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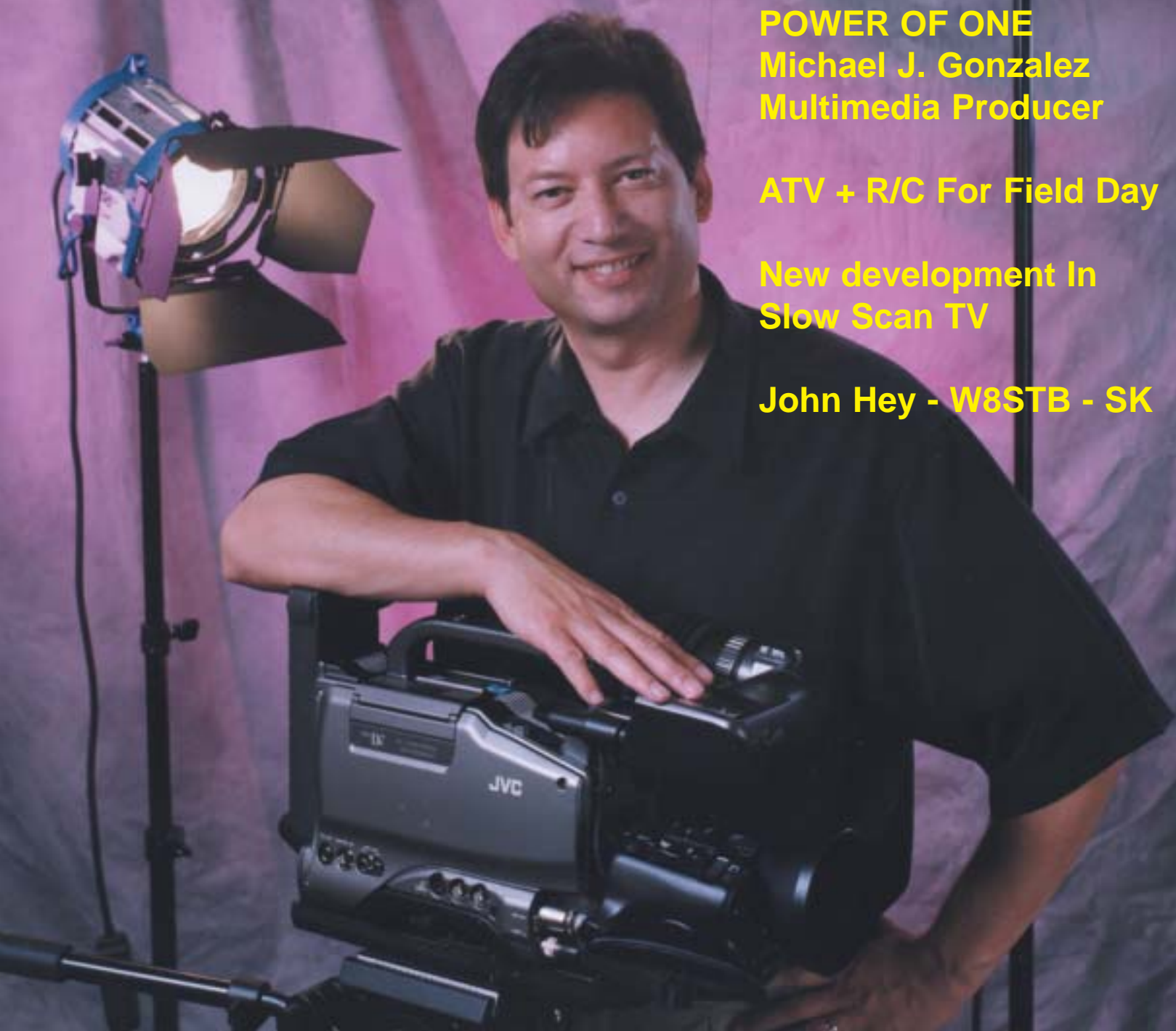
# Amateur Television Quarterly

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**John Hey - W8STB - SK**



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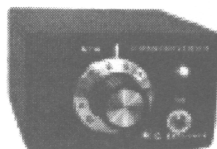
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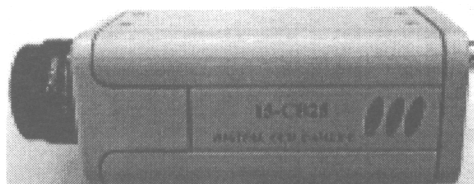
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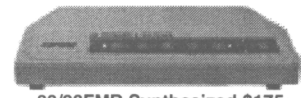
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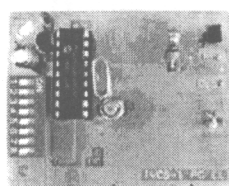


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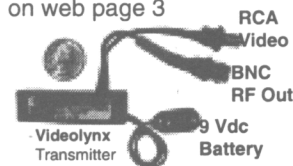
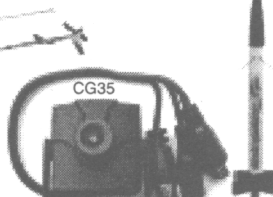
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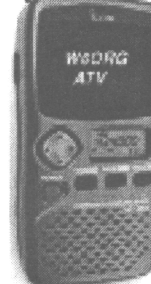


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# AMATEUR TELEVISION QUARTERLY

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## Articles for ATVQ

To all:

I got this email today, and I hope we (I am including 'you' in 'we') can provide what this person is looking for, as I am sure there are more that would like similar topics covered in ATVQ. I hate to loose even one subscriber, but am wise enough (?) to know that I can not please everyone.

The July 1st deadline is coming for the Summer issue. Is there any of these topics that you would care to write about? I would love to hear from you!

The letter is below. I appreciate his comments, even though it starts with bad news.

Gene Harlan - WB9MMM  
Harlan Technologies - publisher of  
OSCAR Satellite Report - OSR@hampubs.com  
Amateur Television Quarterly - ATVQ@hampubs.com  
<http://www.hampubs.com>

\*\*\*\*\*

I have decided not to renew my ATV subscription of ATVQ at this time for the following reasons.

A) The articles no longer pertain to the area I'm currently in in FSTV.

B) The articles are not geared to the average atv'er, but seem to be for the highly skilled or engineers,,,

C) Seeing some items in German. While I have been in Germany, I don't speak the language and don't want to pay for a magazine that has German in it...sorry.

D) Would like to see some articles of a more basic nature..... More on how to build antennas, amps., build and test ... yes test pre-amps...maybe a reader's column..q..and a...

E) A COUPLE OF PAGES OF SOME BASICS FROM TIME TO TIME, FOR NEW COMERS.

f) A "hints and kinks" column (similar to QST).

G) I like the articles that were in during the 80's - 90's...I have many back issues....sooo

\*\*\*\*\*

## Re: Articles in ATVQ

Regarding the subscriber who canceled his ATVQ subscription:

I've been a little disappointed in some of the comments I've seen on this issue.

On the subject of foreign language comment, I hardly think content in German has overtaken the magazine. If it had, an audience which didn't speak German might have a complaint. I imagine some folks got something out of the mentioned material. And if the complaint is that someone in the world doesn't speak american, then the complainer should be ashamed. A ham operator, who is often an international communicator, should be particularly ashamed — the FCC says we're supposed to create international good will.

Regarding the technical level of articles, there's obviously a balance issue. Those who have the experience and knowledge to write articles suitable for beginners are likely looking for (or doing research and writing) content suitable for more the advanced. Personally, I enjoy a mix of things; mostly newbie articles tend to make me lose interest. In a magazine of this size (and budget) selection in any given issue is going to be limited. What gripes me is that Gene is begging for articles, and getting only complaints. Providing want-lists certainly helps him understand his subscribers, but it doesn't take the place of providing needed content. If this community (a very narrow field of interest) wants to have a magazine which is a going concern, the community is going to have to make that happen by writing.

Dennis Boone - KB8ZQZ - drb@msu.edu

\*\*\*\*\*

## Re: Articles in ATVQ

Let me just say...

Gene, I love the magazine. I like to see all the cool things people are doing with ATV.

Regarding Dennis Boone's comments "...mostly newbie articles tend to make \_me\_ lose interest..." Me Too.

I am completely boored with some of the other USA ham magazines like 73, CQ, and even QST usually doesn't have enough meat in it. I think I am going to have to subscribe to DUBUS, VHF Communications, Repeater and some of the other European rags.

Not to discourage the beginners, but the resources on PC Electronics PDF page along with Henry Ruh's ATV Secrets I and II are great places to get up to speed.

Regarding the older issues...I've stared collecting back issues of ATVQ from Gene and I even came across of few A5 and Spec-com at a ham fest. I think ATV Secrets Vol II is mostly a compendium of some of the articles from ATVQ from 88 -92. Maybe Gene could publish a compendium of some of the Articles from 93-2000 as a Volume III. I know he's been scanning issues in for sale on CD, but I'd like to see a nice book compendium kind of like DUBUS does with their Technik Volumes. (If someone could legally put together a compendium of technical articles from A5 and Spec-com that would be great too.) What do you say Gene?

Dan Carlisle carlisle@iastate.edu

## What To See In ATVQ

Hi ATVQ'ers,

I have been giving some thought to what would be good to see in ATVQ.

1/ The newest developments in ATV on a variety of different bands and modes These days it is "use it or lose it" as far as Amateur allocations are concerned worldwide. As well as getting on the air yourself and your repeater, you need to have things logged with your Local-Coordinator and get the word out to non-ATV Amateurs too. Just can't get enough publicity.

2/ Experimental things. Digital modes with potential for Amateurs. Not practical for everybody, but we should be keeping up to date with the direction things are going or we will get as out of date as 32 line mechanical TV.

Say you saw it in ATVQ!



3/ Things for the newcomer. Two pages an issue might seem a lot of old tedious stuff to experienced ATVers, but the new guy needs encouraging or else he soon moves on to other things. We could wind up with no-one to send pictures to. Sure there is a lot of material in back issues and the predecessor magazines to ATVQ. It just isn't accessible to the newcomer. (Anybody want to make a CD of all the back catalogue of A5, Spec-com & ATVQ?) A page of where to look for various things would be helpful too. Things a newcomer could go down to Radio Shack (or similar) and order some parts for would be a good starter level.

4/ Reviews of things you can buy ready to run. For those who have the cash, but not the time to build things, even though we would like to. It would be great to have notes on what the various Transmitters, Receivers, Pre-amps, Antennas, PC cards and Video gear can do can do.

5/ Reviews of kits for those with a little less spare cash but a bit more time available. Besides there are just somethings you cannot buy ready to run. The big three rarely make anything for ATV.

6/ The best material available from ATV sources worldwide. Think why they no longer call G-Land "Great Britain". They stopped using the best available worldwide and went for the "If it wasn't invented here we don't want it" approach. I'm sure you all salute the Flag, love Mom, Dad & Apple pie, but keep an open mind guys (and I'm not even an American) and don't let your country go down the drain. My Friend in Alabama, Dr John Fox WB2LLB says he has a hard time buying American anything, apart from Ten-Tec and a glass Radiometer bulb he gave me one time. We'll be saying "Great China" in no time.

A straight "cut and paste" of articles isn't going to do a respectable job. It is a bear, but some explanation in Americana (if a full translation is not available) is a must. In recognition of the fact that some brands of parts are not distributed in the USA (can you get a BC547, 2SC3358, BFG68 or TEA5114 easily?), equivalent devices might have to be mentioned or International electronic parts mail order addresses given. If DX authors are willing to license their artwork, a closer to home (for you guys) source of printed circuit boards could be arranged. The progress of ATV, especially repeaters, in ZL made great progress once we accessed the best technical information from South East Queensland TV Group, Australia and the Severnside TV Group in Bristol, England. Where there was only one ATV repeater in ZL, there are now five operational (in a country of only 4 million). More are a building too.

7/ Mods, Hint & Kinks. You'd all probably like to know what we have done to Tom's VOR to make it do a better job in our ATV AM & FM repeaters.

8/ News from far and wide as well as local. For a communications type hobby the word can be slow to travel sometimes. Email and this list helps me a lot.

9/ Home built projects. If you spent all that time designing it and getting that antenna or transmitter, etc to work, let us all know. We might want to follow in your footsteps also. The most creative guys seem to be the poorest at writing (Aw, I've done with that & I'm into my next creation is what they tell me) of their achievements, so consider letting another ATV'er ghost write the article for you, if you don't want to do it yourself.

10/ A balanced mix of the above. Too much of one flavor spoils the food, I think.


Michael Sheffield ZL1ABS - Email [mjsheffield@yahoo.com](mailto:mjsheffield@yahoo.com)

## And Now, My Turn


But I did not leave myself enough space! I agree with almost all the comments written above, and would like to implement some. Do you have time to take up one of the columns mentioned? Remember, it is only 4 times a year, and only a page or two most of the time. Also, I need ideas for a ATVQ ATV contest. I had hoped to do something this issue, but ran out of space. I need more ideas for rules for such a contest. Please email your ideas to me at [ATVQ@hampubs.com](mailto:ATVQ@hampubs.com). Thanks for your ideas and assistance through the years writing articles. Sharing information is what it is all about.

Gene Harlan - WB9MMM - ATVQ

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# YOUR ATV AND SATELLITE ANTENNA SOURCE...

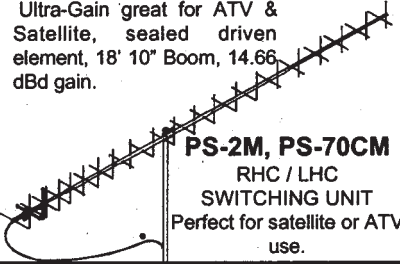


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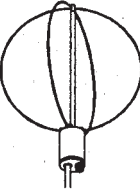
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ATVQ

Summer 2001 Amateur Television Quarterly

Blue Cross of California  
**POWER OF ONE**

Healthcare's Answer To Media Management Is A Department Of One

by Luke Walden





His name is Michael Gonzalez. For the past five years he has represented the media department for Blue Cross of California. The strange thing about this Fortune 500's media department is that it is not located in a lab, workstation, or even in the communications area. The entire media operation can be found in a maze of open cubicles shared by programmers and analysts in the Group Systems department. The most unusual factor about the media department is that Michael Gonzalez is the media department.

In fact, the only thing that separates him from the others in his area are his collection of CD-ROM covers he has designed of the projects he has completed pinned against the front area of his semi-cubicle.

Large companies such as Blue Cross of California commonly employ their own in-house media department. In most cases, the media department consists of writers, artists, designers, programmers, and an entire video staff. Some companies choose to hire a single individual who coordinates the entire operation by hiring outside vendors and freelancers. The thing that makes Gonzalez stand out from the rest of his fellow producers is that he controls the entire operation from start to finish. In other words, he alone is the artist, the designer, the writer, the programmer, the director, and the producer.

Different from a one-man band who plays a variety of instruments strapped to his body who does his best to sound passable; Gonzalez's work is considered one of the best in the nation. For the past three years he has been named in the Who's Who in Media and Communications, selected by AV Video Multimedia Producer magazine as one of the Top 100 Producers in the Nation, and most recently featured on the cover of AV Video Multimedia Producer magazine. He has also conducted a variety of seminars on "corporate multimedia" for various multimedia groups in the Los Angeles area. In addition, his CD-ROMS have been used as a learning tool for multimedia courses for creating effective multimedia programs.

"I love the work I do and I put all my effort into it," says Gonzalez. "It's not easy doing the work of several depart-



ments and it's a tremendous amount of pressure but the finished product is very rewarding. I'm happy when I hear our agents are using my programs, the training department, marketing, etc. I'm especially pleased when I walk by an executive meeting and hear one of my programs being played."

Placing the entire media department in the role of one individual makes the process extremely cost-effective for an insurance company who strives to use its funds efficiently. The normal cost of producing a professional multimedia training/presentation piece on the outside world which includes quality graphics, music, sound, and video can run between \$50,000 to \$200,000 per program. Gonzalez is able to provide five major projects each year.

When asked about the total pricetag of each of his projects, Gonzalez states that "since I am able to coordinate the entire project, write all the scripts, develop and sketch the storyboard, shoot/edit/direct

the videos, and even do the programming, the only costs the company absorbs is \$20 for the video or audio tape. I think that's a gigantic savings when you compare \$20 to \$200,000 per project."

The only other costs fully absorbed by the company are the duplication and distribution of the CD ROMS or video tapes. Gonzalez also wears the hat of a CD ROM duplicator when only





**Sarah Waugh, another employee of Blue Cross of California, was chosen by Gonzalez for the lead role of Alice**

a small amount of CD ROMS is needed in a hurry. "I was one of the first individuals to purchase a package of CD labels from a small company that had a product called NEATO. These are handy to use when someone needs only a dozen copies of a program."

Gonzalez contributes his ability to become a jack-of-all-trades to his twenty plus years of additional education. Though multimedia and the Internet were not even invented when he graduated high school, Gonzalez believes that his destiny was already carved out. He began going to college to learn how to be a designer and graphic artist; he soon added a number of classes in typography, page layout, cover design, and more. He enhanced his graphic and design skills by working as a graphic artist for such companies as Disney, Foothill Publishing, and several advertising companies. "I have been going to school every year since high school, I haven't stopped. I felt the best way to perfect my skills was to work in the same field I was studying. I would work during the day and go to school at night."

Prior to the computer revolution, Gonzalez had to create everything by hand. He was a paste-up artist, camera operator, stripper, and typesetter. Except for a few die-hard printers, these positions no longer exist. "When I was working in the publication industry I noticed that they were introducing computers at one of the printing trade shows. Everyone was laughing at them as they tried to demonstrate how computers could do graphic design and typesetting more quickly and easily. It looked quite primitive at the time and it did look ridiculous and the quality of their work was less desirable. However, I knew eventually they would improve their product and many of the people in my

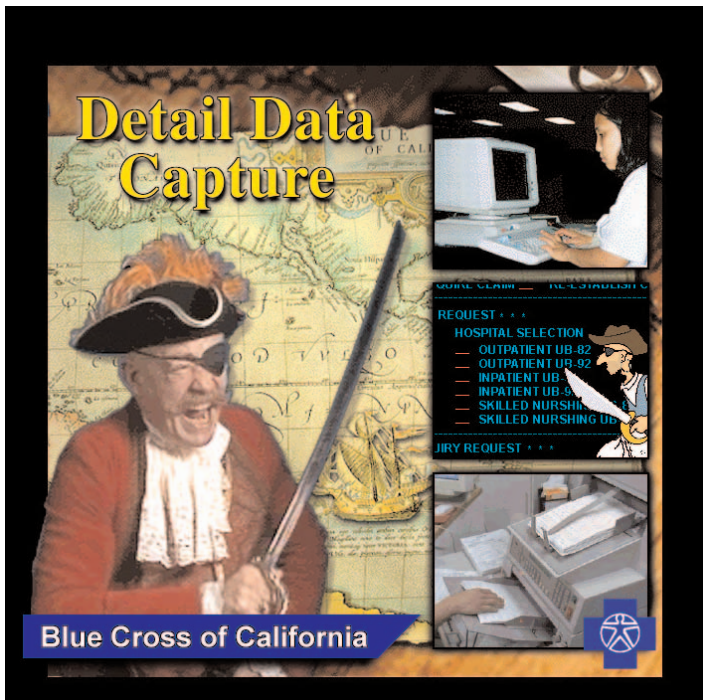
industry would soon be replaced. At that point I knew I had to learn how to be proficient at the computer."

During his four-year term as a technical illustrator for the Allied Bendix Corporation he attended a number of classes in computer programming. To enhance his writing skills, he earned an associate in arts degree in journalism and a certificate in graphic design. He dabbled into script writing and soon began taking classes in directing, producing, and filmmaking. The acting bug also got a hold of him as he appeared in two company videos and as an extra for Steven Spielberg's "1941" movie. Since the industry is very difficult to break into and Gonzalez felt that he needed a more hands-on approach, he took over a half-dozen classes at small studios and cable access organizations to learn how to do video editing, direct live shows, and even occasionally act as its host.

Attending the American Film Institute for three years to further his production knowledge, he also started producing his own public access show entitled "The Martial Arts Today Show." "This was a fun show in which I produced, directed, and wrote a three-part series. Since being a part of the martial arts industry since I was 10, I grew up with some of the arts biggest stars so getting their cooperation to be part of the







### CD cover created by Gonzalez to be used for training. Walsh was the star again.

show was an easy task." By the way, Gonzalez hides the fact that he is an accomplished writer of two books and over fifty published articles.

Gonzalez later progressed to an art director, then an editor, to eventually the publisher of his own sports magazine. When he sold the company he decided to combine his speaking skills, writing skills, and design skills into becoming a training instructor. It was then that multimedia became of age and Gonzalez quickly dove into it with both feet. "When I found out what multimedia was, I knew this was my destiny. It combined everything I had learned over the past twenty years. I knew then that even though multimedia was in its infancy, it was what I went to school for," says Gonzalez.

Though the stage was set for the world of multimedia, it wasn't quite an easy sell for the corporate world. When it comes to companies such as Disney, Dreamworks, etc., a large expense account for creating a multimedia area is expected. However, convincing an insurance company or a conservative bank institution the need for multimedia was a challenge. "I first created the multimedia department for Cal Fed Bank. I had to prepare a complete budget, an analysis report of cost-savings, and conduct a series of meetings of why multimedia was needed. It was a long process but after I demonstrated the tremendous cost-savings by small department, they were convinced," says Gonzalez.

Gonzalez also was responsible for creating the multimedia area for Blue Cross of California. As with his experience with Cal Fed, he had to present a series of reports on the cost-savings of such a department. "The different thing about Cal Fed and Blue Cross of California was that Blue Cross already knew the importance of such a department and the type of revenue it would bring it. The task that I was challenged with was forming the department with the necessary hardware," adds Gonzalez. "By this time I had already made a lot of contacts in the industry and was able to get the best prices from key vendors in the industry."

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At Blue Cross of California he works alone. Once upon a time he used to hire an outside vendor to record the audio and shoot and edit the video, but now he does it in-house. After studying at a few voice-recording studios, he purchased a Sony DAT recorder and began recording the talent himself. Upon proving that shoot-

ing the video in-house would be more cost effective, he created a whole new wing in his department for camera and lighting equipment under a \$12,000 budget. "We were spending \$300 each time we did an audio recording. I purchased the DAT recorder and microphone equipment for \$500 and began saving money in just our second recording," points out Gonzalez. "Each time we would do a video shooting it cost about \$2,000. Add editing to that and the costs increases substantially. By doing the whole shooting and

editing in-house we would incur a substantial savings."

There are many drawbacks in working alone. "It's a lot of work," he says. Since the video is now in-house, he alone has to haul the equipment back and forth. He doubles as a lighting director, grip, stage manager, production assistant, sound person whenever he does a shoot. "That's the time when I really need some assistance. I know how to light the set, operate the camera, and direct the shoot, but it does become a little difficult when I have to set it up all by myself. By the time I finish tearing down the equipment my shirt is completely soaked," he exclaims.

Gonzalez completes four to five major projects a year. Since he is able to control the entire operation, he conducts meetings on one project and simultaneously prepares things for the next project. Unfortunately, since there is only one individual in the media department, each project must wait its turn. "I am a realist. Since I've been doing this for quite a while I know exactly how long a project will take and what can be done to adjust that timeline. I don't believe in exaggerations or providing an unrealistic timeline, I'm upfront about the timeframe and if the project will meet their needs. Many of the internal clients I meet with are unfamiliar with the process so I help guide them through so they understand what needs to be done to complete the project," motions Gonzalez.

**All Blue Cross employees, John Walsh, left, played several roles including the role of Mad Hatter, Sarah Waugh as Alice, and Michael Gonzalez, right.**







and complete the entire program,” says Gonzalez.

To accomplish this goal Gonzalez met with each member of that department’s team to get their feedback on the type of theme they had in mind. Since most of the administrators are female, the logical solution and the overall agreement amongst the staff was to select a female-oriented theme. Once the character type was selected, the next step was to decide upon the actual theme. Half-a-dozen characters were discussed but to no avail. The story needed to be able to mirror each section of the manual. Since the manual had at least seven sections, a story with multiple scenarios should be considered. “After researching several fairy tales including books, videos, countless hours on the Internet, I felt the best theme would be Alice in Wonderland which I renamed as Alice in BlueCrossland,” says Gonzalez.

“Alice” was already divided into several sections such as the Tea Party, Painting the Roses Red, etc., in addition, there were two books featuring Alice including Alice in Wonderland and Through the Looking Glass. Gonzalez felt that each section could be adjusted to make the manual interesting. For example, he modified Painting the Roses Red to Painting the Roses Blue to reflect the Blue Card section. He altered the Problem Resolution section to reflect facing the Queen’s wrath.

The training piece needed to include lots of video, sound effects, music, and graphics to keep the users attention. The program was designed to last for 1 1/2 hours of training with an accompanying manual. He also divided the CD in numerous self-help sections so that the group administrator can refresh their training by advancing to a particular section. In other words, if the administrator needed to know the rules about processing, they could easily advance to the Walrus and Oyster section, which would be the Billing section.

A recent project that Gonzalez is most proud of is a training program for Group Administration. The project was designed to replace costly in-person training. Whenever a new group administrator was hired Blue Cross of California had to dispatch a trainer to demonstrate the duties of an administrator. Turnover is very high in that area, and training the new employee is very costly.

One of the many interesting things about his projects are the themes he enjoys creating. For one program he used a professor to show the progression of the computer age, for another he used a pirate to demonstrate the rough seas that would be encountered upon learning the computer system. For this project he met with the client and he came up with the idea of parodying Lewis Carroll’s Alice in Wonderland to transform the dry, technical manual. “This was a real challenging project. The current problem the training area was encountering was keeping the

group administrator’s attention long enough to understand the process. The material was very dry and the trainers were having a hard time keeping it refreshing. They wanted to do two things with this program. First, eliminate the need to sending someone to do stand up training and second, provide something really creative that would get their attention





**The crew spent three days on location shooting the footage for the one-hour CD-ROM.**

Another requirement in producing the program was the need for actors. In order to save money, Gonzalez utilizes the talent available at Blue Cross. He notes that some time ago there was a vendor, Winter's Productions, who spearheaded a recruitment of people within the company who possessed some acting ability and were interested in starring in leading roles for in-house productions. After attaining the list of actors from the vendor, Gonzalez quickly latched onto John Welsh and Lisa Mee. Both Welsh and Mee had done quite a bit of acting in the past and were familiar with the routine. "These two have been the oars that steer the media department. I could not have found two better actors. They are the best and they are very professional. Welsh does about 80 percent of the acting and recording most of the time, but Mee is used whenever a female voice is required. Most voice recording studios typically require a day or two to record a script cleanly and accurately. Since Welsh and Mee are familiar with recording I am able to record an entire script in less than two hours," points out Gonzalez.

For the Alice in BlueCrossland program, Welsh was selected as the key male character, even though he did double as the Queen. He also included a new comer, Sarah Waugh, who was an Alice-lookalike, to play the role of Alice. The cost for this project was a little more than Gonzalez was used to, but a large staff of personnel was required. In addition to two camera operators, he required a sound mixer, production assistant, a make-up artist, and a teleprompter operator. To save additional costs, the entire shoot was done on location of a wealthy friends' backyard. "The vendor I used to shoot the project was owed a favor by the home owner so they allowed us to shoot in their yard. The home was very big and even included a gigantic garden area that easily doubled for a winding forest, it also came complete with a rose garden, and plenty of room for additional outside scenes," says Gonzalez. Since the homeowner only allowed him three

days to complete the entire shooting, precise planning was the key. "I had the whole shoot down to a science. While one scenario was being shot, the production assistant was already setting up the next area. The costumes were all laid out in sequential order and the make-up artist had everything ready for the next character. It was very hectic but the three teleprompters set up around the actors assisted them in getting their lines perfect," says Gonzalez.

The last thing Gonzalez wanted was a costly production piece. While at Cal Fed Bank Gonzalez played several roles in the company's in-house video productions. "I recall when the video department at Cal Fed did an in-house hospital video, I had the opportunity to play a sick patient. It was fun and it took a few days to

shoot, but the video department spent over \$70,000 to do the shoot. Since I had the whole shoot planned and coordinated for the Alice project, I spent only \$10,000 and the finished product was more impressive," points out Gonzalez.





In addition to producing the company's video projects, he loves to direct, and especially to act in his own productions. He doesn't play a major role in his videos because he needs the additional time to concentrate on directing, but he loves to play the background role of an extra. "I love to act, it's really enjoyable. When I was taking some directing classes in college I was always chosen to act in nearly all of our video projects."

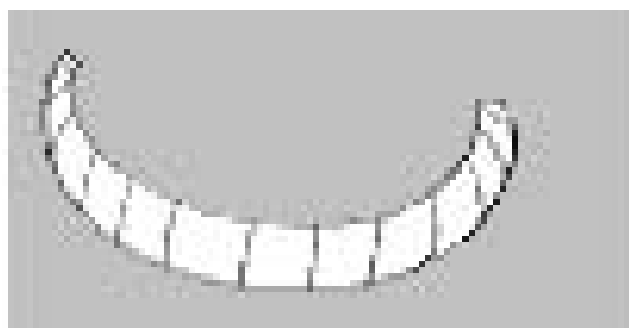
Gonzalez loves the challenge of converting dry, boring, technical manuals such as the Group Administrator Manual into a fun, entertaining, and informative CD-ROM or video. The Alice in BlueCrossland is an example of that. "People learn by different methods. Some people learn by visual stimulation, while others learn by hearing, and others learn by reading. As a former trainer I am able to incorporate all these things to make my programs more educational and more entertaining," says Gonzalez. "I think being a trainer was one of the best things that prepared me for multimedia. As a trainer I had to design the manuals from scratch and then do a number of stand up training classes. As a result, I was able to experience what works and what failed."

There is a method to Gonzalez's madness. As a one-man operation he is able to coordinate the entire project without the need for creating a paper timeline. Motioning his hands like putting together a Spielberg film, he notes that he is able to see the entire project in his mind even before the first word is written.

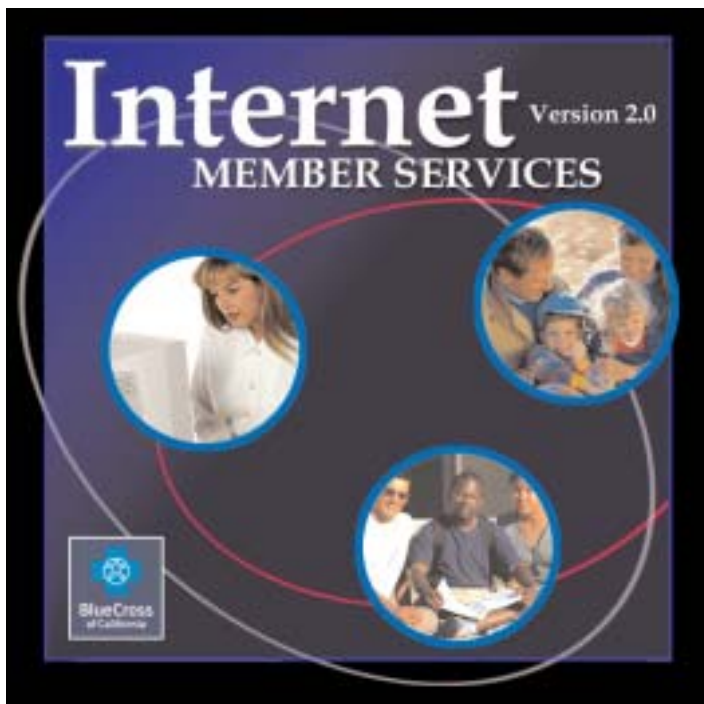
To begin the project, Gonzalez first meets with the client to

determine the need, and then he meets with the subject matter experts to refine that need. From this point he begins to write the script and at the same time begins to draw the storyboard. He takes his work back and forth with the client to ensure the project is on the right track. Everything is verified several times over. He feels he needs to be detailed because if the project is going to be done within a three-month period he can't afford to have mistakes.

As the storyboard is approved, he fine tunes the script and already begins creating the artwork using Adobe Photoshop. By the time the script is fully approved the artwork is done and he is ready to begin recording the voice-overs. "I'm very meticulous about my work. It usually takes a half-dozen people to do what I'm doing and it usually takes them five months to complete a project. I have to do the functions for each of these departments and in addition, complete the project within only three months. As long as everything runs perfectly I can always







### Another CD cover

meet my deadlines,” smiles Gonzalez. “The script and information has to be perfect, we cannot have any mistakes or changes. Since I do the artwork I can always make adjustments to it but I can’t have the actors come back and re-record because you’ll never get the voice to have the same tone. No matter how hard you try, it will always be different. So everything must be perfect without any changes.”

After preparing a comparison report for the managerial staff for adding additional multimedia equipment, Gonzalez was authorized to purchase his own digital video supplies. Big projects, which require a large staff, will still need to be coordinated with a freelance crew, but the remainder of his projects will be shot entirely by Gonzalez.

Gonzalez speaks quite highly of his workplace. Despite the fact that he doesn’t have an office or even a work lab, but does all his work from an open cubicle, he feels that the company allows him the liberty to be creative. “The majority of places I have worked have been very conservative. Because of this I am aware of how a conservative company operates and what my boundaries are. I know what they are looking for and know how to make adjustments to meet that need.”

When asked why doesn’t he move into the entertainment industry with all those abilities behind him, Gonzalez points out that he loves the challenge of corporate training. For him it’s a very rewarding feeling the impact that his projects have on the company. The CD ROMS are duplicated by the thousands and given to potential clients who are interested in signing up with Blue Cross. “I like to think that it’s the CD ROMS that influence them in deciding to sign up with us. For example, if you are the client, and one insurance company leaves you a bunch a pamphlets showing how their company works, and the other

company also provides you with pamphlets, but in addition, they supply you with a few CD ROMS that shows you how the company is more advanced and more interactive, I think the choice is pretty obvious,” motions Gonzalez.

Though working alone can be quite challenging and nerve-wrecking, Gonzalez feels that this type of structure allows him to be sort of an entrepreneur. He enjoys learning and applying what he has learned to his work. The only unfortunate thing Gonzalez points out that he has to design his programs for the lowest common denominator. “I don’t have the liberty of being too fancy. I can’t have the dissolves I would like or showing the video full screen. Since most of my work is transferred to CD ROMS I have to design my project so that even a person on a slow computer can operate it effectively. I would love to add fancy and high-speed movements, some flash, etc., but the computers some of our representatives use just can’t keep pace with it and it begins to skip.”

For the last twenty plus years there has never been one semester in which Gonzalez did not take some type of course. Though his units topple the century mark, he managed to accumulate enough in one single area to graduate with a Bachelor of Arts degree in management earlier this year. “I was planning to take a semester off this year but I think my Spanish needs some work,” admits Gonzalez. “I also managed to befriend a few producers in the industry who have invited me to learn the fine points of producing so I guess I’ll continue to refine my skills. What can I say, I like to learn.”

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ATVQ



# ATV + R/C For Field Day Excitement

Chris Cieslak - KC9L - Email: [ccieslak@chrisbieslak.com](mailto:ccieslak@chrisbieslak.com)

810 N. 16th Ave.

Melrose Park, IL 60160



## The KC9L R/C ATV-mobile.

Are you looking for a project that captivates hams and non-hams alike? One that's quick and easy? An ATV-equipped radio control car just might be the ticket to add excitement to Field Day, public service events, or other places where potential amateurs gather.

The ATV-mobile I built for our club's Field Day is based on a racing truck chassis, and contains a micro ATV transmitter putting 50mW on cable channel 59 into a flexible HT antenna. This low power was more than enough to view the entire Field Day site, even with a standard cable-ready TV and rabbit ears on the receiving end.

An ideal ATV-mobile would be durable, to withstand the occasional driving mishap; quick enough to be exciting, but not too fast to be dangerous to itself or others; and easy to assemble and

disassemble in the field, to ensure that it keeps. Let's take a look on how to meet these goals.

### THE CAR

I used a racing truck chassis from Associated Electrics (<http://www.rc10.com>), the RC10T3. The RC10T3 is a pickup-truck style vehicle with oversized tires and oil-filled shocks, perfect for hitting the grassy fields and gravel trails of most Field Day sites. While it's probably overkill, there's lots of good reasons to use it, or a similar chassis, for this application

First, replacement parts are easily found at any good hobby shop. If a suspension arm breaks as you fly the car over a hidden rock, or an overeager driver manages to slam it into your 20 meter tower, you won't have to replace the entire vehicle chassis.





**The chassis. The orange box is the electronic speed control (ESC). The black box above is the R/C receiver, and the battery pack separates the two.**

Second, a racing truck has enough horsepower to carry the 2 pounds of ATV equipment without becoming too slow to be exciting. In fact, many trucks might be too fast to comfortably drive for many novice drivers! We'll look at how to solve this in a bit.

Third, racing truck bodies are made of Lexan, a clear, thin plastic body that attaches to the vehicle with a few metal clips. It's easy to cut, drill, and paint, and there's lots of room in the truck's cab to mount the transmitter, battery, and associated wires. The body can be removed in a matter of seconds

Most truck chassis come in different flavors, but for our purposes the low-end trucks are more than good enough, unless you plan on taking your ATV-mobile to the local track to compete. (Come to think of it, there's probably a few potential hams there, too!) A new chassis with body and motor costs between \$100 and \$150.

## THE R/C ELECTRONICS

A truck chassis is just that—a chassis. You still need an R/C transmitter and receiver, as well as a steering servo and speed control to complete the truck portion of the project. These come in many different flavors, but to keep costs down I chose a simple 2-channel set (one channel for steering, and the other for speed).

Now, if you have the ambition and the money, you can actually use a 3- or 4-channel set, which in many cases are designed for R/C airplanes. The extra two channels can then control movement of the camera. However, that has cost and complexity issues that make it a little out of the scope of this article.

For cars and trucks, the most comfortable style of transmitter is a “pistol-style” set, which is shaped like its namesake. The trigger varies the vehicle's speed, and a small wheel mounted on the side controls the steering.

Usually, the hand-held transmitter and car-mounted receiver come as a set, along with one or two servos.

Why one or two? Well, you can use the second servo to control a mechanical rheostat that acts as the car's accelerator. Or, you can skip the second servo altogether and use an electronic speed control, or ESC. This has a few advantages. ESCs use the



**Inside the R/C ATV truck. At the top is the MFJ transmitter. The brass strip acts as a ground plane for the HT whip antenna.**

Say you saw it in ATVQ!



**KC9L's ATV car, along with its bigger brother.**

truck's batteries more efficiently, run much cooler, and are less prone to failure. The main disadvantage is cost: ESCs can cost upwards of 50 dollars. However, the extra cost is offset somewhat by the fact that you need to buy 1 fewer servo. Personally, I'd go with the ESC-it makes using the truck much more fun.

Speaking of batteries, you'll need at least one to complete the truck's electronics. R/C batteries come in a standard 6-cell configuration with a Molex-style two-pin connector. Like the batteries in our handheld transceivers, NiMH batteries are quickly replacing the venerable NiCds, and provide longer running times. Radio Shack even sells a 3000mAh NiMH battery for cars (catalog #23-431).

If you own a universal quick charger for your HT, it will probably charge your R/C battery as well. Radio Shack and hobby shops also sell R/C fast chargers.

Finally, when you're at the hobby shop you might want to pick up a few odds and ends. For the truck, you'll need CA adhesive (superglue) and thread-locking compound. For the ATV portion, you'll need double-sided servo tape (to stick the ATV components to the inside of the body) and thin brass or copper sheet (to provide a ground plane for the transmitter antenna). Finally, choose a color for your truck and buy a can of R/C spray paint. Make sure the label says that's it's designed for R/C bodies.

### ASSEMBLING THE TRUCK

Whew! OK, that's quite a few facts to digest, and if you're not careful it can get pretty expensive-quickly. But hopefully you've made it home without spending an arm and a leg, and you're ready to get to work!

Putting the truck together is easier than building most ham radio kits. Just take your time, follow the directions carefully, and don't lose any of the screws or small parts. In 2 or 3 nights you'll have a working vehicle that's ready to carry the ATV equipment.

<http://www.hampubs.com>

There's one modification you may want to make to improve the vehicle's suitability for ATV: slowing the vehicle down. These are built for racing, after all! To do this, you'll need to change the pinion gear that's mounted to the truck's motor. For an RC10T3, a 12-tooth pinion (the standard pinion has 17 teeth) will slow down the truck nicely. If you have a different model, ask your local hobby shop for help.

### ADDING THE ATV EQUIPMENT

Now the fun part. After the body is painted, it's time to mount the ATV equipment. I used an MFJ-8704 Micro ATV Transmitter and a CG35 Mini Color Camera from P.C. Electronics (<http://www.hamtv.com>). Each requires a 9V battery for power.

You'll need to connect everything together. The CG35 uses a BNC for its video output, and the MFJ takes a phono plug for its video input, so I used a BNC male-phono female adapter and a short phono plug-to-phono plug cable to connect the two. Both



**The KC9L R/C ATV-mobile.**



are available from Radio Shack. Of course, if time permits you can make a BNC-to-phonon-plug cable.

While the MFJ has a 9V battery clip, the camera has a coaxial socket for its DC input. Since Field Day was quickly approaching, I simply chopped the plug end from the camera's included "wall wart" adapter and soldered a 9V clip to it. If you choose to do this, make sure the white-striped side of the power plug's leads is connected to the red wire of the 9V connector.

Now, the layout of ATV components requires some thought. You want to keep the ATV antenna as far away from the R/C receiver, its antenna, and the speed control as possible to avoid interference. The layout I chose was to place the ATV antenna in the middle of the truck's roof, and the camera on the truck's hood. The ATV transmitter and 9V batteries are stuck to the inside of the truck's windshield.

This layout has proven to be interference-free, but before cutting holes in your truck's body you may want to test your particular setup by turning the ATV transmitter on, placing it in the approximate location you want, and testing your vehicle's range and the quality of its ATV signal.

To mount the ATV antenna, use a hobby knife to carve a BNC-sized hole in the vehicle's body. Then, using tin snips, cut a 13" strip of sheet copper or brass, then cut a hole in its center for the BNC connector. Line the strip's hole up with the hole in the truck's body, bend the strip to fit the inside of the body, then place the transmitter's BNC connector through the hole. The HT whip antenna holds the BNC and strip securely, although you should use double-stick tape on the ends of the strip to hold it to the body tightly.

If the BNC is loose, extra shock absorber clips from the truck make perfect shims for the antenna. The camera can be mounted to the outside of the body with double stick tape. Cut a hole in the body to allow the camera's wiring harness to pass through. The camera I used has a removable harness, so feeding the cable through the body was easy.

Finally, use double-stick tape to mount the remaining components to the inside of the body. Use cable ties to hold the wiring securely.

Mount the body onto the vehicle chassis and check carefully for hanging wires. Is anything mounted to the body interfering with the vehicle's wheels, drive shafts, or shocks? Is the ATV wiring close to the vehicle's motor and battery wiring? (This can cause interference.) If anything looks wrong, make sure to fix it before taking the vehicle for its first spin.

#### TESTING- THE MOMENT OF TRUTH

If everything looks OK, it's time to test! Set up your station to receive on 433.97 MHz (cable channel 59). Connect the 9V batteries to the transmitter and camera. You should see a truck's-eye view on your TV.

A note on testing: when I brought my truck to Field Day, I found that the truck was not transmitting any video, only a carrier. With the help of Jim, W9DHX, our club's Field Day ATV captain, we determined that the transmitter was placed too close to the antenna. Moving the transmitter a half-inch away solved the problem.

When taking the truck out for a test drive, check for interference between the ATV setup and the R/C receiver. If you used an ESC, the vehicle will stop if the receiver is out of range or being interfered with, which is nice and safe unless your truck is stopped in the middle of a busy street. If you used a mechanical speed control, the truck will probably just keep going, which of course is slightly less safe.

The ESC is a high-frequency electronic device, similar to a switching supply, and may cause lines or snow on the ATV picture. If that happens, moving the ESC or re-routing its wires should solve the problem.

The truck has proven to be durable-it's survived flips, collisions, and the like with no ill effects.

#### SHOWTIME!

Now it's time to show your creation to the public! A regular TV works just fine for demos. Make sure it's in a place where people can see it as they walk by, and have a few hams ready to answer questions. Hopefully your ATV-mobile will drive a few people to our wonderful hobby!

ATVQ

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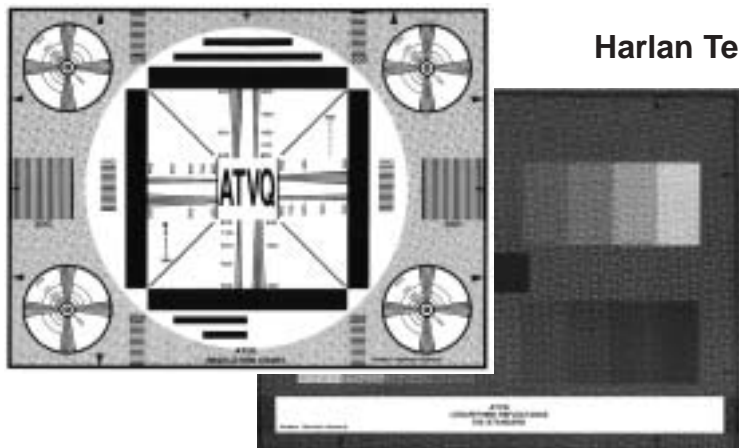
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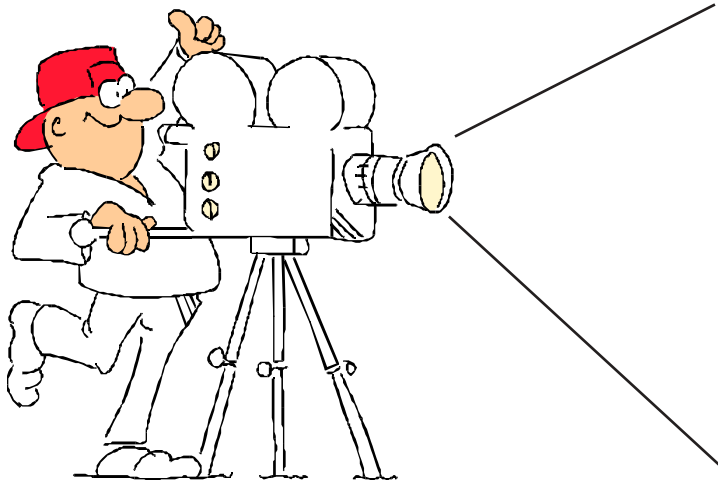
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# A NEW DEVELOPMENT IN SLOW SCAN TELEVISION

by Don Miller, W9NTP - Email: [Wyman@svs.net](mailto:Wyman@svs.net)  
and Barry Sanderson, KB9VAK

The Dayton Hamvention has always been the place where new developments in slow scan television have been announced and demonstrated. This year was no exception with the forum presentation of High Definition Slow Scan Television, HDSSTV, by KB9VAK. Slow scan television is unique in the fact that radio amateurs have developed almost all of the circuits, software and resolution improvements. From the days of P7 tubes, shift register scan converters, RAM scan converters and color slow scan, SSTV has shown a steady improvement with time.

Slow scan started at the end of the fifties and is used by many amateurs for sending data and pictures. The main problem with slow scan television, as with most communication channels, is various types of noise. There is no "handshaking in SSTV" and you get what the communication channel allows. The Internet on the other hand is guided by hand shaking techniques and allows perfect pictures of varying resolution to be sent.

It is technically possible to use hand shaking on the amateur bands but that limits communications to only one receiver at a time. It would necessitate two channels or time sharing one channel to correct for errors in the transmission of data.

For a situation like a SSTV net, with several simultaneous receivers, redundancy can be used to correct errors in received data. Reed Solomon coding was used to provide redundancy that can be varied depending upon the noise in the channel. This means that the time of transmission for a completely corrected image will vary depending upon the level of noise and signal level and amount of redundancy added.

It was assumed from the first that digital transmission of SSTV would be a requirement. Since the transmission of raw digital data requires much wider bandwidth than analog data, it was evident that data reduction must be used to achieve reasonable transmission times for digital pictures in the bandwidth of analog SSTV (2.5 khz) as used on high frequency (HF) amateur transmissions.

Image data reduction is easy to achieve with some of the readily available programs such as Paint Shop Pro. These techniques are often used on the Web to reduce the time for transfer of images through channels even wider than those used for HF amateur transmissions.

Since digital transmissions are limited to 300 baud by FCC rule, it was necessary to look at many modulation methods that could send parallel data in the available bandwidth, in a reasonable

amount of time. After many tests of data transmission by various modulation techniques, a multi-tone method was chosen. This technique is used in several systems that have similar requirements.

Eight different frequencies, spanning 1.84 khz, were chosen to fit well within the 2.5 khz HF bandwidth. The frequencies had to be chosen very carefully since non-linearity of the transmission and reception equipment could generate a forest of mixer frequencies that would prevent the detection of the signal at the receive end. It was also decided, after testing several methods of modulation, that differential phase modulation would be used on the sub-carriers. Nine possible phase changes were used to modulate each of the eight sub-carriers.

The test pattern from the Robot scan converter was modified to be the test picture sent to participating hams. The computer sound card was used to generate the signal that was transmitted using the test pattern as an image. This radio signal was sent to a number of hams participating in the tests. These were W0LMD, KB4YZ, W8ZCF, W4HTB, W9NTP, VK3LM, VK4CS, VK3CQE, and KB9VAK. Tests were run successfully on 20 m, 40 m, 2 m, and 75 m as well as through FO-29.

The generated audio test pattern was sent to each of the participating hams by Email. Each transmitted the test pattern using his radio. The following hams also participated as receivers: W9NTP, W0LMD, W8ZCF, and KB4YZ. They sent their recordings back to W9NTP by Email, for analysis by KB9VAK.

In order to have a comparison, SSTV in the various modes such as Robot 36 and Scotty 1 were sent just after the HDSSTV transmissions. These pictures are available at the following URL:

<http://www.mindspring.com/~sstv/hdsstv/sstv-cmp0.html>

Barry Sanderson, KB9VAK, gave a talk at the Dayton Hamvention on May 19, 2001, showing some results of the tests and discussed ways the SSTV amateur community can start using this newly designed SSTV system. The slides and many of the results and conclusions can be found at the following URL:

<http://svs.net/wyman/examples/hdsstv/index.html>

The source code used to transfer these images is distributed

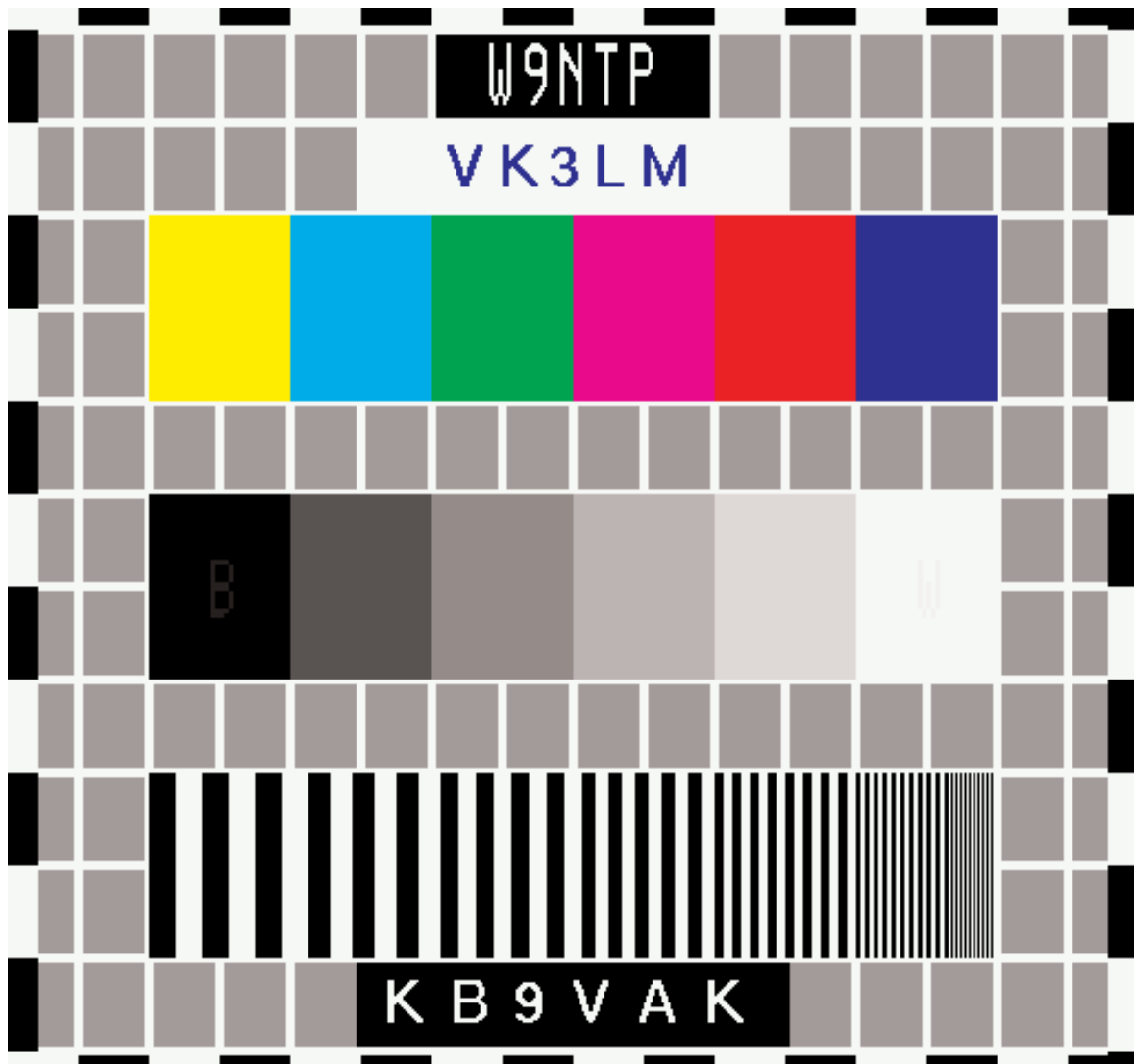


under the terms of the GNU Public License, which is included in the distribution, via the URL:

**<http://svs.net/wyman/examples/hdsstv/pm7b100.tgz>**

The source code has only been used under the Linux operating system. We encourage anyone wishing to work with the developers to convert the software so that it can be used by other operating systems to contact the authors. Questions concerning any phase of the development should be directed to the authors at the following Email address: **Wyman@svs.net**

ATVQ





## ATV meeting Ulm (Southern Germany)



About 100 guests from DL, HB9 and OE gathered on 29.10.2000 in Hotel "Krone" for the 11th "ATV meeting Ulm". Rolf, DL6SL, welcomed them at 10 h and gave a short overview. The first lecture by OM Hannes dealt with new possibilities to transmit ATV pictures in three dimensions (stereoscopic). People used to red/green glasses from 3-D where overwhelmed by the new technology giving the

feeling of real immersion. Special LCD-Shutterglasses and multiplexers make the color 3D video viewable, that is shot with a 3D camcorder adapter (NuView) in front of the original lenses saving a second camera unit. Ewald Goebel, DK2DB, demonstrated a logarithmic measuring amplifier by Analog Devices with a dynamic of 60 dB and frequency range from 0.1 to 1.5 GHz. Some of its usages is precise antenna pointing at directional radio links. Another topic was Digital-ATV, a discussion resulted in his statement that high quality demandings of ATV friends must be fulfilled. The MPEG chip development is slower than hoped before, and the 2 Mbit/s-ATV is not steadily enough with a channel bandwidth of more than 2 MHz. A video demonstration of different frame rates will be shown next time in Ulm. More infos can be found on Eutelsat (16 degr. east) in MPEG transmissions from ATV repeater PI6ALK (Netherlands) or on the web under [www.darc.de/distrikte/g/datv/datvindex.html](http://www.darc.de/distrikte/g/datv/datvindex.html)

After lunch DF6MW from Munich reported from his experiments with moving video camera, model helicopters and much more. Ewald, DK2DB, gave some details about regulations on 23/13 cm ATV and pointed out the importance of "good relations" on this secondary allocation instead of bad differences. Then DL2GMP described developments at the ATV repeater project DB0RZ in Bussen. With diagrams and photos on his notebook he explained the planned antenna construction and got useful suggestions from other guests. The group was hopeful to transmit their first ATV pictures from the Bussen church tower by end of 2000. Before closing the event at 13.30h Rolf, DL6SL, told his guests of mending work at DB0RIG in Goeppingen after storm damage. Some stands and tables by DK2DB, DC8SE, DL2AM and



others gave opportunities to talk and swap. My balance report from this first visit in Ulm: well organized and friendly environment - interesting and comprehensible lectures - the ATV community is very helpful and technically open-minded - got some input for new experiments - dated for next year again.

73 de Thomas, DL1GRT

## Club station in Wolfsburg, DL0VW (by Gunter Neef, DM2CKB)

This club station is located in a water tower in Wolfsburg-Fallersleben, and it is well known for extending activities especially in Amateur-TV.

Every sunday morning at 10.30h the DARC DL-bulletin and a local "lower-saxonia" bulletin is transmitted from here on 145.550 and 439.050 MHz in FM phone and in ATV via repeater DB0HEX. This ATV relay (the highest in northern Germany) has a range of up to 150 km. Four OM in exchange are reading out the bulletins every Sunday, and the confirmations are showing the success of the ATV part. DJ3FG is collecting a rising number of viewers and ATV ops, in February 2001 they counted 94.

Besides Sunday the water tower is open each Friday from 17 to 22 hours, also for a youth group. There are regular ATV meetings with crowded talks about technical problems. DG5ACX brings his large measurement equipment in order to help OM coming from far away (up to 120km) adjusting their devices and getting qrv. This is important because of missing GHz measuring tools, and now all modified 10 GHz LNB can get optimized. On the fly Peter likes to describe each step, and every question is answered by the team at DL0VW.



In 1931 the 20 m water tower was erected in order to ensure

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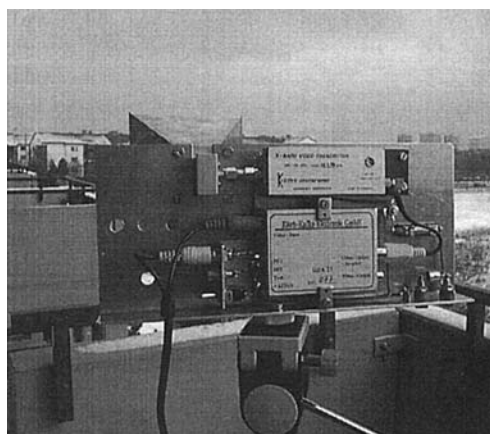
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water supply in Fallersleben. After a change of this technology the radio amateurs had an opportunity to move in. From the flat roof one can look far away in all directions being a special goody for the microwaves. This is the most important aerial platform. There is a washing room, a lecture room, a small kitchen, the shack and some spare room for cables, antennas and such.

If the radio amateurs had not engaged for the conservation of the water tower, it would have suffered much more. DG5ACX for instance did great work in summer of 2000 removing severe water damage by new paintings. The year before about 80 percent of the antennas were renewed! There are 12 ATV ops in the local club now, and this mode was started in 1990 at H24 club (DARC).

## **CQ Southern Germany (by Bernd Beckmann, DJ9PE) ATV on 10 and 24 GHz**



10 GHz inputs and outputs at many ATV repeaters are seeing much usage among the TV amateur community. But the OM's parabolic dishes or horns are stuck to one direction mostly, the relay. Direct contacts between two stations are rare, although the quality of ones own equipment would prove much better. A big obstacle is the needed condition "line of sight" as only few amateurs are living on top of a skyscraper or on a mountain top.

DJ9PE and DC6WU from Munich are qrv in ATV for more than 20 years, they are using the Alp mountains near by quite often. They own 10 GHz and meanwhile 24 GHz ATV equipment that is constructed especially for portable use. In 2000 they had mostly 10 GHz connections from mountain tops to distant ATV repeaters and some 24 GHz tests, but in 2001 they are searching for direct QSO partners in southern Germany.

The equipment for 10 GHz:

48 cm parabolic dish, 2,5 Watt ATV TX (incl. baseband) with call inserter (see photo below) and 200 mW ATV TX (incl. baseband) with horn antenna on a tripod (small photo).

The equipment for 24 GHz:

48 cm and 60 cm parabolic dish, 600 mW ATV TX (incl. baseband) with call inserter. For both bands are RX with dish and horn available, furthermore video camera, digital camera, GPS, dualband TRX 2m/70cm and mobil phone (photo next page).

It is obvious that portable work is done only with good weather conditions, also at week days. Both OM would like to contact inter-

<http://www.hampubs.com>

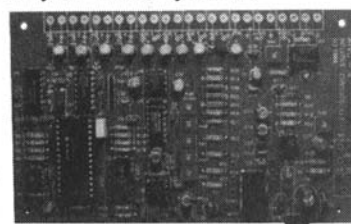
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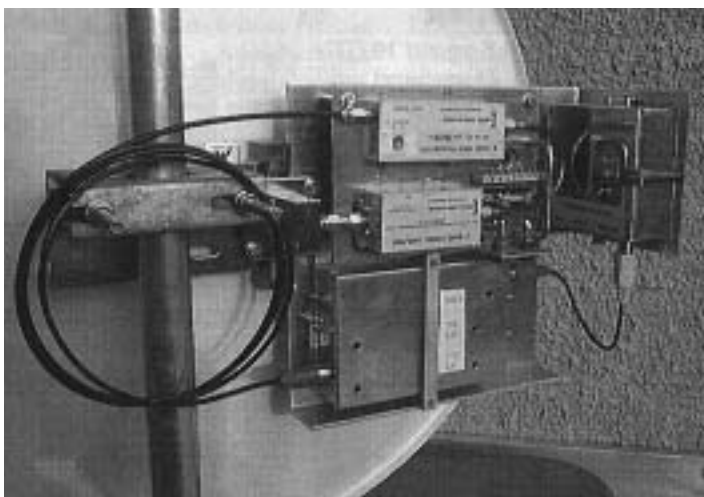


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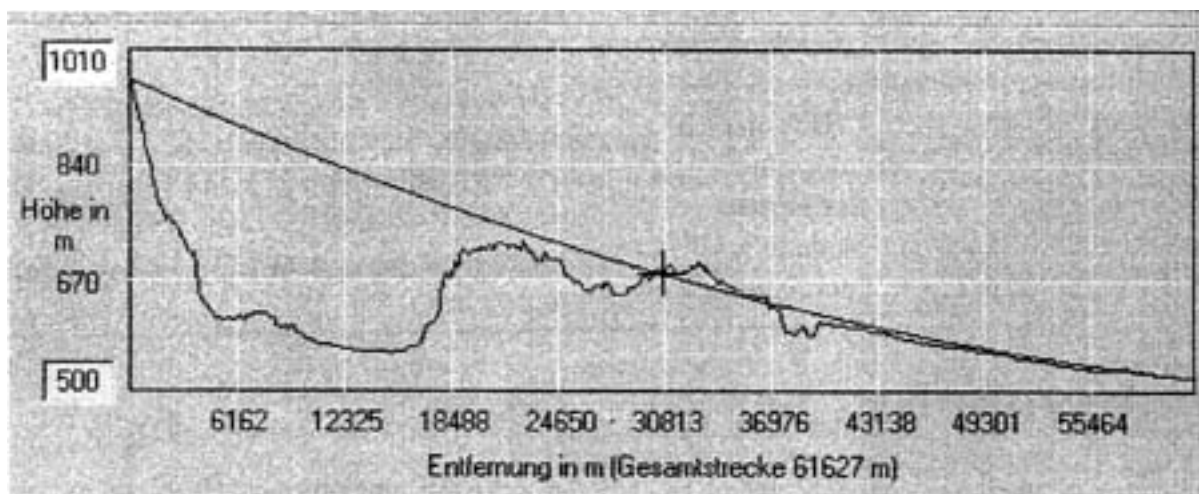




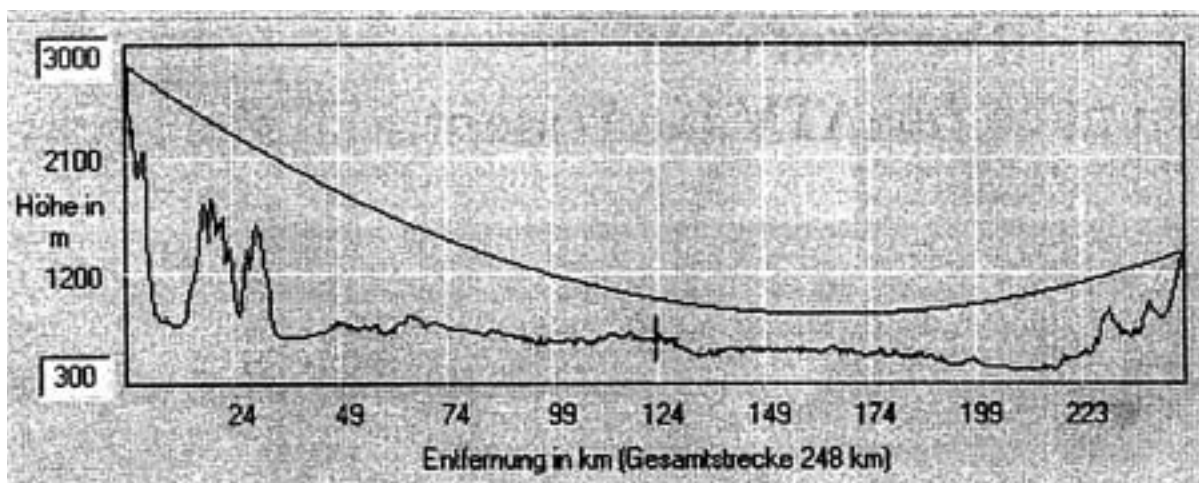
## Line Of Sight Calculations With Computer Programs

With higher frequencies propagation without obstacles is important, line of sight between QSO partners is ideal. In order to examine the route for obstacles until today you needed to pick up the contour line of both QTH from topographic maps and calculate troublesome. In the military and commercial sector there are decent computer programs. Now more and more topographic offices enable simple line of sight calculations for private use with their CD-ROM based maps. It inhibits some more features like relief map, color masked contour lines, 3D and perspective view. After input of two or more geographic points you can get a topographic relief on the screen, ready for printing. Trees and buildings are not included already. The CD-ROMs called "TOP 50" are available in bookshops and in topographic offices.

ested ATV friends, who should give their data like QTH, height above sea level, equipment specification, callback channel or phone number. So they can calculate the possibility of a connection with computer based topographic maps.



250 km line of sight on 24 GHz ATV? Nom problem from the highest german mountain "Zugspitze" (2962 m ASL) to the top of "Grosser Rachel" (1453 m ASL) in the Bavarian Forest near the OK border. The influence of earth surface curving on long distances is shown as a bowing line!



Topographic relief between DJ9PE/p on the "Hohenpeissenberg" (998 m ASL) and DC6WU/p north of Munic (500 m ASL). The direct contact worked in spite of the visible obstacle midrange with B4.

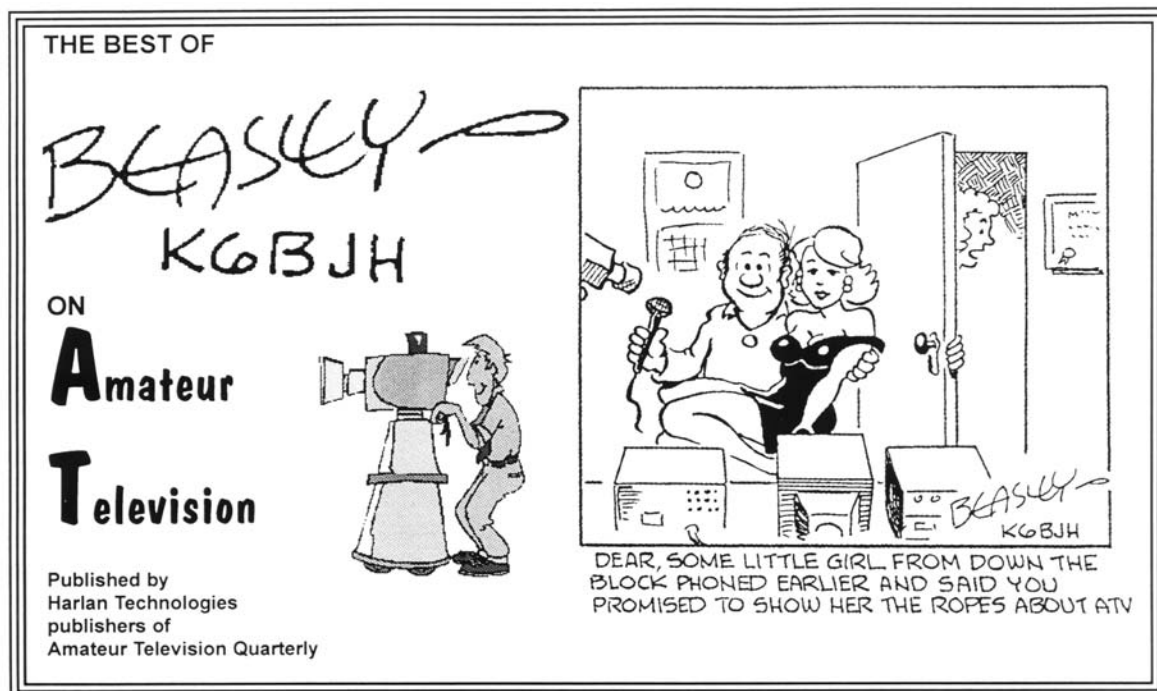
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translation Klaus, DL4KCK@t-online.de  
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## Field Day - Glen Ellyn, IL

Field Day was a big success for ATV here in Glen Ellyn. WTTW Wild Chicago visited the site, and did a lot of video on a ATV equipped Remote Control Race car. It was assembled from a kit by a Ham, who added the MFJ 8704 and a small camera that got great pictures on my 17 inch SONY cable ready receiver. Also viewed on the ICOM R-3.

Wild Chicago also interviewed me with the R-3 hand on the ATV emergency usage.

Jim Ward, W9DHX - jrobward@worldnet.att.net

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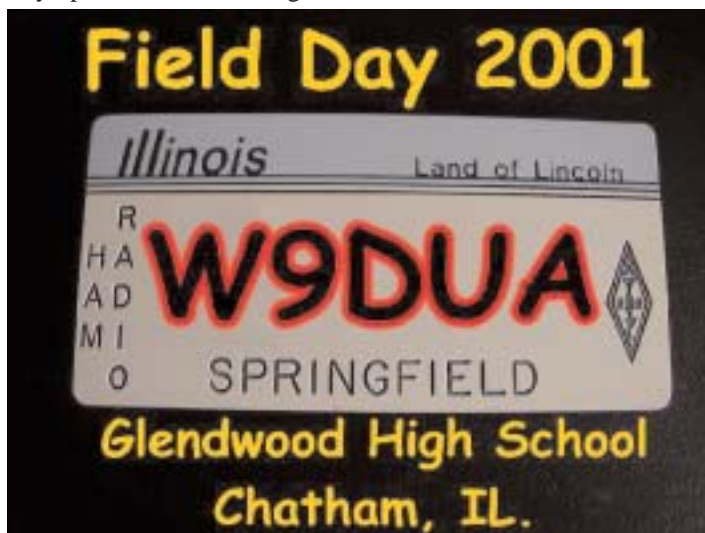
## First for Sangamon Valley Radio Club

### Field Day 2001 at Glenwood High School Chatham, IL.

As far as I know it is a first for Sangamon Valley Radio Club to have Amateur Television at its Field Day event. I talked to several of the old timers and none of them recall having seen it done before. I was responsible for the 2-meter and 6-meter contacts. I also was going to do a demo on fast scan or Amateur Television for extra points.

#### EQUIPMENT:

P.C. Electronics Amateur Television TC 70-20 transceiver  
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M2 440-21 ATV yagi antenna  
A149-20 Cushcraft antenna  
MFJ 3 EL 6 meter antenna  
CDR 22 rotor  
Sharp 13 inch cable ready TV  
Tripple 300 watt AC converter  
RCA Small Wonder camcorder  
Olympus D-450 Zoom Digital Camera



At around 8:00 PM, June 23, 2001 I started my demo of Amateur Television for extra points. I thought 15 minutes and it would be over with. I gave a call on 2 meters 144.340 MHz. the calling frequency for Amateur Television. I received a call back from Gene Gallant (WB9LHD), Carter Morrisson (N9ABR), and Bill Bryant (K9KKL). All were from Springfield, IL. I sent a



test pattern W9DUA to Gene and he was able to fine tune on my signal and we sent some video to each other. The same took place for the other two Hams. I received pictures and audio from a P2 to P4 signal. They received my signal from a P1 to P3. From my location they were 12 to 13 miles away. Anyway the



Field Day Continued On Page 30

Say you saw it in ATVQ!

## John Hey, W8STB — SK

It is with a sadden heart that I pass along the news of John, W8STB, passing. John passed away 6/21/01 from a massive heart attack. His family was with him. John will be missed here in the Dayton, Ohio area. He did a lot to get new hams into ATV. John also was net control of the Wednesday night ATV net.

Ron Piatt ( KB8GUE) - ronkb8gue@webtv.net

I'm attaching a photo of John, which was one of his favorites aboard his boat the "Bass Buggy". He came down to my QTH



one day to get it scanned for use in ATV/SSTV. In this picture he was W8STB/MM (Maritime Mobile) and was set up to work AO-27. As we learned, he passed away while aboard

the boat, one of his favorite locations on Indian Lake with his family and friends.

On June 26, 2001 there was a memorial service for John at the "Lady of Good

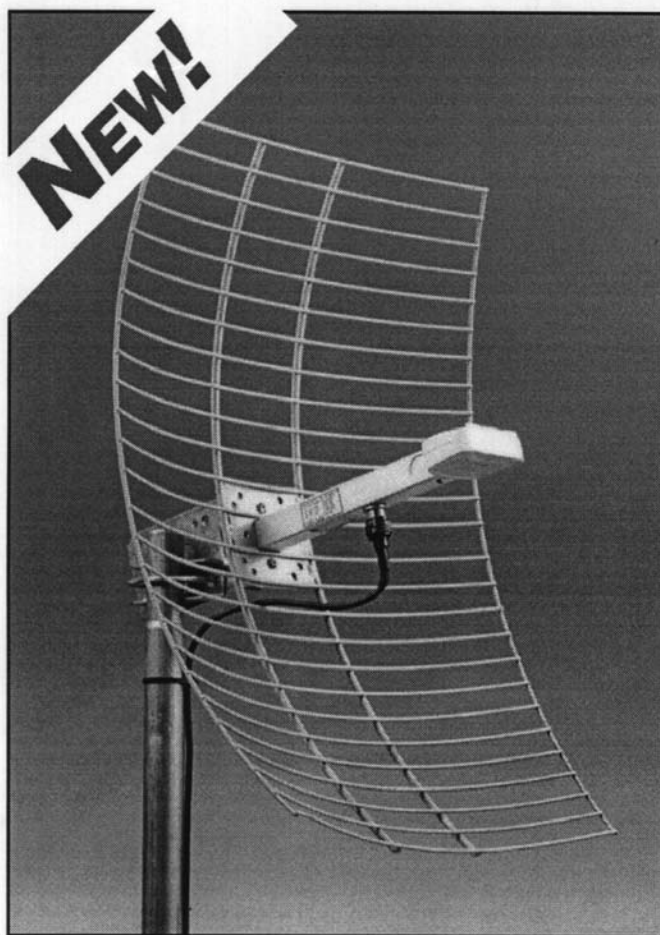
Hope Catholic Church" in Miamisburg, Ohio. Many of his fellow amateur radio friends were present.

We will miss John's very enthusiast support of ATV activity which he pursued almost on a daily basis both morning and night to show and tell with his friends or hoping to find an unusual band opening. You may recall the article which ATVQ ran in the Fall 1999 issue. The part about John is very realistic regarding his typical activity in promoting ATV. Incidentally in reviewing this article, I note that the picture above should have been John's ATV picture which KA9UVY received in Mt. Vernon, Illinois while John was visiting his daughter in the St Louis area.

73, Farrell Winder - fwinder@one.net

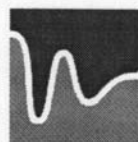


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## Field Day Continued From Page 29

15-minute demo lasted over 1 hour and was enjoyed by all. Several Hams at the field day event stopped by and made good comments about the ATV event. That is what is so great about amateur radio all the things that you can explore and have a lot of fun doing it.

Leonard McWhorter, N9XHU

ATVQ

## Field Day In North Texas

We had what I believe was the first ATV ever here in North Texas near OK/TX border for field day. It was sponsored by W.A.R.S. - Wichita Amateur Radio. I used a pair of slightly modified 900 mhz Gemini Rabbit's, receiver and transmitter. I built a helical coil antenna for 900 mhz out of a metal slinky purchased from Wal-mart, I used a 10 inch metal speaker grill for groundplane with a 5 foot 3 3/4 inch long piece of pvc pipe sticking out from the speaker grill to support the helical coil. I measured 19 loops and cut them from the slinky, (slinky's will take solder), I mounted a SO-239 on the grill/groundplane and fastened the end of the slinky to it by crimping a small locking washer on the end of the helical coil and putting that over the connection point on the SO-239 and soldering it, then stretching the coil out and fastening at 5 foot 1 inches. The antenna wasn't exact as dimensions go for a helical, but they were so close that everything worked fine. I hooked everything up and used small Andrews heliax to carry signal to antenna. I used a small home-made dipole for the receiving end, it connected right to the receiver, no coax. We got a good P-5 picture (when the guys weren't keyed down on HF). The whole camera/transmitter package operated QRP and battery power (I lugged around a marine battery also).

There was some pictures taken of the setup, I'll see if I can get some electronic versions sent to ya'll if I can.

I also recently attended Ham-Com in Arlington Texas.

**www.Ham-tv.org** was there. Lee, AB5IG, was there with his portable ATV repeater built into a portable rackmount cabinet. The machine had all the bells/buzzers/whistles, with close captioning and stereo I believe. Lee has an ATV repeater located in downtown Dallas, Texas.

In one picture you will see a lineup of HF/VHF/UHF radios with members of W.A.R.S. (Wichita Amateur Radio Society) Field Day operating voice and PSK31/SSTV, and at the far end of the table you see me (KD5INM) setting up the atv station.

The second picture you will see the homebrew 915 mhz helical antenna made from a 10 inch speaker grill, a 5 foot 3 3/4 inch long PVC pipe and 19 turns cut from a slinky. I assembled this antenna the night before.

On the chair sits B/W TV with Gemini Rabbit receiver beside it. The Rabbit Transmitter is in the chair by itself with dipole antenna on it. I later swapped antennas, and hooked the Gemini



Rabbit Transmitter and RCA camera up to a marine battery and took it mobile. It worked better with the helical antenna on the TX when moving around. I used a short run of Andrews FSJ1-50A heliax between helical antenna and transmitter, and we got a good P-4 to P-5 picture at over 50 yards with a stock(modified-replaced antenna with F-connector) transmitter. I set this up as a demo, although we didn't have any QSO's, we did get 100 points for having an ATV demo at our club field day and introduced club members and visitors to ATV.

Photographic credit to David H. Gaines - N5DHG.

John Hamilton KD5INM - Kd5inm@aol.com

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## Balloon SSTV On 6 Meters

I plan to have SSTV on my balloon for the "Great Plains Super Launch 2001" (see link below). I plan to have it on 6m, I think that will provide interesting possibilities. I will send QSL cards/certificates for all SSTV reports and/or Simplex repeater reports. I would really like to get the word out on the 6m simplex repeater. I really want to break the long distance contact record! ;-)

73 de Don Pfister - KA0JLF - ka0jlf@earthlink.net

<http://users.crosspaths.net/~wallio/gpsl2001.html>

ATVQ

# ATV RFI Filters

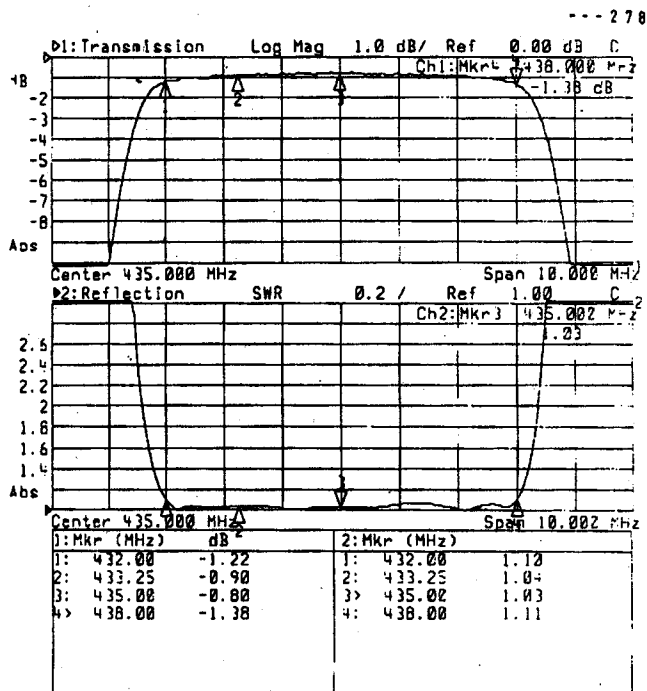
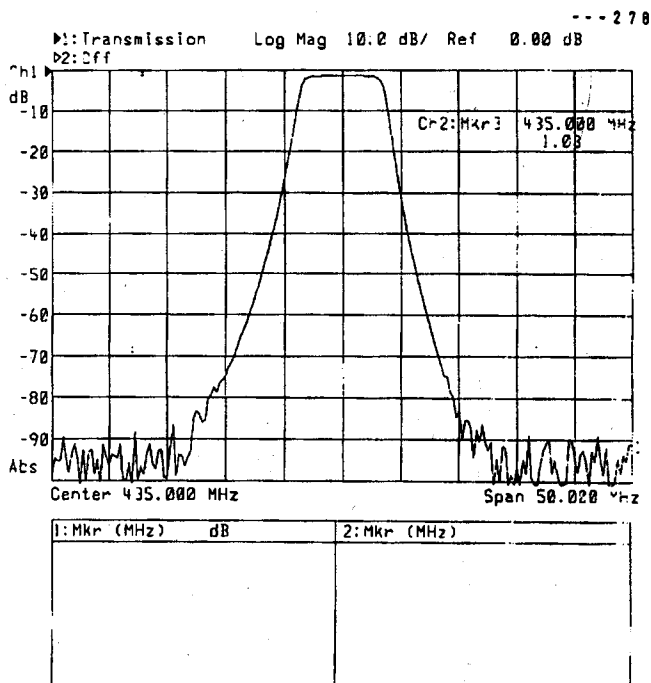
## Custom tuned to your video carrier frequency

Improve your picture quality by reducing interference from pagers and other sources of RF near your reception frequency. On transmit, your signal bandwidth will be reduced so you don't interfere with other services.

DCI bandpass filters are solidly constructed from extruded aluminum and brass. DCI filters are passive and can be used in both the TX and RX pass. They are DC grounded on both inputs and outputs for additional lightning protection. Power rating is 200 watts for a 6 MHz bandpass.

Configuration	8-pole In-line	8-pole Folded	8-pole Rack-mount
Weight (approx)	12 lbs.	12 lbs.	14 lbs.
Dimensions (inches)	24 x 3 x 8	12 x 6 x 8	19 x 6 x 8

The graphs below show the characteristics of a typical DCI 8-pole ATV filter with a video carrier frequency at 433.25 MHz. We make similar filters for 900 and 1200 MHz.



Box 293, 29 Hummingbird Bay  
White City, SK, Canada  
S0G 5B0

email: [dc@dc.ca](mailto:dc@dc.ca)  
<http://www.dci.ca>



## FCC Shuts Down 434 Space Shuttle Video

How's the Subject header for a grabber to get your attention, just like in the tabloids?

It seems that a company by the name of Code Alarm makes remote car security and auto starter Part 15 devices that is operating on 433.97 MHz and was having its range decreased from 200 ft to 20 ft every time the Space Shuttle transmitter on 434 MHz, operated by Chris, N8UDK, was on the air in Clawson, Michigan. Code Alarm made a formal complaint to the FCC. Pat Patterson of the FCC contacted N8UDK because Chris had a copy of his license on the rack as required and asked Chris to shut down his transmitter in response. Chris cooperated and told the FCC where the switch was at the site and they confirmed that his transmitter was the cause of Code Alarms problem.

I emailed Chris the applicable Part 15 Rules. Chris asked Pat Patterson if Code Alarm was Part 15 compliant and if so, stated that hams have priority in the 420-450 MHz band over Part 15 and that one of the conditions of getting a FCC ID for the device is to accept all interference from other services as well as not interfering. Pat Patterson said he would check out the rules, do some further tests and get back to him.

A day later Pat Patterson confirmed to N8UDK that he was well within the FCC Rules and OK'd turning the Space Shuttle retransmission on 434.0 MHz back on. Further, Pat Patterson asked if Chris could talk to the engineer at Code Alarm, which he did. The engineer apparently was not aware of the ham band and that hams could run over 1 KW if they wanted to, much more than the 32 watts that Chris was running. Code Alarm had just recently changed to 433.97 from 315 MHz.

This was the second incident for Chris with new Part 15 device companies where he worked things out cooperatively on an engineering and FCC Rule basis with the company this year. Johnson Controls drove up with some new Chryslers and met with Chris to make some tests with their tire pressure sensors. They found no mutual interference and were appreciative for the time and cooperation.

Congratulations and a big pat on the back to Chris Oesterling, N8UDK, on a very professional and successful handling of what is an increasing problem in our ham bands.

Tom O'Hara, W6ORG - TOMSMB@aol.com  
ARRL Technical Advisor for ATV and Spectrum Management

## 920 MHZ Interference

Talking about 434 MHZ interference to other users, I have been testing FM video and audio on 920 MHZ at 10 watts here in Baltimore recently getting ready to construct a repeater at another location. Sometimes I have a test pattern with my call letters

displayed and also morse ID every 5 minutes on the audio. I can key it up remotely from various locations using a DTMF decoder and it will be on sometimes for over an hour each time while I drive to another spot using a 3 foot loop yagi to check it's P-level. Anyway, two of my neighbors including my wife have discovered that they cannot use the 900 mhz cordless phone while the transmitter is on even though my own phone is using spread spectrum. I had the transmitter and amplifier unit checked on a spectrum analyzer and it looks fine. I limit my time on now just to keep peace but see that there will be problems in the future with all of the wireless junk coming out especially on 2.4 GHZ where a lot of hams are experimenting.

K3ROJAL@aol.com

## 920 MHZ Interference Response

<<Anyway, two of my neighbors including my wife have discovered that they cannot use the 900 mhz cordless phone while the transmitter is on even though my own phone is using spread spectrum.>>

You are quite right. Most people who buy Part 15 devices are not aware that they must accept interference and not give any. Direct them to the FCC ID sticker on the phone or RF device they have. If it is a legal device, it is required to have the FCC ID sticker and note that says " This device complies with part 15 of the FCC Rules. Operations are subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received including interference that may cause undesirable operation."

However, if the guy is bigger than you, or your own wife, you might consider not transmitting when they use the phone.

Tom W6ORG - TOMSMB@aol.com

## 920 MHZ Interference & Spread Spectrum Phones

I think you'll find the interference to your spread spectrum cordless home 'phone is caused primarily by simple power overload from your 920 MHz transmitter. It will more-or-less "flatten" the front end of that cordless 'phone, and no amount of spread spectrum will help it.

Plus, as you point out, users of such telephones (and other gadgets) have to accept any interference problems they encounter.

On the other hand, Tom, if you continue interfering with your wife's 'phone calls, how will you accept having to cook your own meals and sleeping on that lumpy couch every night?

Karl K - W8TIF - Karl.Kanalz@allegiancetelecom.com  
McKinney, Texas

## ANSR-1 Balloon Flight

Here is a little about the high altitude balloon flight last month:

It reached an altitude of 86,668 ft. and the total flight time was 104 minutes. Average rate of ascent was 816 ft/min and descent 3394 ft/min.

The ATV and APRS signals were received on the ground but since the APRS was on a non-standard frequency, few folks knew about the flight.

There were many ATV'ers in Phoenix receiving the video as were KG7KV and W7WKM (me).

There were several problems including the control link for the video camera so all we saw was the ground out of focus and spinning around. Still pretty neat, though, if you ask me.

It was launched from the east side of I-10 between Casa Grande and the I-8 turnoff and landed somewhere around Randolph, AZ, NW of Coolidge.

There was a ground station in a park in Eloy but I did not get the word in time. A two meter repeater around Picacho Peak (?) was used for VHF coordination, as I understand.

For more information, join the Yahoo group  
<http://groups.yahoo.com/group/Ballooning>  
Messages start with #6.

Two of the messages include the flight superimposed over a map of the area. You will also find snapshots at: [http://www.ansr.org/flight\\_archives.htm](http://www.ansr.org/flight_archives.htm)

Bil Munsil - W7WKM HAM-TV - Tucson Azespero@cs.com

ATVQ

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## Northern Illinois ATV

Do you own an ATV station and live in the Chicago area? Then this message is for you. Even though there isn't an ATV repeater in Chicago there is plenty of activity on simplex (439.250Mhz). Please dust off your equipment and join us. Several folks are on every evening and usually on weekend nights late. Give a call on 144.340 and join in. Turns out simplex is more fun and provides a challenge. Some of us are sending video over 60 miles. So if you can't transmit you might be able to receive. Give it a try. We don't have an ATV NET but might consider it in the future if it will improve participation. Currently there are stations in Downers Grove, Bolingbrook, Harwood Heights, Cresthill, Yorkville, Plano, and Malta. Give a call on 144.340.

Michael LeBlanc  
KB9ARS or email me at [michael.leblanc@tellabs.com](mailto:michael.leblanc@tellabs.com)

**Editors Note:** You would be amazed (or maybe not) at how many hams have ATV and do not think they can use it as there is no one else on. This is true in Rockford, IL, as well as many other places in the country. I know that there are at least 15 hams in Rockford that have 440 ATV capabilities, and do you think that any two of us can get on at the same time? I have other contacts around the area and have fun anyway. And the Chicago area is close enough that I get them sometimes.

Henry, AA9XW, sent me the following: The AA9XW ATV repeater (Chicago) may be returning to the air from the Sears building. New facilities are being built there over the next year that may allow the system to be re-activated. Meanwhile I am having a lot of fun doing HF mobile all band (160-450).

<http://www.hampubs.com>

Summer 2001

Amateur Television Quarterly

ATVQ

## 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" \$129 includes serial cable and 3 1/2" diskette.

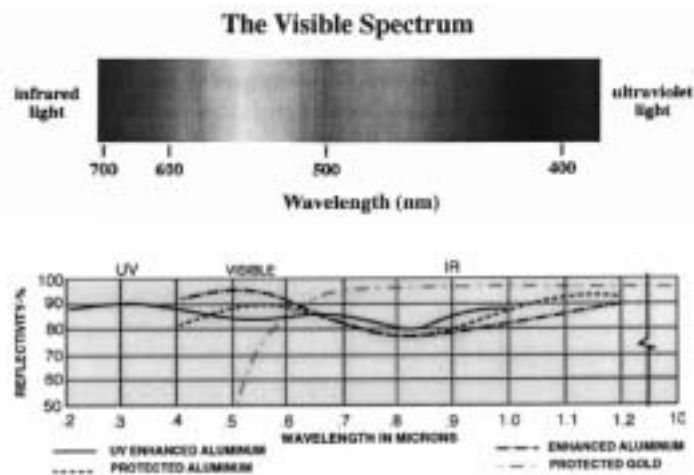
**Intuitive Circuits, LLC**  
Voice: (248) 524-1918  
<http://www.icircuits.com>



# Infrared Mirror System For Balloons

by Joe Mayenschein, WB9SBD - Email: mayen1@mwt.net  
E 4710-A Pheasant Ct.  
LaValle, WI 53941

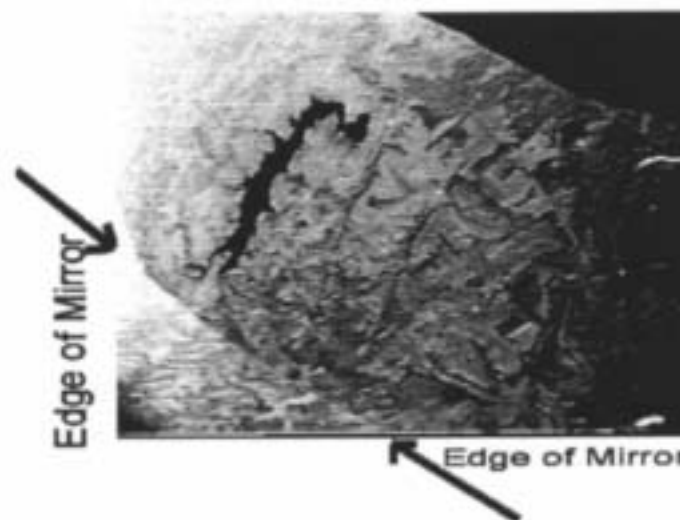
Many of you have been asking about the Infrared mirror system we used on our last flight. As most of you know we all have been fighting the “haze” of our atmosphere. After seeing those false color landsat infrared images, we thought that we could try to filter out the “blue” end of the spectrum, where it seems we have the most scattering problem. Just for refreshers below is our visible spectrum with it's corresponding wavelengths. As you can see to be able to filter out all the haze we basically need a cut off frequency of about 500nm. Anything shorter we don't want. Below the spectrum is the pass curves for various scientific mirrors available. Of course we picked the “protected gold” coating.



resolution through the “Snappy” Below is a picture showing the rotateable mirror assembly in front of the B&W CCD Camera. These cameras inherently have excellent infrared sensitivity.

Next here is an image from the camera, all by itself it doesn't look all that impressive. Again we apologize for the poor image quality of the “Snappy” image. Anyway the large lake in the view is Lake Redstone, our launch sites location. You will also notice the “Edge of the mirror. The camera had a wider field of view than we expected and some of the view sneaked around the mirror.

This seemed like a good possibility, so we tried it, and we think it worked so well we plan on adding further filtering into the system on our next flight. The snappy images below don't do it justice at all. The live video looked 100% better. We don't know why or what we were doing wrong but we lost huge amounts of



## Icom R3 Freqs?

We are now stocking the Icom R3 Receiver and will program in all the popular ATV frequencies plus any 10 of any mode and frequency into memory at the time of purchase. I'd like to know if we have put in all the commonly used frequencies in the US. The AM ATV memory bank only has space for 10 frequencies so I have put 421.25, 426.25, 427.25, 434.0, 439.25, 1241.25, 1253.25, 1265.25, 1277.25 and 1289.25 in that bank. We have also put in all the standard over the air broadcast TV channels into memory from channel 2 to 69 which leaves TV best memory bank with 14 available slots for more AM ATV channels. I have put in these frequencies: 910.25, 911.25, 913.25, 915.0, 919.25, 923.25, 1265.0 and 1248.25. Are there any others that are used in your area? If so I have 6 slots left.

For FM there is a bank of 50 memory channels available. I found that the R3 is so wide on FM that you can be within 10 MHz and not know the difference. However the sound subcarrier is the tough one to set. The FM memory bank is set up with: 910.0, 915.0, 920.0, 1248.0, 1252.0, 1255.0, 1265.0, 1280.0, 2398.0, 2317.0, 2330.0, and 2442.0. So there are over 30 slots here left.

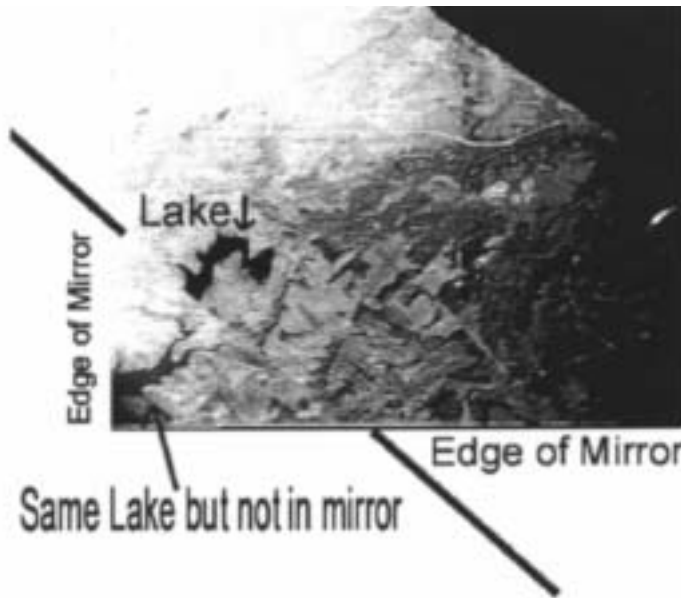
I also put in the 50 channel memory bank A, the two meter ATV coordination and talk back freqs of 144.34 and 146.43.

Please let me know the other frequencies that are actually in use in your area of the USA so that I may add them in.

Tom O'Hara W6ORG - TOMSMB@aol.com  
P. C. Electronics  
[www.hamtv.com](http://www.hamtv.com)

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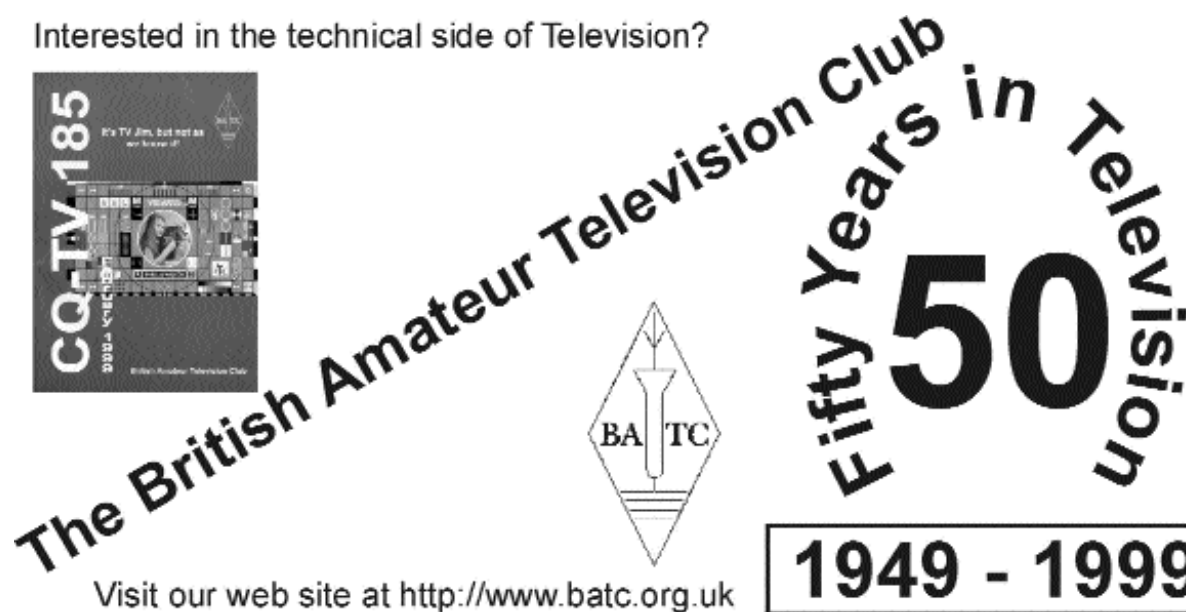
The contrast is somewhat apparent already with what is seen in the mirror and what is directly viewed. Now if we waited a bit for the view to drift slightly different,, we can actually see the lake both in the mirror and directly!

This is where the improved contrast is really seen!

On our next flight we plan on placing a lens type of filter in front of the camera to filter out even more.

Any questions just drop me a note..

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## 70cm ATV Trial

NZART's FMTAG (Frequency management and technical advisory group) plan for sharing the use of 430-440 MHz for ATV, with other modes already present in that spectrum, has passed NZART council approval for a 12 month trial. The full details are in the May/June 2001 Break In.

This comes about because of the shared nature of Amateur allocations and the Ministry of Commerce's actions in moving other users (studio to transmitter links) into 440-449.75 MHz, displacing ATV repeater inputs.

Michael Sheffield ZL1ABS  
176 Albany Highway, Albany, Auckland,  
New Zealand.  
Email mjsheffield@yahoo.com

ATVQ

## ATV Notes #24 Sunday, June 24, 2001

The June meeting of the ([www.qsl.net/zl1qf/ATVusers.html](http://www.qsl.net/zl1qf/ATVusers.html) - our web page) Auckland ATV Interest Group (of the Auckland VHF Group inc. Br66 NZART inc. [www.qsl.net/zl1bq](http://www.qsl.net/zl1bq)) was last Sunday afternoon. It was hosted by Andrew, ZL2TQV. The day was typical wintry, wetness among the Kauri trees of Titirangi.

Attending were Ashly, ZL1AG, (not one of the walking undead, as everyone joked. The Break In obituary is for the previous holder of the callsign ZL1AG. Why a local club submitted it for publication last month, so long after the chap became a Silent Key, no one knows), Tim, ZL3VTV, Ken, ZL1TVQ, Michael, ZL1ABS, Andrew, ZL2TQV, and Daniel, ZL2UTV. Four 23cm ATV exciter boards were tested, repaired, were completed, tuned and seen to be working on a 23cm FMTV on the other side of the room. Another two boards, remain unfinished but had more parts soldered to the pcb than when they arrived. (These exciters are a development from CQ-TV 133 and Henry, ZL1AAN, has had his example published in 73 magazine. Using locally available parts, they are the easiest, low cost way to produce a low power 23cm FMTV signal available to ZLs).

ATVQ magazines were searched to find Wavecom articles that Rob, ZL3TCM, is looking for. Recent BATC CQ-TV magazines were passed around. Andrew, ZL2TQV, showed a two element 23cm Yagi-Uda he had built for a handheld from a CQ-TV article. Ken took a NEC printer cartridge home to try from the pile that the ATV Interest Group has acquired. There were no takers for chart recorder paper.

Projects to increase the output power at the Whitford ATV Repeater to 30 Watts (power supply being built, two M57762 PA modules already purchased), fit an 8 way remote controlled Video switch to Whitford (being assembled by Ian, ZL1VFO), add a 2.4 GHz FMTV output to the ZL1BQ Nihotupu repeater (nothing purchased or built so far), assemble a low cost DOS PC

to run SSTV to FSTV display at ZL1BQ (Grant, ZL1WTT, testing DOS type software for auto-boot features and Doug, ZL1AVY, looking for hardware) were discussed. Interest in the progress of the Whangarei ATV repeater Form 10 application to FMTAG was expressed. As soon as the Whangarei BR28 NZART submits the completed form, to FMTAG, the process of consultation and publication in Break In will begin.

Many thanks to Andrew, ZL2TQV, and his family who invited the late-stayers to have macaroni, mince and cheese with them for dinner.

Tim, ZL3VTV, has offered to host the July AK ATV Interest Group meeting at his house in Howick, Auckland. The planned date is Sunday afternoon, 1pm onwards, on the 29th July. It is suggested that it be a day to bring your soldering iron, parts and built up (or partly built) PLL boards (for the 23cm FMTV transmitters to test.

Michael Sheffield ZL1ABS  
Email mjsheffield@yahoo.com

ATVQ

## Serious ATV DX'ers use 144.340 MHz

Hey, Bob here in Southern Illinois looking for possible long haul ATV DX. I just wanted to remind everyone that the national ATV calling frequency is still 144.340 MHz. If we hide out on other obscure simplex frequencies or heaven forbid some over allocated repeater pair that is used in nearly every large metropolitan area we will not make a possible connection with other ATV operators across the country.

Please monitor 144.340 if you want results! I know I do!

73, Bob Delaney - KA9UVY-TV  
Mount Vernon, IL  
[ka9uvy@hotmail.com](mailto:ka9uvy@hotmail.com)  
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Monitoring 144.340 FM When Active

Check out <http://members.tripod.com/silatvg>  
for Southern Illinois. ATV

ATVQ

## Webcam

Well I finally put up a 24x7 webcam in my yard looking at the new construction of my garage. I used a Wavecom transmitter and receiver along with a bigger receive antenna to stretch the distance. Unfortunately my phone system interferes with the signal a little. But I thought this might be interesting to the HAM guys. This could also be done by anyone with a cable modem or DSL to show an ATV repeater on the NET.

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<http://66.25.132.121:8080/frames/default.html>

It may not work if you go through a proxy server at work. If that is a problem cut the above URL and paste it into the web page at: <http://www.safeweb.com> that should make it work. Be patient the pictures load slowly, especially the live ones.

Let me know what you think. My main reason for doing this was to be able to watch the construction while I am on the road, or on my vacation in Orlando. Yes I will be in Disney world.

I'll work on the interference soon. And maybe there is a magazine article involved here. Hmmmmm.....

Fred Juch, N5JXO  
Email : [fjuch@austin.rr.com](mailto:fjuch@austin.rr.com)  
1706 Walsh Dr.  
Round Rock, TX 78681-1434



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 Web site: <http://www.hamtv.com>



## VOR-3 VIDEO OPERATED RELAY

The Video Operated Relay module is designed to control two relays for various applications by sensing the horizontal sync in the applied video. Some of these applications include: basic ATV repeater, link or beacon control, with automatic station identification at the end of a transmission or every 9 minutes during continuous transmission to satisfy FCC Rules, or control of any device that needs to be activated when video is sensed such as remote pause control of a VCR. A SPDT relay is used to switch a transmitters power supply of up to 6 Amps on upon sensing horizontal sync. The horizontal sync frequency is sensed by a tone decoder whose frequency is set to 15734 Hz +/- 200 Hz by an on board pot using a frequency counter on the 10K test point (TP) resistor. A DPDT relay is used to switch between received video and ID video sources plus an extra set of contacts. The 6 modes of operation are controlled by a specially programmed PIC and selected by an on board digiswitch, panel rotary switch or remotely using 6 of the relay contacts on a DTMF-8 board.

To change modes, turn off power to the board, turn off all modes, turn on new mode then turn power back on. With the exception of the RS-232 mode, you can change modes with the power on, but the new mode will not function until the current mode has completed its full operation. The yellow status LED will flash during power up for about 1 second or stay on if more than one mode is selected.

### MODE 1 - RPT, ATV REPEATER

With no video input, the Power relay will be in the normally closed (NC) contact state and the video relay energized in the normally open (NO) contact state and its video LED will be lit. This keeps DC power to the transmitter off and ID video selected. To set the horizontal sync sensitivity pot on the output of the sync separator, apply the minimum weak, snowy video signal you want the repeater to key up on. Slowly advance the pot from full CCW until the Green Sync detect LED lights. When the Sync LED lights the Power relay will switch to the NO contact, its power LED will also light and the video relay switches to the NC contacts. This will enable DC power as well as sending the received video to the transmitter. If the video is continuously applied for 9 minutes, the video relay will switch to the NO contacts temporarily for 5 seconds to ID. When the input video is dropped, the Sync LED will go out, the Video relay LED will go out as the ID video on the NO contacts are switched in but the Power relay NO and its LED will stay on for 20 seconds of transmitter hang time before dropping out.

### MODE 2 - VTX, CONTINUOUS TRANSMIT VIDEO

The Power relay will be continuously energized and the NO will make contact regardless of video input. The Power LED will also be on but the video relay will be off in the NC state. This mode is usually used for testing purposes to transmit the received video as long as necessary.

### MODE 3 - IDTX, CONTINUOUS TRANSMIT ID

This is the same as Mode 2 except the video relay is energized, video LED on and NC contacts selected to continuously transmit the ID video for testing purposes.

### MODE 4 - BEACON

The power relay and its LED will energize and the NC contacts selected initially for 10 seconds and then switch off to the NO contacts for 10 minutes before repeating the 10 seconds on and 10 minutes off beacon cycle. The video relay is continuously energized, NC contacts selected to transmit the ID video and its LED on. Video input has no effect but may turn on the Sync LED if video is present at the input.

### MODE 5 - VOR, VIDEO OPERATED RELAY

This is a very flexible mode where there are many different applications that require relay contacts to switch upon sensing video. When horizontal sync is sensed, the Sync, Power and Video LED's will all light within 200 ms and both relays will switch from their NC to NO state. When video is removed the relays will return to their NC state after 100 ms and the LED's will go out. There are then 3 sets of relay contacts that can be used - one 6 Amp and two 1 Amp contact. This mode is good for switching a remote pause control on a VCR or to unquench a speaker on a TV if the video input is connected to either of their composite video outputs.

### MODE 6 - RS-232

The power and video relays can be controlled externally by a computer, Basic Stamp or modem with a RS-232 buss if other than the standard modes and timing supplied in the PIC are desired. Mode 6 uses 9600 baud, no parity, 8 data, 1 stop. VOR-3 "G" solder pad connects to a DB9 connector pin 5, "O" connects to pin 2 and "I" connects to pin 3. Sending ss<enter> to find out if sync is being detected returns a 0 if no sync and 1 = sync. Sending id 0<enter> turns off the Video relay and selects the NC contacts. Sending id 1<enter> turns it on and selects the NO contacts. Sending tx 0<enter> selects the NC contact and tx 1<enter> selects the NO contact of the Power relay.

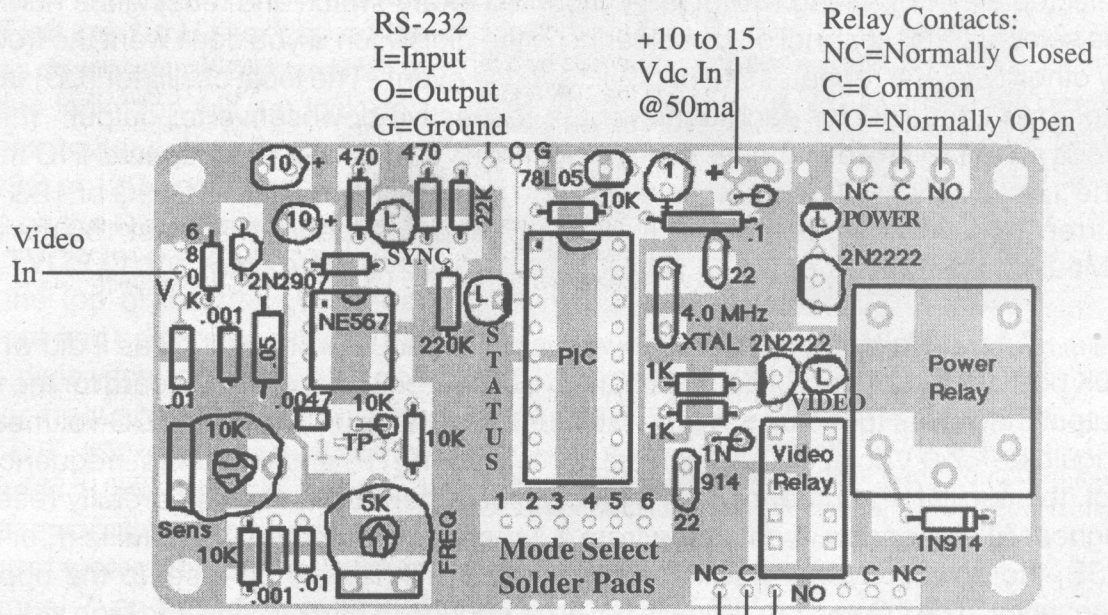
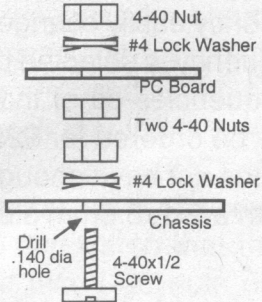
W6ORG (c) 4/2001



## VOR-3 VIDEO OPERATED RELAY

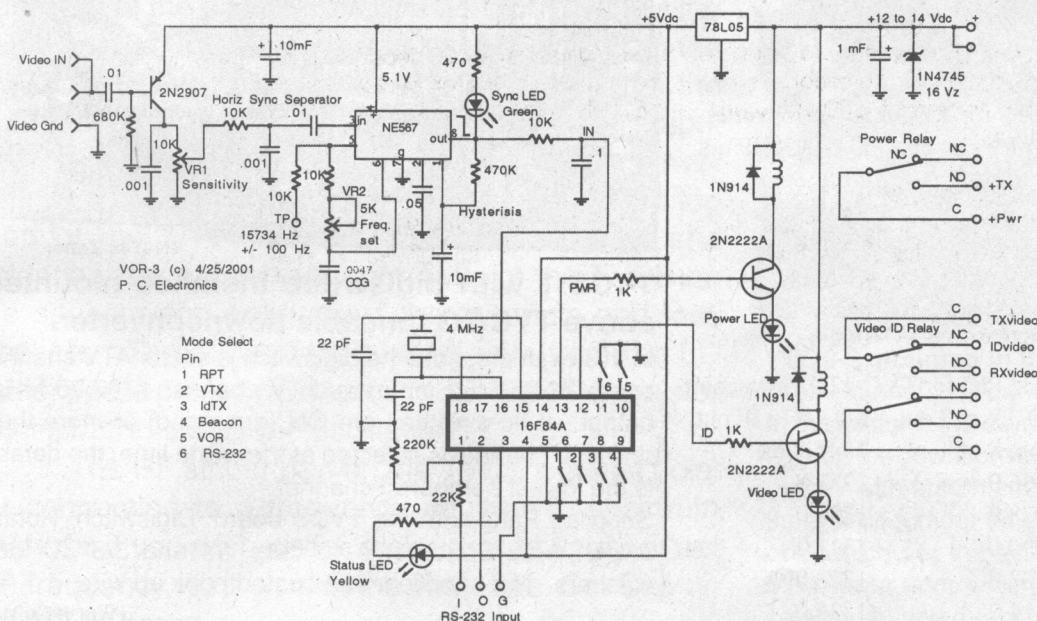
Mount in a shielded box.

Board Mounting Detail



Mode	Video in	Sync LED	Power LED	Video LED	Notes
1 RPT	YES	ON	ON	OFF	Video ON 5sec every 10 min and 20 sec when video in drops out, Power hangs 20 sec.
2 VTX	NA	NA	ON	OFF	
3 IDTX	NA	NA	ON	ON	
4 Beacon	NA	NA	ON	ON	Cycles Power and Video relays ON for 10 seconds and OFF for 10 minutes.
5 VOR	YES	ON	ON	ON	
6 RS-232	NA	NA	NA	NA	Relays controlled externally.

The VOR-3 should be mounted in it's own 100% shielded enclosure to prevent the transmitted ID video from getting into the receive video and locking up the transmitter. The VOR-3 and OSD-ID(PC) can be mounted in a LMB CAB247 diecast aluminum box with coaxial connectors for the video and 500 to 1000 pF feed-thru caps for DC voltage for the simple ATV repeater application.



For ATV repeater operation, connect the receiver video (RX video) to the video in solder pad and run a jumper wire from the second video in pad to one of the NO pads of the video relay. Connect to the transmitter video input from the video relay C (common) solder pad and connect the video ID source to the NC contact.



## TVCS Downconverter Synthesizer Board

This board is designed to provide stable crystal referenced local oscillator locking with our TVC-2G, TVC-9 and TVC-12G tunable down converter boards and functionally takes the place of our previous TVCX series of crystal controlled downconverters. 5 ATV channels in the specified ham band can be selected either by wiring to the panel mounted rotary switch and reusing the numbered knob to indicate the selected ATV channel or, by soldering in the digiswitch if you don't want the frequency easily changed by others like at a repeater site or public service event. The local oscillator (LO) frequency is selected by a programmed PIC for each band for the respective downconverter output. If frequencies other than those standard listed in the table below, or lower VSB is desired, a special PIC may be ordered for \$25. The 12V 100 ma wall plug power supply that came with your TVC-4G, 9G or 12G does not have enough current to supply both boards, you will need a supply capable of at least 150 ma with a 2.1x5.5mm plug - Mouser 412-112024 or Radio Shack 273-1773 & 273-1716 plug.

After installation your TVC downconverter should work right off as it did when it was tuned by the 10K pot if you first select or jumper channel switch 7 or 8 on the TVCS board for the specific downconverter output that it was tuned up for - see table below. Check for lock with a DC voltmeter - Highest frequency should be <7.0 Vdc at the vertical resistor test point (TP) and the lowest frequency channel >1.0 Vdc. If not, the oscillator trimmer cap on the downconverter board can be carefully reset to 6.5 to 7.0V on the highest ATV channel. If changing from a TV channel output to 45.75 MHz IF or special PIC with lower VSB, the downconverter oscillator trimmer cap will have to be reset to the opposite side of the input frequency. The LO varicap range is not wide enough to mix low side and high side injection mix channels. Ch 6 is not used normally and is reserved for special frequencies or functions.

### TABLE: ATV Channel Input VS. Output Frequencies:

TVCS-2 70cm band 420-450 MHz PIC for TVC-2G Downconverter

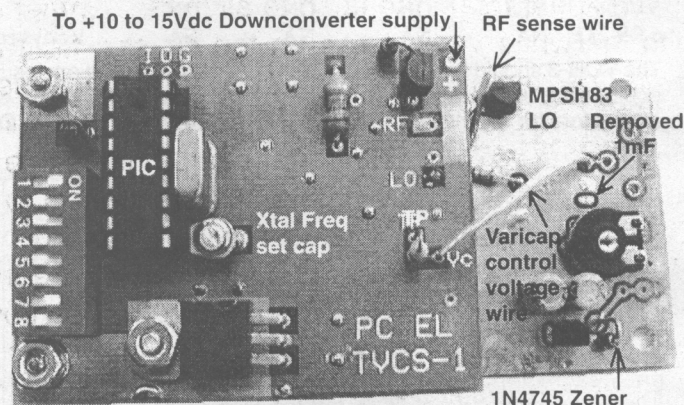
Input	LO TV ch3 out	LO TV ch4 out	LO 45.75 IF out
CH MHz	7 & 8 off	7 on, 8 off	7 off, 8 on
1 421.25	360.0	354.0	467.0
2 426.25	365.0	359.0	472.0
3 427.25	366.0	360.0	473.0
4 434.0	372.75	366.75	479.75
5 439.25	378.0	372.0	485.0

TVCS-9 33cm Band 902-928 MHz PIC for TVC-9 Downconverter

Input	LO TV ch3 out	LO TV ch4 out	LO 45.75 IF out
CH MHz	7 & 8 off	7 on, 8 off	7 off, 8 on
1 910.25	849.0	843.0	956.0
2 911.25	850.0	844.0	957.0
3 913.25	852.0	846.0	959.0
4 919.25	858.0	852.0	965.0
5 923.25	862.0	868.0	969.0

TVCS-12 23cm band 1240-1300 MHz PIC for TVC-12G Downconv.

Input	LO TV ch8 out	LO TV ch7 out	LO 45.75 IF out
CH MHz	7 & 8 off	7 on, 8 off	7 off, 8 on
1 1241.25	1060.0	1066.0	1287.0
2 1253.25	1072.0	1078.0	1299.0
3 1265.25	1084.0	1090.0	1311.0
4 1277.25	1096.0	1102.0	1323.0
5 1289.25	1108.0	1114.0	1335.0



### TVCS-1 with digiswitch installed mounted above TVC-2G tuneable downconverter.

In this example, note the digiswitch is set for ATV channel one (421.25 MHz input) and TV channel 4 (67.25 MHz) output. If no switches are ON (grounded) or more than one ATV channel is selected at the same time, the default is the lowest numbered channel.

Supplied Parts with the TVCS board: Digiswitch, Rotary switch, Hex Spacers, 4-40 nuts, #4 and 3/8" ID lock washers. Not supplied: #22 coated hook up wire.

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ELECTRONICS



## TVCS Downconverter Synthesizer Board, cont.

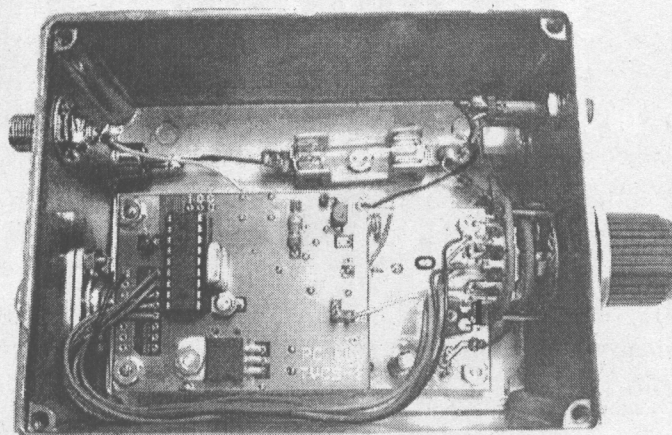
### MOUNTING:

The TVCS mounts on 1/4" hex by 5/8" 4-40 spacers over the antenna input end of the tunable downconverter board. First the 1 mF filter cap on the varicap control line of the downconverter board has to be removed or the phase lock loop will not lock up - check that there is no short after cutting it out.

On the TVC-4G, 9G or 12G enclosures, replace the top two 4-40 screws on the N jack with the 4-40x5/16 screws so that the TVCS board will fit. Remove the two 4-40 nuts on the top of the downconverter board at the antenna input end and screw back on the spacers. Solder in the digiswitch to the board if you wish the downconverter frequency to not easily be tampered with, or run 6.5" #22 wires from the ATV channel select solder pads 1 thru 5 plus one ground to the rotary switch - make sure the order is correct on the switch and the ground wire goes to the common terminal. Jumper channel 7 or 8 to ground or not depending on desired output. To mount the switch, remove the variable pot and knob then drill out the hole to 3/8" dia. Before cinching down the set screw on the knob, rotate the knob to align the number one with the white vertical line on the chassis front and verify that channel 1 is ground with an Ohmmeter. Remove the two end wires from the old 10K tuning panel pot at the downconverter board but remove the center wire at the pot side and then reconnect to the TVCS board Vc solder pad. A wire is run from the TVCS + power input pad to the down converter + input or convenient +11 to 14 Vdc downconverter power supply connection - wrapping the wire around the top lead of the 1N4745 on the down converter and soldering is a convenient spot. Mount the TVCS on the spacers and snug down the two nuts and lock washers. The 1 inch long pick up wire from the LO solder pad is placed next to the MPSH83 LO transistor within 1/8" to sense the oscillator RF.

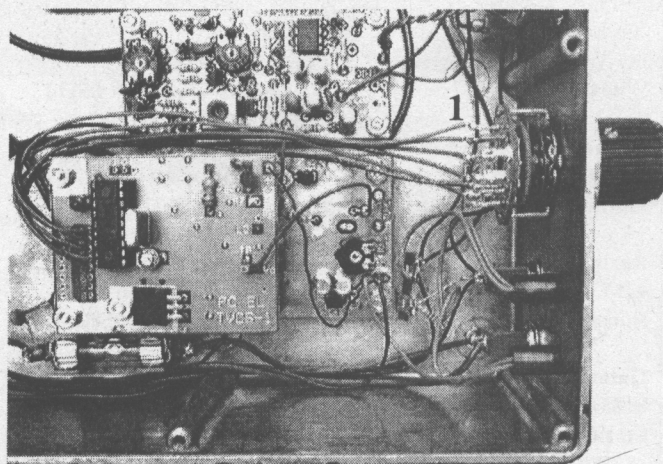
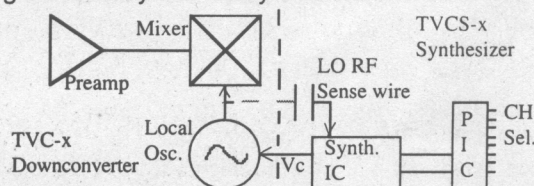
The RF solder pad on the TVCS is a test point for connecting to a frequency counter or spectrum analyzer if you wish check lock up or to verify or set the frequency right on with the Xtal Freq. Set Cap on the TVCS board.

<http://www.hampubs.com>



**TVCS-2, 9 or 12 Synthesizer board as mounted in a TVC-4G, 9G or 12G ATV Downconverter.**

In this example using a TVC-12G downconverter board there are no wire jumpers on the TVCS-12 boards 7 or 8 output select solder pads - output in this case then would be on TV channel 8 (181.25 MHz) for which ever of the 5 channel select solder pads is grounded by the rotary switch.



**TVCS-2 mounted in the TC70-20 Transceiver**

Note channel 1 solder lug location on the rotary switch. In this picture, the switch is shown with the wires on the top - on the downconverter they are shown on the bottom - verify with an Ohmmeter to be sure. In this example there is no jumper on either output select solder pads 7 or 8 which per the table, gives a TV channel 3 (61.25 MHz) output for which ever of the 5 ATV channels is selected by the rotary switch.

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## Digital-ATV at HAM RADIO 2001

The digital amateur television test provided by a group around DJ8DW from Wuppertal University at the HAM RADIO 2001 fair in Friedrichshafen, Germany, was built up over a 9 km distance from the "Elektronikschule Tettnang" building to hall 6. On 434 MHz plus/minus 1 MHz 80 watts of power were used in GMSK modulation and a fourfold 11-el. yagi group at each location.

On Friday morning the video and sound transmission in MPEG2 quality was successful at times, but strong inband short-time carriers interrupted it more and more. So an originally planned long path test over 26 km from Austria was cancelled.

Several TV monitors at the combined stand of DARC public relations and AGAF e.V. were showing all three days long, how well an undisturbed 3rd generation digital-ATV link can work. On 1255 MHz plus/minus 3 MHz 10 mWatt in QPSK modulation with FEC (forward error correction) provided excellent video and sound quality, received by a cheap digital satellite TV settop-box in MPEG2. After intentionally interrupting the path an error message from the settop-box menu appeared on a black TV screen, but after realignment the live picture was back with some delay.

Uwe Kraus, DJ8DW, will soon present a detailed description of 3rd generation DATV which is designed to enable experienced TV amateurs to use the new single chip MPEG2 coders and decoders from Fujitsu and a universal modulator for GMSK, QPSK or 8VSB.

**web info:** [www.darc.de/g/datv/datvindex.html](http://www.darc.de/g/datv/datvindex.html)

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Frequencies courtesy of Scanning USA, Feb. 2001 -Something new to monitor, by Tom Filecco



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