for DTV signals on the ham bands. That is the easy part. The hard part is generating an 8VSB-T signal that can be received and decoded. BTW, its 8VSB-T not 8VSB. The T means trellis encoding which gains about a db reduction in the amount of signal the TV needs to receive. There is also no difference in the transmission process no matter if you generate plain old NTSC or a high def 720 or 1080i signal. It all gets digitally compressed to the 19.3 Mhz SMPTE 310 signal to the modulator.

I've been thinking about ham 8VSB-T. There are several steps involved. First you need to get the video in an MPEG-2 format that will be compatible with the ATSC standard. You may be able to do this with simple software such as that sold by Ulead, which allows fairly detailed adjustment of the MPEG-2 parameters.

Second, you will have to encode the MPEG data in packets compatible with the ATSC standard, including PSIP information. This may be a tough one.

Finally, most 8VSB-T modulators require the data stream be in DVB-ASI or SMPTE310 format. There are converter boxes and perhaps chips that should allow you to do this. Finally, the 8VSB-T modulator you use has to have the randomizer and forward error correction to generate a valid 8VSB-T signal. Not an easy process!

If I were going to try to do it on an all ham homebrew basis, I would try to do the MPEG encoding, ATSC formatting and the Reed-Solomon coding and randomizing all in software on a PC, not in real time. The PC, perhaps through a Firewire or USB connection, would then supply the data to be used by the 8VSB-T modulator, which would still have to do the FFT (fast fourier transform) to make the signal 8VSB-T instead of 8-DSB! Another option, requiring more computer power, would be to have the PC generate both the I and Q data for the modulator. There would be some significant timing issues with this, but if they could be surmounted it would reduce the modulator complexity to practically nothing!

You need to multiplex the input to couple the audio and video baseband signals. This is a simple process and just about any data mux can do this. But you also need to generate a valid PSIP signal to identify you at the receiver. That also has to be muxed in. That would compromise the digital end of things.

In RF land, the modulator needs to be very low phase noise. The SMPTE 310 signal must be very stable. It has been found that even a tiny amount of jitter in the data clock, which can come from modulation, conversion and oscillator noise, can reduce the signal to undecodable mush. The commercial stations generally rely on a very stable oscillator, tied to a GPS receiver and a precision locked 10 MHz source. The 10 meg source locks the transmit frequency and the data stream generator.

The RF transmitter needs to be very linear. Class AB at worst. Non linearity in the RF stages is corrected by a feedback process that pre-distorts the signal in a broadcast transmitter. In our ham rig, we likely would not want to build the additional hardware to do this, and a class A amp would be necessary. If the errors are not corrected, the effect is to raise the needed C/N ratio. A minimum of 14-15 C/N ratio is currently the threshold of detection, decoding and demodulation for 8VSB-T. That is still about 12-20 db better than our ham analog signal to get locked sync and discernable call letters depending on your receiver bandwidth and noise floor.

Of course you could cheat and "borrow" the hardware from your buddy at the local station, few would notice the DTV signal is not on the air for a few days, or plunk down about \$80k for your own hardware, but I bet someone out there reading this is saying, shucks, those computer programs would be easy.....I can do this for \$20!

Now the 8VSB-T signal also has to have an RF mask filter to prevent sidebands splattering all over the band. We can do that with a simple interdigital bandpass filter with skirts sharp enough to keep the products legal. In broadcast TV my filter is about 30 feet long, 15 inches wide, 8 inches high not including the four bolts on side mounted cavities. We would want our filter for ham DTV to be about 8 Mhz wide and less than 1 db ripple. This avoids the problem of band edge delay distortions.

The European DVB system uses a completely different modulation scheme (COFDM) and uses 8 MHz band width. So perhaps some of our over the pond friends have some 8 MHz wide RF filters already in the works. Spectrum International offered a bandpass filter, but the skirts are too wide with only 5 poles. The skirts of the filter should be -50 at 1 Mhz removed from the passband edge. This should keep the digital splatter from creating havoc on our fellow hams and spectrum users outside of the 420-40 band.

OK, so that's it in a nutshell. Create a simple (understatement) computer program and share it with the rest of us. We can all build the RF stages to convert a 45 MHz modulator or channel 3 modulator to UHF and add a few watts of power. Lets go to it!

Thanks to Doug Lung for his input.

Good luck!  
Henry AA9XW  
A9xw@cs.com

## 809 Phone Scam - Beware

The Federal Communications Commission (FCC) has become aware of a long distance phone scam that may lead consumers to inadvertently ring up high charges on their phone bills. The Scam Works Something Like This: You get an e-mail, voicemail or page telling you to call a phone number with an 809 (or some other three-digit) area code to collect a prize, find out about a sick relative, engage in sex talk, etc.

You assume you are making a domestic long distance call as "809" (and other three-digit area codes involved in this scam) appear to be typical three-digit U.S. area codes. When you dial the "809" area code, however, you're actually connected to a phone number outside the United States. You don't find out about the higher international call rates until you receive your phone bill.

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### NASA Broadcast Schaumburg, Illinois

I'm a member of the Motorola Amateur Radio Club of Schaumburg, Il. (K9MOT). I just thought I'd pass along some ATV info about our club.

For the last couple years we have been rebroadcasting NASA TV on 910.25 AM Upper VSB during shuttle missions. During the missions the station is live 24/7. We are running about 50 watts average - horizontal polarization from the Motorola Center in Schaumburg, Il. Currently the antenna height is only about 80' and favors SW and north. This may be of interest to any ATVs within about 10 miles or so of Motorola.

Skip - K9SA  
sallison@megsinet.net

ATVQ

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### ATV Presentation Peoria Amateur Radio Club Friday August 9, 2002 - 7 PM

If you are in the area of Peoria, Illinois, please join us at the Peoria Amateur Radio Club for a presentation about Amateur Television. I will try to show a few things about ATV and why it is so much fun, and how you can get started easily! If you are already into ATV, but have some friends that are not yet, bring them along so we can tell them all about it.

The meeting will be held at the American Red Cross in downtown Peoria where they have held their meetings for years.

See you there!

Gene - WB9MMM  
Editor - ATVQ

ATVQ

32 Amateur Television Quarterly Spring 2002

## Dayton ATV Forums For 2002

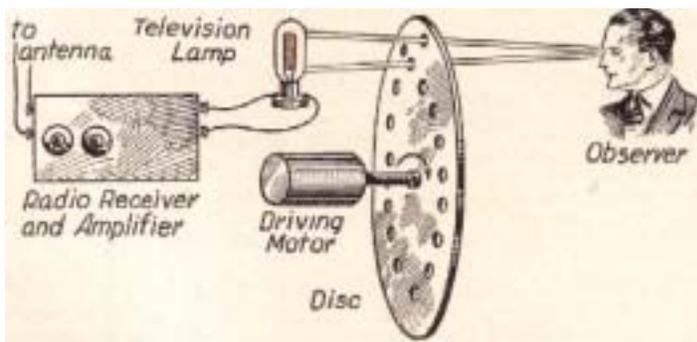
### Saturday May 18, 2002

12:15 - 2:00 PM - (session #3).....Room 1

Moderator: Bill Parker, W8DMR

Speakers: Chris Cieslak, KC9L - "R/C ATV: Quick, Easy, Fun and Useful."

Why combining radio control and ATV is good for both club and public service events. How to do it. Actual demonstration of an RC ATV vehicle employing a 70 cm AM wireless video link.



Steve McVoy, "The Early Television Museum", President and Curator.

History of early television, preservation of early TV receivers, and a demonstration of the Baird Televisor!

Announcements by:  
Dara ATV Repeater Status  
ATNA Activities, W3SST  
ATVQ, Editor WB9MMM  
ATCO, Editor WA8RMC

ATVQ

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### ATV Forum At The Egyptianfest Sunday June 9, 2002 Granite City, Illinois

I am happy to announce that I have been asked to put on a forum about ATV at this hamfest. With all the ATV'ers in this area, it should be a good one. I hope to see you there!

For more information go to: [www.w9aiu.org](http://www.w9aiu.org)

Gene - WB9MMM  
Editor - ATVQ

ATVQ

Say you saw it in ATVQ!

# ATNA and the DAYTON HAMVENTION

To All ATVers:

A.T.N.A. is expanding their Dayton weekend activities regarding Friday and Saturday night ATV sessions. This year we are locating both the Friday night and Saturday night sessions at "The Stockyards Inn". This will enable ATVers and guests to enjoy a moderately priced meal and also allow more time for technical presentations.

As we have for the past several years A.T.N.A. will make all the arrangements and provide the room to gather. The Stockyards has agreed to have separate checks and order from the menu.

This year we would like to solicit from the ATV community subjects and presenters to provide technical or operational presentations. You need not be an engineer or public speaker however we would request a general outline of the subject matter in order to prevent duplication of the same specific matter.

Some topics I personally would like to see are 2.3 cm ATV and Narrow Band ATV demos or hardware. Vendors with new or unusual products are welcome.

Please respond to me at [w3sst@juno.com](mailto:w3sst@juno.com) with your suggestions.

Current information will be listed on the ATNA web page as the Dayton Hamvention gets closer. [www.qsl.net/atna](http://www.qsl.net/atna)

John Shaffer, W3SST  
Pres. A.T.N.A.  
[rcohen@voicenet.com](mailto:rcohen@voicenet.com)

ATVQ

## Dayton 2002 ATNA Program

Hello Gentlemen, here is my "almost final" Dayton 2002 Program which really surprised me in that all time slots are now filled 60 days before we have "show time"!!!

Many thanks to the gentlemen who said "Yes" when asked to volunteer for presentations. I would ask them /you right now to plan to keep within the time slots in order to give the courtesy due to other speakers who have prepared equally well for their presentations. FYI, I do plan to use a timer and a logical "vaudeville hook" to "help" the process.

Please support ATNA's use of the Stockyards Inn by eating there each evening as it helps ATNA and it so very convenient for you. Because of individual bills, the "Caviar Set" can eat "high on the hog" and pay as such while the more conservative folks can eat according to their tastes/wallets.

<http://www.hampubs.com>

John Jaminet = W3HMS  
VP Activities, ATNA  
[W3HMS@aol.com](mailto:W3HMS@aol.com)

QTH

Stockyards Inn  
1065 Springfield St  
Dayton, Ohio 45403  
Phone 937 254-3576

## Friday 17 May 2002

**1745-1900** Dinner from menu with separate checks....PLEASE dine with ATNA.

**1900** Program (and timing) review by MC, John Jaminet, W3HMS

**1905** Where and What Does ATNA Do Now? and Officer Nominations for next term by John Shaffer W3SST, President, ATNA

**1925** A Tribute to John, W8STB SK by MC and all with tributes

**1930** First Prize Drawing by Art Towslee, WA8RMC.

**1935- 2020** Linked ATV Repeaters via Amateur TV Network by Mike Collis, WA6SVT (Video report followed by Tech talk with Q and A.

**2020-2035** Break with refreshments courtesy of ATNA.

**2035-2100** ATV From Arizona Balloon by Brian Miles, WB7UBB with video and talk

**2100-2105** Second Prize drawing by Art Towslee, WA8RMC

**2105-2140** Upcoming Balloon Flights by Bill Brown, WB8ELK. Video report?? and talk

**2140-2155** Preparing a First Rate NPRM Response by Mike Collis, WA6SVT

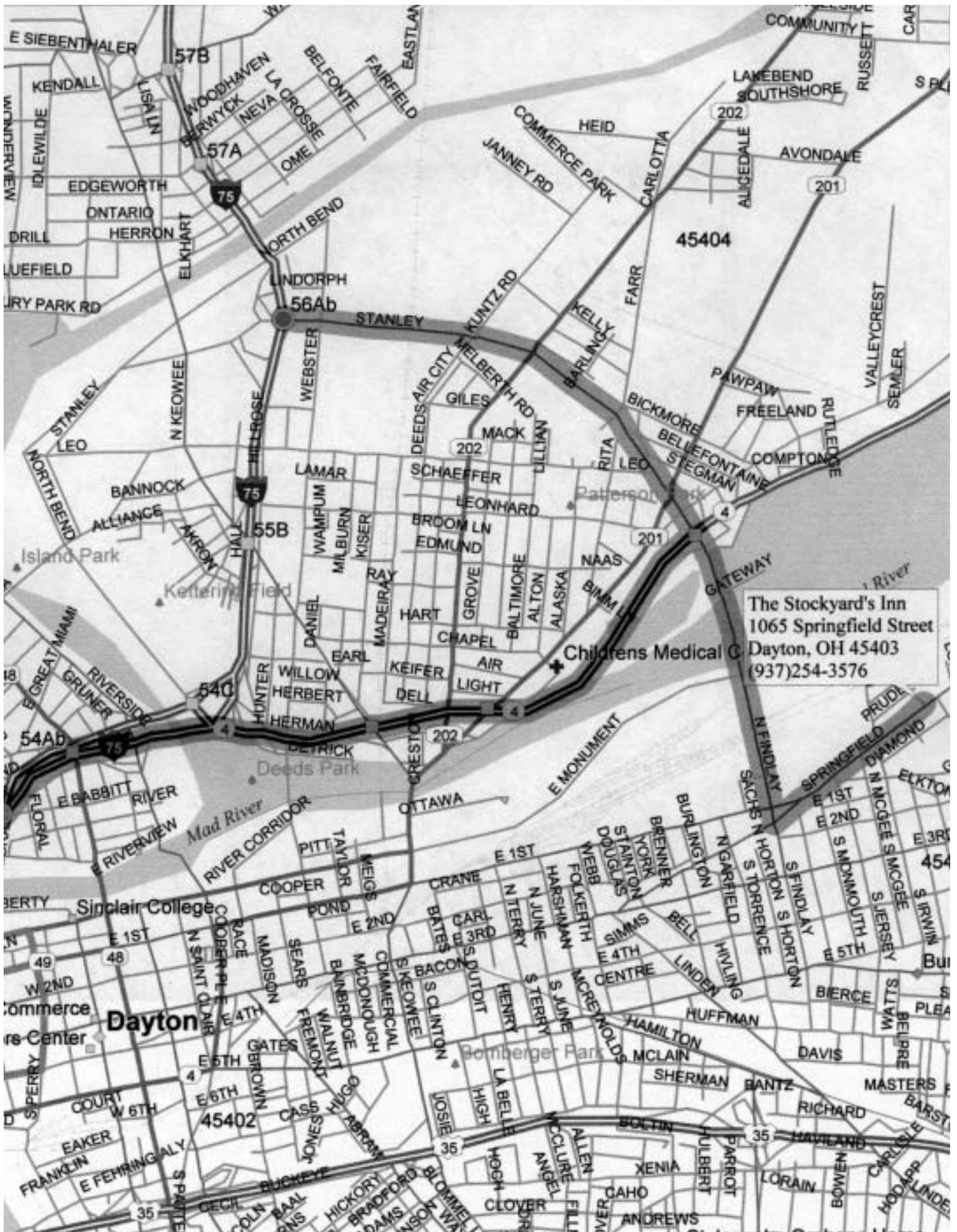
**2155- 2200** Wrap up Announcements/Good of the Order....MC

**2201** Good Night

## Saturday 18 May 2002

QTH - Same as Friday.

**1745-1900** Dinner from menu with separate checks..please dine with us.



1900 Program review by MC, John Jaminet, W3HMS

1905 ATNA Election for Officers for 2002-2004 by John Shaffer, W3SST, President, ATNA

1915 ATNA Treasurer's Report by Harry DeVerter, N3KYR

1920 Informal discussion with Gary Hendrickson, W3DTN, on ATV Regulatory Ideas

2010-2025 Break ....refreshments courtesy of your wallet!

2025-2040 A Video Review of the Seigy, France Hamfest April 2002 and Annual ANTA France Meeting by John, W3HMS

2040-2055 Linking of Wilmington, DE and Philadelphia, PA ATV Repeaters by Ron Cohen, K3ZKO and Dave Stepnowski, KC3AM

2055-2105 ATNA Business by John Shaffer, W3SST, Outgoing President ATNA.

2105-2115 Remarks by Incoming ATNA President

2115-2145 Internet ATV by Ron Cohen, K3ZKO

2145-2055 Microwave ATV Update by John, W3HMS

2055-2200 Good of the Order ....MC

2201 Good Night



# The A.T.N.A. Friday and Saturday Night ATV Dinner Meetings

Starting at 6 PM both nights  
**DIRECTIONS**

From I-75 North, exit 56, Stanley Avenue East, at RT-4 the road changes name to N. Findlay Street, at Springfield Street turn LEFT and look for "THE STOCKYARD'S INN". The trip from I-75 is 3.4 miles and should take about 8 minutes.

From I-75 South, exit onto SR-4 and get off at N/ Findlay Street South. At Springfield Street, turn LEFT and look for "THE STOCKYARD'S INN". The trip from I-75 is 4.0 miles and should take about 6 minutes.

Please note: Each person will be responsible for their own dinner expenses.



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 <b>FT-7100M</b> 50/35 Watt Dualband mobile	 <b>FT-100D</b> HF/50/144/430 HF/VHF/UHF Transceiver	
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## 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](mailto:atna@qsl.net) or by regular mail to:

ATNA c/o Harry F. DeVerter 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.tallahassee.net](mailto:atv@atv.tallahassee.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 \_\_\_\_\_, Repeater \_\_\_\_\_, AM \_\_\_\_\_, FM \_\_\_\_\_  
1200 Mhz \_\_\_\_\_, Simplex \_\_\_\_\_, Repeater \_\_\_\_\_, AM \_\_\_\_\_, FM \_\_\_\_\_, 2300Mhz \_\_\_\_\_, Simplex \_\_\_\_\_, Repeater \_\_\_\_\_, AM \_\_\_\_\_, FM \_\_\_\_\_  
10 Ghz \_\_\_\_\_, Simplex \_\_\_\_\_, Repeater \_\_\_\_\_, AM \_\_\_\_\_, FM \_\_\_\_\_, Other \_\_\_\_\_, Simplex \_\_\_\_\_, Repeater \_\_\_\_\_, AM \_\_\_\_\_, FM \_\_\_\_\_

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)

Enclosed (USD) \$ \_\_\_\_\_ for \_\_\_\_\_ years dues (Non-North American)

### ORGANIZATION APPLICATION FOR ATNA

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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:

ATNA C/O Harry F. DeVerter Jr., N3KYR  
303 Shults Road  
Lancaster, PA 17603-9563

FOR ATNA USE ONLY: ATNA # \_\_\_\_\_ CLUB CATEGORY \_\_\_\_\_ CHECK# \_\_\_\_\_ AMT. \_\_\_\_\_

Membership card sent \_\_\_/\_\_\_/\_\_\_ Certificate sent \_\_\_/\_\_\_/\_\_\_ (ORG. ONLY)

# TVHAM

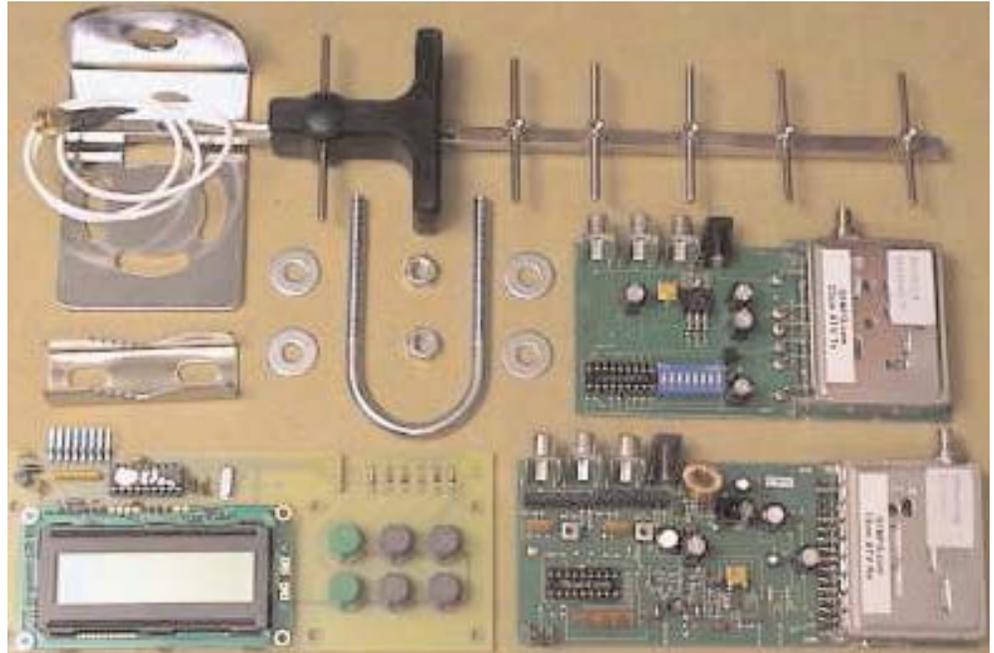
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## ITVLP

My name is David (VK3JDA) I am the co sysop of node 630 I have had a call since 1988 and have been very active in ATV from the start, the first amateur project I built was an ATV transmitter for 70cm. My ATV activity includes mobile and portable (backpack). I have video in/out/TV on a windows 95 box and will be switching to linux as soon as I can (soon with help if its needed), I also have SSTV running on the box and have done some SSTV to ATV repeating. Tony (VK3JED) and my self have also done SSTV over IRLP in VK3 and VK3 to a group in VK2. I will properly not be able to help with the software side but as long as it can coexist with an IRLP node running on the same cable connection I can help with video testing. The local ATV group in Melbourne is open to trying just about any think as long as its legal.

David - VK3JDA  
[vk3jda@optushome.com.au](mailto:vk3jda@optushome.com.au)

ATVQ

## ITVLP - Amateur Television Linking

Wanted to tell everyone about our projects for linking ATV Repeaters between cities the old fashion way first, check the CAATN Web page at [www.qsl.net/caatn](http://www.qsl.net/caatn). We do have Philadelphia, PA and Wilmington, DE linked full time with 1.255 GHz receive at Phila. and Wilmington receiving 2.418 GHz.

The latest linking has been over the Internet using IPHONE and connecting Philadelphia, PA. with Smyrna Beach, FL. Bob, W3EFG, receives the transmission from his ATV repeater and sends it via IPHONE to me and I retransmit up to our repeater in Phila. then we reverse the path.

I just signed on to this server and will have to go back and see what has taken place in the past, maybe we are just re-inventing the wheel.

73  
Ron, K3ZKO / AFA1HQ  
[rcohen@voicenet.com](mailto:rcohen@voicenet.com)

ATVQ

**Editor's Note:** As they say, yesturday I could not spell engineer, and today I am one, the same can go for ITVLP, although I am not one yet. It seems like IRLP came up overnight, and everyone is having fun talking through their local repeater, through the Internet, and out another repeater somewhere else in the world. Whether you or I think that this is "real ham radio" won't matter as there will be bunches of hams that will do this. Those that do not think that this is REAL ham radio have to remember that technical advances continue every day, and ham radio as we used to know it will not be forever. So, will we see ATV repeaters around the world through our local repeater soon. More articles to come, I am sure. - Gene - WB9MMM - [ATVQ@hampubs.com](mailto:ATVQ@hampubs.com)

<http://www.hampubs.com>

Spring 2002 Amateur Television Quarterly

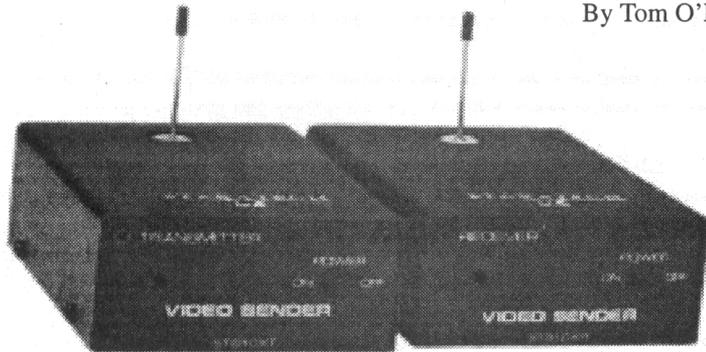
ATVQ

37



## Star Tech Video Senders on 900 MHz ATV

By Tom O'Hara W6ORG



**These \$30 License Free FCC Part 15 video transmitter and downconverter can be used directly for any short distance video and audio application or for 909.25 MHz AM ATV with some modifications.**

Order from Bill Houlehan at Oshea Ltd. -  
[www.atariclassic.com](http://www.atariclassic.com) or (816) 257-2111

The transmitter and receiver (actually a crystal controlled downconverter) is designed for plugging in camcorder or VCR composite video and line audio to the AM transmitter (RCA phono jacks) and receiving through the downconverter with the F jack cabled to the antenna jack on a TV set to channel 3. The system comes with screw in 1/4 wave spike vertical antennas and 12Vdc @ 200 ma wall plug power supplies.

The power supplies actually put out 14 to 15 Vdc. In the transmitter, a 12V regulator IC is used, but in the receiver they just used a series dropping resistor. In either case, 12Vdc battery power could be tapped in on the output side of the regulator and resistor for portable applications, or directly from a car with the engine running. The receiver draws 40 ma and the transmitter 100 ma with 12Vdc applied.

DX with the FCC Part 15 video devices is only a few hundred feet line of sight. You can't change the antennas or tweak the power for legal license free operation, but if used as a ham for ham purposes, you can repeak the transmitter, remove the antenna system and connect to beams like the 3318LYARM Loop Yagi and should get about 1/2 mile line of sight. There are many public service events or other applications where this may be all you need. However for higher power a Downeast Microwave amp could be added - they have amps that take 10mw input, but more investigation of the transmitter needs to be done to better match the AM linear input range. Bill is trying to get the schematics for me.

I think the best part of the Star Tech system for ham use is the crystal controlled downconverter. The downconverter outputs on channel 3, has a preamp stage, and a total gain of 18 dB. However, for some reason, the local oscillator is on the high side which inverts the sidebands. This is no problem for DSB simplex but if used to receive an ATV repeater transmitting VSB, the desired VSB will be attenuated.

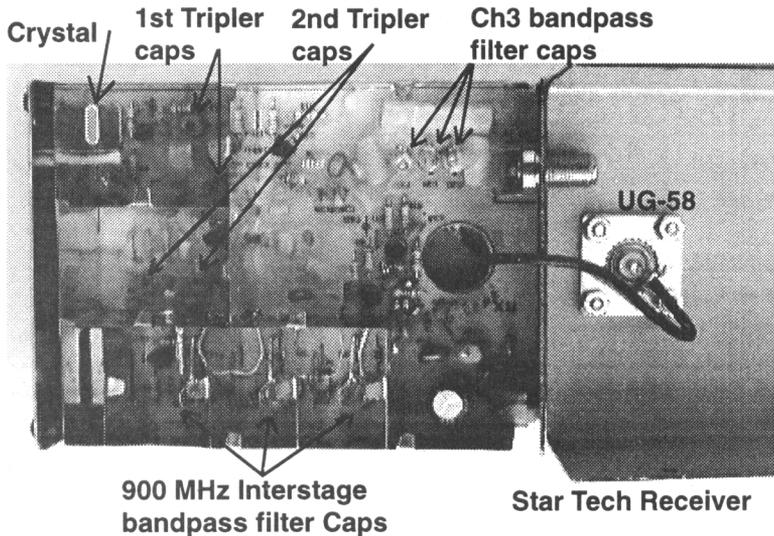
So if you intend to change the frequency from 909.25 MHz to one of the standard ATV frequencies you might as well get a crystal for low side injection and repeak the two tripler double tuned circuits. The crystal frequency for low side injection is input frequency input minus 61.25 MHz (ch3) all divided by 9. Crystals can be ordered from KW Mfg. (405 567-2285) - specify KW-18 type crystal and the frequency:  
910.25 = 94.333 MHz    911.25 = 94.444 MHz    913.25 = 94.667 MHz    919.25 = 95.333 MHz  
923.25 = 95.778 MHz

The receiver channel 3 output has a multipole bandpass filter which is tuned by C20, 21 and 22. For some reason, it was centered on 61 MHz rather than tuned for being flat across channel 3 - 60 to 66 MHz. The high side at 66 MHz was rolled off about 5 dB which would decrease the color and sound subcarriers. A slight decrease in

(c) 3/2002

### Star Tech Video Senders on 900 MHz ATV cont.

capacity on C20 and 22 brought the passband up to the proper bandwidth and band pass for channel 3. After a little more peaking I was able to increase the total gain to 22 dB.



Both units are in metal enclosures with the electronics in tin plated metal cans inside. The cans come out by removing the 8 external screws and on the receiver, also removing the nut on the F jack. The cover on the can comes off by prying up the tabs. The antenna assembly can be unsoldered from the boards and replaced with RG-174 coax to a UG-58 N jack for ham use. The top tin plate cover is not used so as to make room for the N jack. The hole in the enclosure cover is 5/8 so you only need to drill 4 1/8" diameter holes for the #4 mounting screws, nuts, lock washers and solder lug. Point the solder lug toward the center socket and bend it up to clear the center socket by about 1/8". Flair back the braid on the RG-174 and put the center conductor and its insulation through the solder lug hole and solder the center to the UG-58 center socket. Then solder the braid to the solder lug. Check for shorts.

center to the UG-58 center socket. Then solder the braid to the solder lug. Check for shorts.

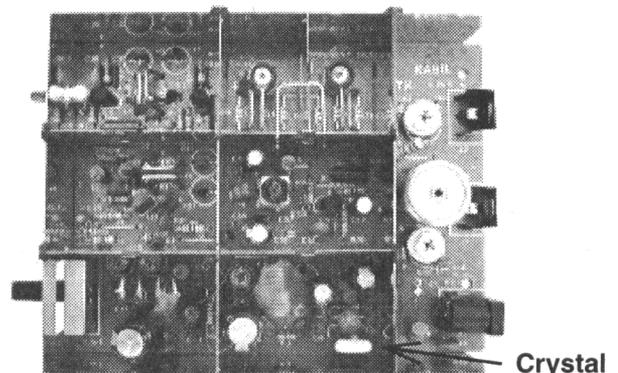
With a signal generator or strong near by ATV signal, peak for best picture and least snow starting at the two first tripler caps with an insulated tuning tool. Then proceed to the two caps of the 2nd tripler. If the signal gets too strong, decrease the applied signal by rotating the antenna or adding input attenuation. Then peak the 3 interstage bandpass filter caps. And finally, touch up the channel 3 bandpass filter for best color and sound.

The transmitter puts out -7 dBm pep which is about right for the 50 mW per meter at 3 meter license free FCC Part 15 limit these units are certified for. I was able to get about +2 dBm with a little peaking of the output filter and some of the multiplier stage trimmer caps. However, the tuning of the multiplier stages greatly affects the video modulation. I could get +8 dBm if I just peaked for max power, but the modulation was unuseable. It looks like they modulated the last tripler stage transistors base. The video also rolls off quite a bit. The modulator is the weak part of the design. If I can get a schematic soon, I might be able to find a simple solution. If not Ill just have to trace it out when I can get time.... and patience. The sound subcarrier is also down about -25 dBc, which is quite low - it should be up around -15 to -18 dBc, but this might also be a function of the modulators video high frequency roll off. There are internal video and line audio gain pots on the board.

The frequency can also be changed from 909.25 MHz by changing the crystal and reapeaking to the more standard ones used for ATV. The crystal frequency is times 9 in this circuit and the same type as in the receiver.

- 910.25 = 101.139 MHz
- 911.25 = 101.250 MHz
- 913.25 = 101.472 MHz
- 919.25 = 102.139 MHz
- 923.25 = 102.583 MHz

**Star Tech Transmitter**



## Driving the PA5 20 Watt Amplifier from the Videolynx 434 or Z70A Mini ATV Transmitters

The Videolynx 434 and Z70A Mini ATV transmitters are great for short range applications up to 1/2 mile dipole to dipole or ground plane to ground plane. But there may be times that you need to extend the range but cant use higher gain antennas and need a linear amplifier. Also, if you do not have a higher power ATV transmitter for the home station, and want to get some additional use out of your Videolynx, then you can add the PA5 20 watt amplifier. See the example in the photo to the right.

The 20 watt power module in the PA5 only takes about 20 mw pep to give the 20 Watts pep output with 13.8 Vdc applied. The drive power must never exceed the input linear limit otherwise the top of the modulated waveform with flatten out and splatter the band just the same as you might be familiar with when running SSB voice.

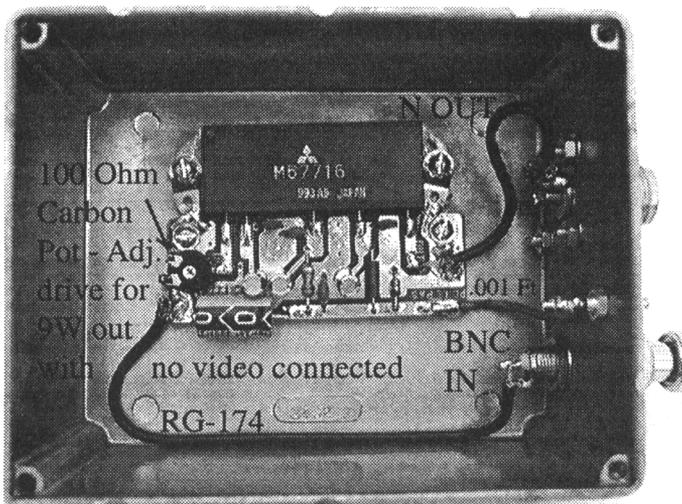
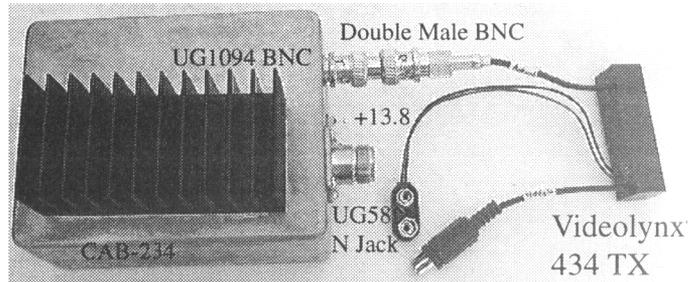
Generally, linear amplifiers will list the 1 dB compression point and is a good reference to set the peak sync at for ATV. This is the power where the straight line input vs output departs from the actual gain line and bends over toward less gain by 1 dB as the output power increases. The PA5 20 watt power module has a 1 dB compression point at about 14 watts output. This peak sync maximum corresponds to a reading on a Bird Wattmeter of about 9 Watts with dirve adjusted and no video plugged in to the Videolynx transmitter.

Since the Videolynx transmitters do not have a peak power output pot, video gain pot, or blanking pedestal (sync stretcher) pot like the TXA5-70 transmitter boards that were designed to drive this amplifier, you must reduce the peak power low enough so that the sync and color burst do not get compressed so far that the TV set will not lock up the sync and/or produce color. Over driving a linear amplifier will also clip the 4.5 MHz sound riding on the video waveform with the Z70A at each sync tip resulting in sync buzz in the received audio.

The amount of attenuation to put between the Videolynx transmitter and the amplifier input will vary from unit to unit. So on the surface, the easiest way to impliment the added amplifier is to add a 100 Ohm carbon pot. However, leads that are outside the coax are very significant inductors on the 70cm band. So one cannot use a panel pot like the video gain pot but must use a small carbon trimpot and make sure the connections are very short. Besides affecting the actual attenuation, the leads outside of the coax can radiate and get into other parts of the circuit.

The example below shows the PA5 module packaged in a CAB234 die cast aluminum box which serves to both shield the circuit and dissipate heat. Note that the placement of the power module must be on a very flat surface and so is off set to one side to avoid a raised manufacturers logo in the middle of the box. RG174 50 Ohm coax is used between the connectors and the board with short direct connections. The Radio Shack 278-105 BNC has a solder tab on the end which is best for keeping the coax ground short. A solder lug is used under one of the N Jacks holes and pointed toward the center socket - coax center goes through a lug hole and the braid soldered to it. The TR-1b T/R relay board could be mounted on the N Jack if you wanted to switch the Antenna between the amp in transmit and the downconverter as well as DC power switching. Bend the 100 Ohm pot CW lead 180 degrees to keep it isolated from ground and solder the coax center conductor to it. The wiper solders to the PA5 IN pad and the CCW lead to the ground plane - bend leads 90 degrees.

The 13.8 Vdc is fed in through a .001 mF feed through cap. The Videolynx BNC antenna jack can be connected to the amp with a double male BNC adaptor.



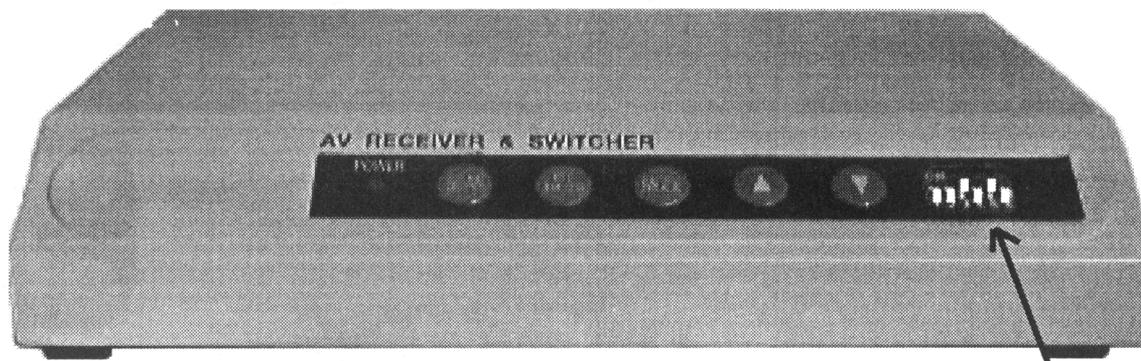
### PARTS LIST

- PA5 20Watt power module, includes heat sink and 1 ft of RG-174 coax - P. C. Electronics
- CAB-234 Die Cast Aluminum box - P. C. Electronics
- UG-58 Type N Jack - P. C. Electronics
- .001 mF Feed Through Capacitor - P. C. Electronics
- 100 Ohm Carbon trim pot - P. C. Electronics
- UG-1094 BNC Jack - Radio Shack 278-105

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## 2400SR 2.4 GHz FM ATV Receiver



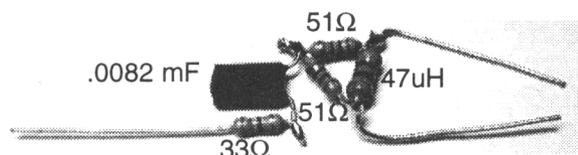
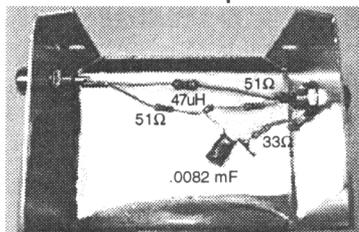
This imported FM video receiver has been converted by us to receive ATV between 2398 to 2442 MHz in 1 MHz increments.. The frequencies are selected by the front panel digiswitch. Suggested frequencies are 2442 repeater input or output, 2418 link, 2398 or 2430 simplex. None of the old push buttons are mounted. The light is only a power on indicator.

A wall plug power supply is provided, however, the receiver can be powered from any 12 to 14 Vdc power supply if you make up a cable using a 2.1 mm power plug (RS 274-1569).

The rear panel has video and line audio RCA jack outputs. Sound subcarrier is 6.5 MHz which is compatible with the Wavecom transmitters. De-emphasis is standard on most ham bands but is not built into Wavecoms or most license free transmitters. It must be added if used in your area. Pre-emphasis of the video frequencies in the transmitter and corresponding de-emphasis in the receiver reduces the noise bandwidth and results in about 6 dB more sensitivity or twice the distance for a P4 to 5 picture. However, you cannot mix those with and without the network or you will get very distorted video or unstable sync.

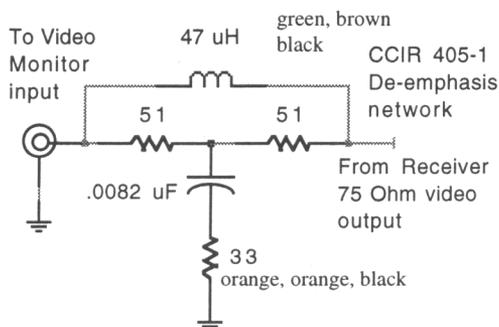
De-emphasis detail: You can either build the de-emphasis network for the video output into the receiver or run a short cable to the network built into an external box using the supplied network parts. To make up for the loss through the network, jumper across R56 and adjust pot VR1 on the board for 1 Vp-p output into a 75 Ohm resistive termination.

### External de-emphasis

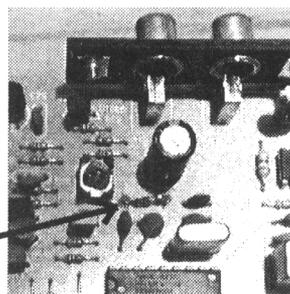


Twist then solder the parts as shown above.

The de-emphasis network shown above, is mounted between RCA phono jacks-Radio Shack 270-235 aluminum box. Run a short jumper coax cable between the box and receiver video output jacks. Put a jumper across R56 and adjust VR1 for 1 Volt peak to peak output to your monitor.



Jumper R56 if a de-emphasis network is used.



### Frequency select:

0=ON or UP 1=OFF

MHz	1	2	3	4	5	6
2398	0	0	0	0	0	0
2399	1	0	0	0	0	0
2400	0	1	0	0	0	0
2401	1	1	0	0	0	0
2402	0	0	1	0	0	0
2403	1	0	1	0	0	0
2404	0	1	1	0	0	0
2405	1	1	1	0	0	0
2406	0	0	0	1	0	0
2407	1	0	0	1	0	0
2408	0	1	0	1	0	0
2409	1	1	0	1	0	0
2410	0	0	1	1	0	0
2411	1	0	1	1	0	0
2412	0	1	1	1	0	0
2413	1	1	1	1	0	0
2414	0	0	0	0	1	0
2415	1	0	0	0	1	0
2416	0	1	0	0	1	0
2417	1	1	0	0	1	0
2418 (shown)	0	0	1	0	1	0
2419	1	0	1	0	1	0
2420	0	1	1	0	1	0
2421	1	1	1	0	1	0
2422	0	0	0	1	1	0
2423	1	0	0	1	1	0
2424	0	1	0	1	1	0
2425	1	1	0	1	1	0
2426	0	0	1	1	1	0
2427	1	0	1	1	1	0
2428	0	1	1	1	1	0
2429	1	1	1	1	1	0
2430	0	0	0	0	0	1
2431	1	0	0	0	0	1
2432	0	1	0	0	0	1
2433	1	1	0	0	0	1
2434	0	0	1	0	0	1
2435	1	0	1	0	0	1
2436	0	1	1	0	0	1
2437	1	1	1	0	0	1
2438	0	0	0	1	0	1
2439	1	0	0	1	0	1
2440	0	1	0	1	0	1
2441	1	1	0	1	0	1
2442	0	0	1	1	0	1

# Thanks to all the fine stores that carry Amateur Television Quarterly

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Austin, TX 78723

**Burnaby Radio Comm Ltd.**  
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Burnaby, BC Canada V5C 2J5

**Gateway Electronics**  
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**Ham Radio Outlet**  
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Phoenix, AZ 85021

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Atlanta, GA 30340

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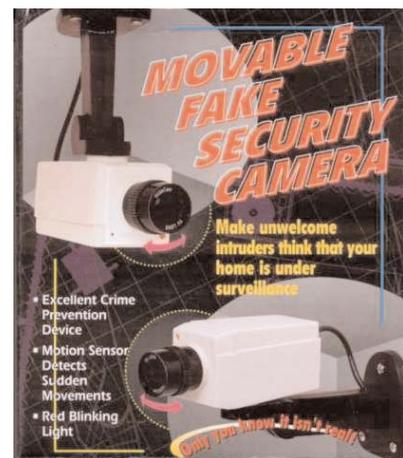
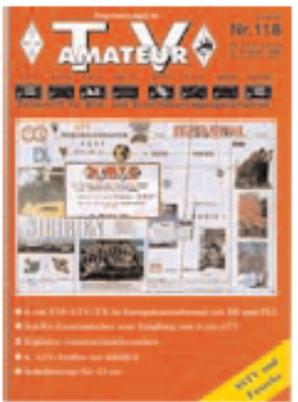
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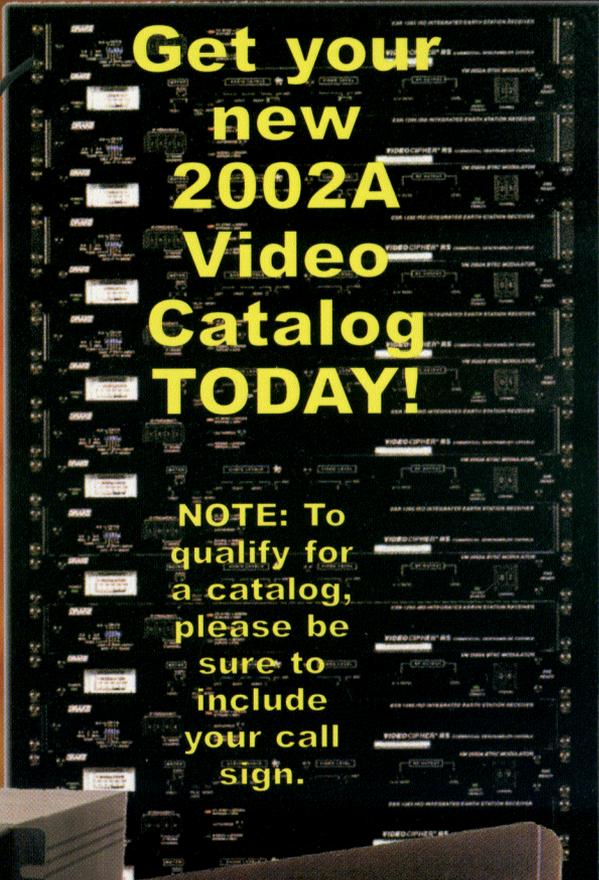
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