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Amateur Television Quarterly

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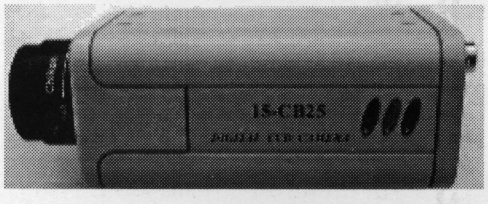

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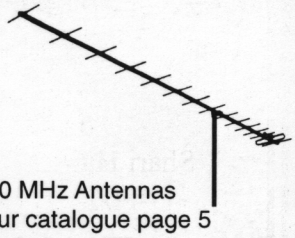

420-450 MHz Antennas
- see our catalogue page 5
All prices include UPS surface in USA

Dir. Sys. DSFO ATV-25 yagi	**16 dBd**	**$159**
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Diamond X510NJ Vert omni	**9.5 dBd**	**$199**
Diamond X510NA Vert omni	**9.5 dBd**	**$209**
Diamond NR-770H mob/port	**5.5dBd**	**$59**

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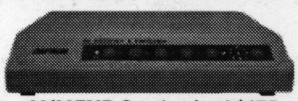

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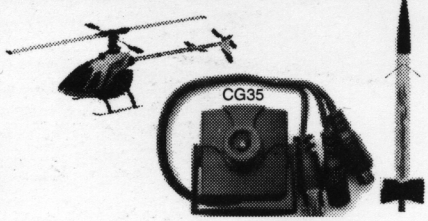
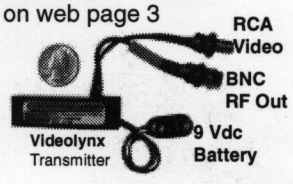


App notes available on web page 3



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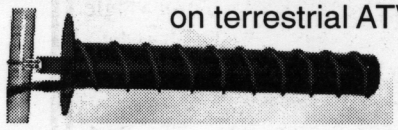

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Application notes can be downloaded or requested from page 3 of the web site - We have it all!

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Amateur Television Quarterly

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FAST CONTINUOUS SLOW SCAN TELEVISION?

This message is to all IBM pc software writer's. The short question is: is anybody interested in writing some new "Fast" Slow Scan TV software that uses the current available frame grabber cards and sound cards the software would continuously grab a small colour frame convert it to a sstv signal and send and receive it via the sound card, giving a type of semi moving picture, (like fast scan) simular to what's being used by video programs such as windows netmeeting on the internet?

The long question is, as most people know Slow scan TV has been around for many years starting with 8 second black and white pictures. But with the current modes, mostly done with computers these days, you can only send one colour frame at a time, and it takes a long time. With the invention of frame grabber cards and sound cards, is it possible to send and receive continuous FAST sstv pictures using these cards?

There are a number of programs for using video on the internet such as windows netmeeting, and some that use a direct phone connection, modem to modem, which continuously grab a small picture and send it to the phone line via a modem, giving a good semi moving picture would these be a starting point.

What I propose is a simular Simplex system that can be used by amateurs, as we use sstv now. I think a faster continuous system would benefit all amateurs and make the mode much more interesting and enable us to get many more pictures between stations mainly on vhf and above as the band width would be too wide to use on hf. So, is there anybody out there in software land who could comment if this type of fast sstv could be made to work?

And of course some new standards would have to be set as to the speed. If anybody knows of someone who may be interested in this new mode of sstv could you please pass the email on to them for comment? I realize that software takes a great deal of time and effort to produce, which has been shown by the many software writers that have written the many programs for the latest modes that have been popping up on the amateur bands in recent years. but I am sure that the software would be appreciated by all that would use it. It could the new mode for 2000.

I plan to publish this message on as many mailing lists as I can find. I want it to reach as many people as possible

73 de Bruce **vk3dht@amsat.org**

Editor: I received this email from Bruce, possibly bue to the fact that I wrote Blaster SSTV for the Sound Blaster, and probably due to publishing ATVQ. I have given this thought on several occasions, as well as a new "short" SSTV mode for satellites (suggested by Don Miller, W9NTP). Anyone have ideas?

ATVQ

Teletec 70cm Amp

The Motorola MRF658 transistors used in the Teletec 150 wat amp are no longer made and the time to get a lifetime buy has passed. I checked with RF Parts and they have a little over 100 of these left on the shelf. So if some one wanted to manufacture 50 of the Teletec amp design they could. The MRF658 is listed at $47.93 each.

There are no other equivalents to this part that I have found and Motorola has decided to go to 28 Vdc parts rather than 12V. RF Parts has a 67728 60 watt power module and 4 can be put together, but these are about $100 each. So it seems we are somewhat stuck for a greater than 100 watt solid state 70cm amp unless there is something new to check out - maybe something will turn up at Dayton.

Meanwhile, I have an app note on the Mirage D1010 / D100 amps on ATV and have added one on the Mirage D26N. Both app notes include the schematic and engineering changes I made for Mirage before they sold to MFJ. They are available in pdf file format free for the asking on email to hams. A list of all our available ATV app notes are on page 3 of our web site.

You could go back to the old 4X250 tube type amps, but they are difficult to get the bandwidth for color and sound due to the high loaded Q of the grid and plate circuits. The interelectrode capacities and high impedances are what result in the high Q tuned circuits. Cathode modulation helps because it eliminates the grid tuned circuit reduction of bandwidth and using a half wave plate line with minimum tuning capacity on the end helps.

Tom O'Hara W6ORG
P. C. Electronics
www.hamtv.com

ATVQ

Can You Believe These?

These are supposedly-real warning labels from packaging around the world.

On Sears hairdryer: Do not use while sleeping.

On a bag of Fritos: You could be a winner! No purchase necessary. Details inside.

On a bar of Dial soap: Directions Use like regular soap.

On some Swanson frozen dinners: Serving suggestion Defrost.

On a hotel-provided shower cap in a box: Fits one head.

On Tesco's Tiramisu dessert (printed on bottom of the box): Do not turn upside down.

On Marks & Spencer Bread Pudding: Product will be hot after heating.

ATVQ TO PAY FOR ARTICLES!

Payment for Technical Articles

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

Ideas

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

ATVQ

CONTRIBUTORS GUIDE

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

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

Articles can be sent to: **ATVQ, 5931 Alma Dr., Rockford, IL 61108**
or to our email address: **atvq@hampubs.com**
Also note our web page address: **http://www.hampubs.com**

ATVQ

On packaging for a Rowenta iron: Do not iron clothes on body.

On Boot's children's cough medicine: Do not drive car or operate machinery.

On Nytol sleep aid: Warning may cause drowsiness.

On a Korean kitchen knife: Warning keep out of children.

On a string of Chinese-made Christmas lights: For indoor or outdoor use only.

On a Japanese food processor: Not to be used for the other use.

On Sainsbury's peanuts: Warning contains nuts.

On an American Airlines packet of nuts: Instructions open packet, eat nuts.

On a Swedish chainsaw: Do not attempt to stop chain with your hands or genitals.

On a child's Superman costume: Wearing of this garment does not enable you to fly.

ATVQ

Video Switcher With On-Screen Display And Automatic IDer

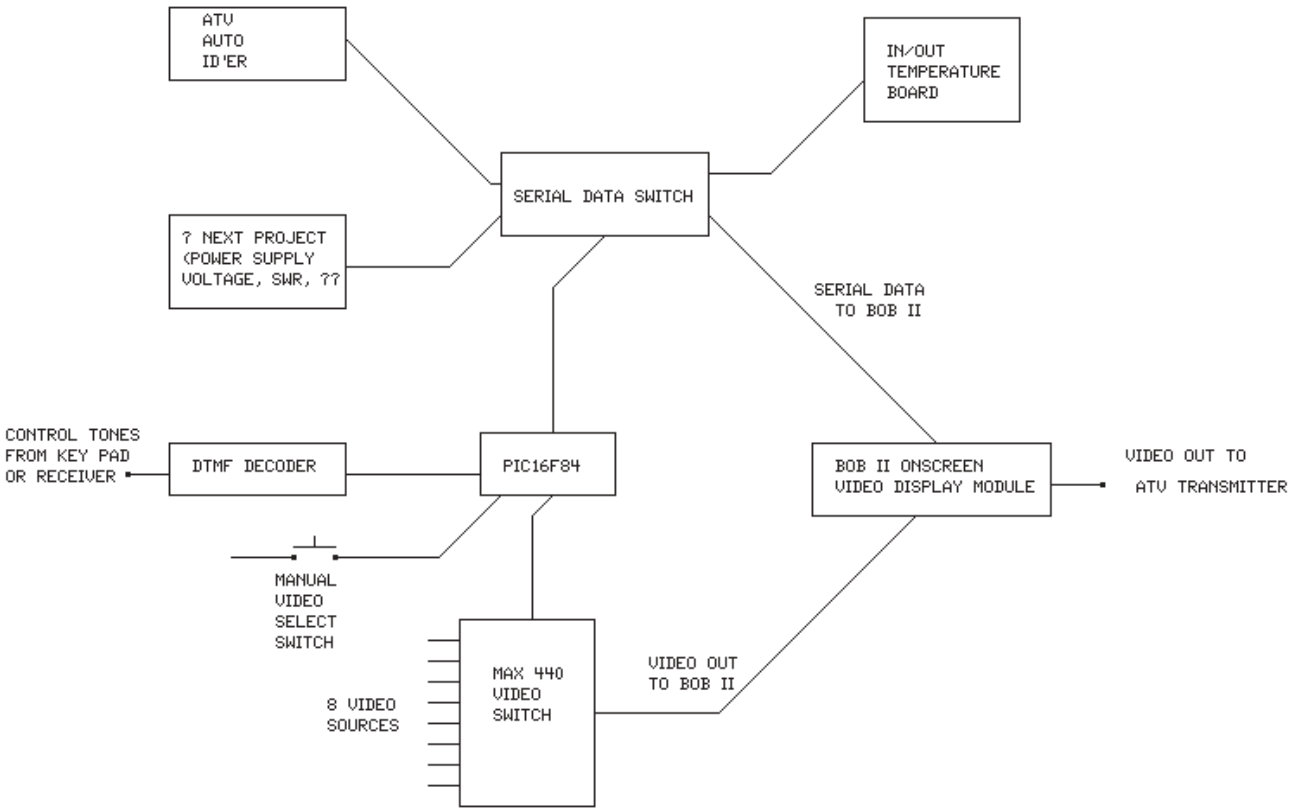
Charles L. Stackhouse WA2IPZ - Email: cstack @safelink.net
65 Vista Lane
Burley, Idaho 83318

The switch box from Radio Shack that I used to route video signals to my ATV transmitter wasn't high -tech enough for me, hence this project. There are a number of video switching circuits to be found in back issues of various magazines, including CQ-TV published by the British ATV Club. None is quite what I wanted. This video switcher routes 8 video inputs into my ATV transmitter. The input channel is selected either by holding down a pushbutton switch which cycles through all the channels or by a DTMF audio signal fed into the unit. The transmitter PTT line likewise can be turned on and off. This allows for remote operation of the ATV transmitter.

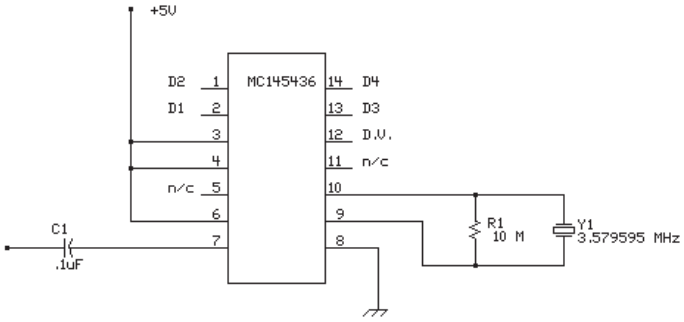
An on-screen video display module (BOB2) is used to display the selected video channel on the video signal, as well as displaying an ATV video IDer that automatically comes on every 10 minutes (see ATV Quarterly, Winter 2001). I also incorporated an indoor/outdoor temperature display unit (see ATV Quarterly, summer 2000) and have an extra input for one more type of display device (battery or power supply voltage, SWR, received signal strength, windspeed or direction, etc.) The outputs of these devices are routed to the on-screen display module by a digital switch that prevents data collisions.

The video switch, itself, is a Maxim MAX440 chip. It combines a video amplifier with an 8 channel multiplexer. A preprogrammed PIC 16F84 microcontroller reads the decoded DTMF input signal or the pushbutton switch. It selects the video channel on the MAX440 by applying a binary code to the address inputs, turns the MAX440 on and off, and turns the PTT line on and off. It sends serial information to the BOB2 on-screen display module to indicate the selected channel and if the PTT is on or off.

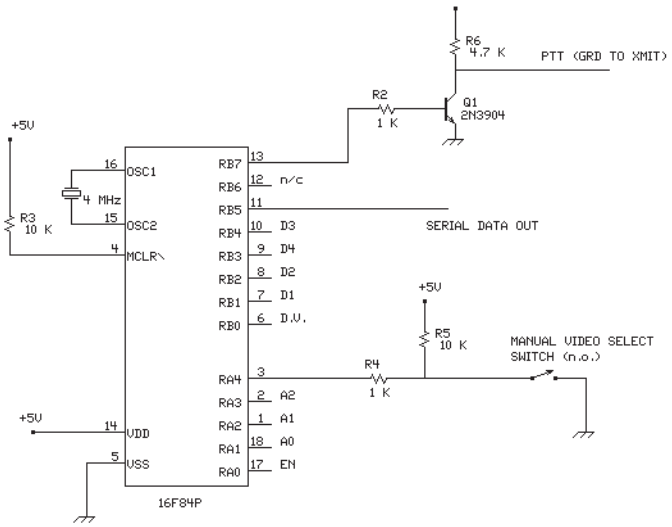
The digital switch for the serial data from the various devices



Block Diagram



DTMF Decoder



PIC 16F84P Microcontroller

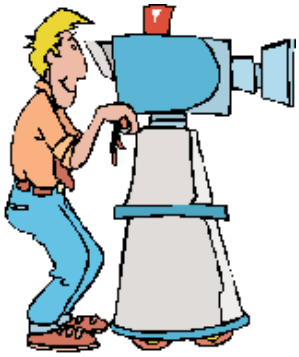
was designed by Bill Carver, W7AAZ, using CMOS integrated circuits. It uses a 3 gates of a 4001 quad NOR gate and a 4052 dual 1-of-4 switch.

The hardware was wired up on prototype boards rather than taking the time to make up printed circuit boards. The PIC chip should be socketed to allow changes in the firmware and the MAX440 chip should be socketed because it is expensive (I received mine as a sample from Maxim). The MAX440 needs input voltages of +5 and -5 volts, so an ICL7660 chip is used to generate the negative voltage. A Motorola MC145436 chip clocked by a 3.579545 MHz crystal decodes the DTMF tones. The PIC is clocked by a 4 MHz resonator. (A more clever person than I could probably figure out how to share the same crystal between the MC145436 and the PIC, but that would require changing the timing on the serial data routine on the PIC.) The power leads to all the integrated circuits should all have appropriate bypass capacitors to ground to avoid noise problems. I put the whole works in a plastic Radio Shack box with an aluminum lid. LEDs were placed on the select lines of the various data sources (not shown on the schematic) and could be skipped, but they made it easier to verify that the serial data switch was working properly. The BOB2 unit was boxed up in a separate project box with RCA jacks for the various connections.

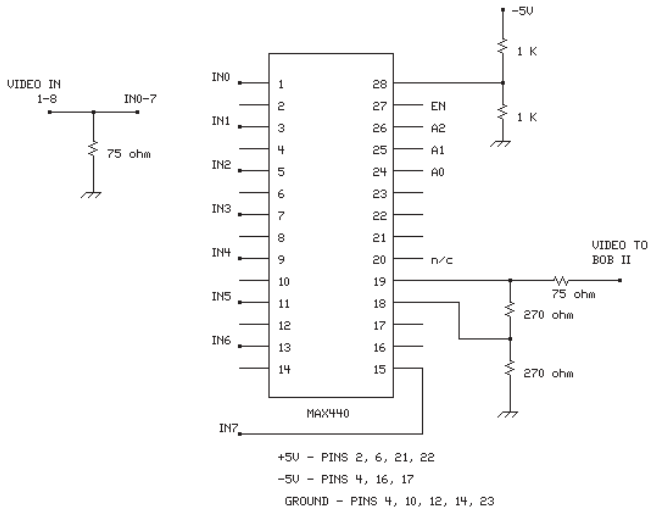
The software was written in Basic, tested in stages using a Basic Stamp2 microcontroller, and then compiled for the PIC chip using PICBasic Pro software. The basic code and/or the hex code for the PIC16F84 are available from the author as an email attachment.

If only 4 video sources were needed, a cheaper MAX454 chip

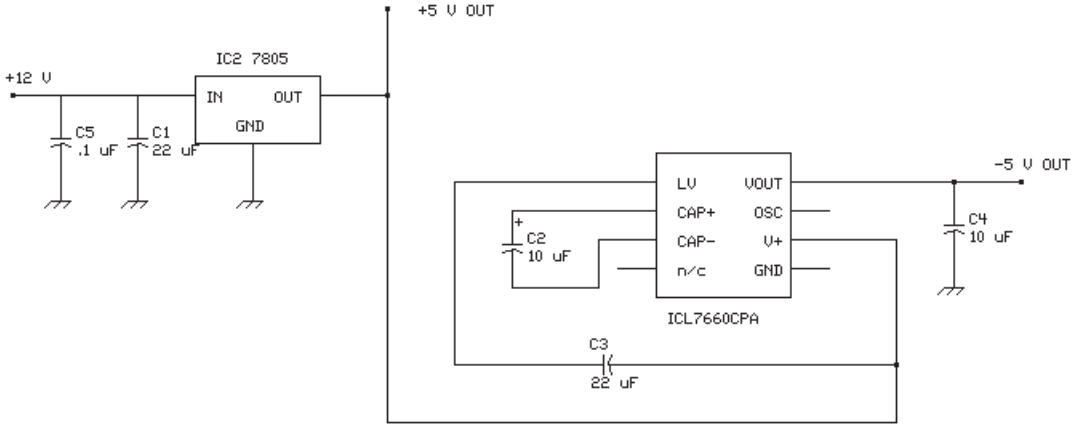
could be used with minor software changes. I made no provision for switching audio inputs with this project. The DTMF signals work with a single digit rather than a multidigit password (that is another day's project). No provision was made for scanning automatically between channels.



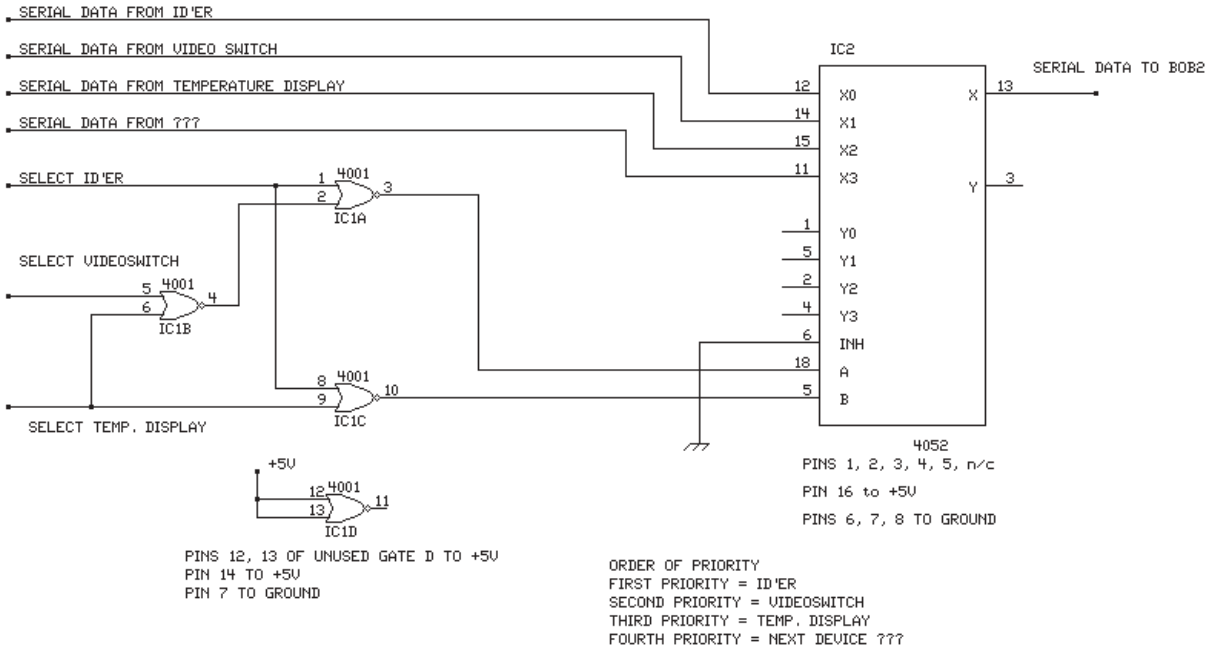
The Basic code, block diagram, and schematic follow.



MAX 440 Video Switch



Power Converter Schematic



Serial Data Switch

```
'————————————————-VIDEO_14.BAS————————————————-
'This program decodes DTMF tones, switches
'8 video sources using a MC145436 DTMF decoder chip, a PIC 16f84, and a MAX440 chip. Written in
'Basic for compiling with PICBASICPro.
'Selects 8 video channels with DTMF tones or a manual pushbutton switch. Also turns xmit on/off.
'Written by Charles L. Stackhouse WA2IPZ, 65 Vista Lane, Burley, Idaho 83318
'January 26, 2001

Include "bs2defs.bas"           'creates all of Basic Stamp 2 variables and pin definitions

DEFINE DEBUG_REG PORTB          'Set Debug pin port (serial out pin is B.5)
DEFINE DEBUG_BIT 5              'Set Debug bit=5
DEFINE DEBUG_BAUD 9600          'Set Debug baud rate
DEFINE DEBUG_MODE 0             'Set Debug mode: 0=true, 1=inverted
DEFINE DEBUG_PACING 1000'pause 1 millisecond between characters

                                '(Note: Debug is the smallest of the software generated serial routines)

TRISA=%10000                    'make PORTA all outputs except A.4
TRISB=%00011111                 'make PORTB all inputs except B.5 (serial out),B.6 (control line), B.7 (PTT)

'=========variables==========================
EN      var     PORTA.0         'EN pin on MAX440
A0      var     PORTA.1         'A0 pin on MAX440
A1      var     PORTA.2         'A1 pin on MAX440
A2      var     PORTA.3         'A2 pin on MAX440
MAN     var     PORTA.4         'Manual video selection button (tie to +5v with 10k pullup)

D_VALID     var     PORTB.0         'Data Valid pin from DTMF decoder chip (pin 12, MC145436)
DATA_A      var     PORTB.1         'Binary digit A  "   "    "     "   (pin  2,  "    )
DATA_B      var     PORTB.2         'Binary digit B  "   "    "     "   (pin  1,  "    )
DATA_C      var     PORTB.3         'Binary digit C   "   "    "     "   (pin 14,  "    )
DATA_D      var     PORTB.4         'Binary digit D  "   "    "     "   (pin 13,  "    )

CONTR       var     PortB.6     'Control line to signal serial data switch
PTT         var   PORTB.7       'transmitter PTT line 1=XMIT, 0=No XMIT (needs to be inverted to
                                'ground transmitter PTT line

Value var byte          'Set input Tone Var
Tone var byte               'Decoded Tone Var

PORTA.0 = 0                 'set MAX440 to Hi impedance output, i.e. OFF
PORTB.6=0                   'set control line to zero
PORTB.7 = 0                 'turn PTT line off
Value=0                         'added to make subroutine _Pushd work
pause 100

Debug "{A"                  'Clear screen
Pause 10
Debug "WA2IPZ Video Switcher"       'Displays "WA2IPZ Video Switcher"
Pause 1000                  'Pause 1 second
Debug "{A"                  'Clear screen
```

```
‘==========Main routine========this part of program decodes binary output from DTMF chip

_Checktone:
If Man = 0 Then _Pushd                  ‘Manual video select button 0=Manual Select, 1=No Manual Select

if D_VALID = 0 then _Checktone          ‘Wait For Tone - ENDLESS LOOP HERE
 Value=0                                ‘Initialize DTMF Variable
if DATA_A = 0 then Value2                       ‘Value for bit 1
   Value=1                              ‘If yes set Value to 1
 Value2:
  if DATA_B =0 then Value3                      ‘Value for bit 2
   Value=Value+2                        ‘If yes add 2 to Value
 Value3:
  if DATA_C =0 then Value4                      ‘Value for bit 3
   Value=Value+4                        ‘If yes add 4 to Value
 Value4:
  if DATA_D= 0 then _Convert                    ‘Value for bit 4
   Value=Value+8                        ‘If yes add 8 to Value

_Convert:
 lookup2 Value,[“D1234567890*#ABC”],Tone        ‘Convert Binary Code

GOSUB _Switch
pause 300
GOSUB _VideoDisplay

goto _Checktone

‘============Subroutines=========================================
_Switch:                ‘This subroutine uses the value of “Value” to switch MAX440 video outputs
If Value = 11 Then                      ‘PTT on (this is DTMF * which is Value 11)
        PORTB.7 = 1
Endif
If Value = 12 Then                      ‘PTT off (this is DTMF # which is Value 12)
        PORTB.7 = 0
Endif
If Value=9 Then
        EN=0 : A0=0 : A1=0 : A2=0               ‘video switched off by DTMF “9”
Endif
If Value=1 Then                                 ‘video channel 0 selected by DTMF “1”
        EN=1 : A0=0 : A1=0 : A2=0
Endif
If Value=2 Then                                 ‘video channel 1 selected by DTMF “2”
        EN=1 : A0=1 : A1=0 : A2=0
Endif
If Value=3 Then                                 ‘video channel 2 selected by DTMF “3”
        EN=1 : A0=0 : A1=1 : A2=0
Endif
If Value=4 Then                                 ‘video channel 3 selected by DTMF “4”
        En=1 : A0=1 : A1=1 : A2=0
Endif
If Value=5 Then                                 ‘video channel 4 selected by DTMF “5”
        En=1 : A0=0 : A1=0 : A2=1
Endif
If Value=6 Then                                 ‘video channel 5 selected by DTMF “6”
        En=1 : A0=1 : A1=0 : A2=1
Endif
```

```
If Value=7 Then                         'video channel 6 selected by DTMF "7"
        En=1 : A0=0 : A1=1 : A2=1
Endif
If Value=8 Then                         'video channel 7 selected by DTMF "8"
        En=1 : A0=1 : A1=1 : A2=1
Endif

Return


_Pushd:                 ' MANUAL  button pushed (manually switch video channels on MAX440)
        pause 500
        If Man=1 then _Notpushd                 'Is Manual select button released?
        Value=Value + 1
        If Man=0 then _Pushd
_Notpushd:                      'MANUAL button not pushed
        Value=Value + 1
        If Value > 9 then
                Value=0
                Goto _Checktone
                pause 10
        Endif
        Gosub _Switch
        Gosub _VideoDisplay
        Goto _Checktone

_VideoDisplay:
        PortB.6 = 1             'Sets control line high to signal serial data is coming
        Debug "{A"
        Pause 10
        Debug "{C0010"          'cursor to lower left of video screen
        Pause 10
        If Value <> 9  AND Value <>11 AND Value <> 12 AND Value <> 10 Then          '<> means "not equal to"
                Debug "Video Source #", dec Value
                Endif
        If Value = 9 Then
                Debug "Video Source Off"
                Endif
        If Value = 10 Then
                Debug "DO NOT PRESS 0"
                Endif
         If Value = 11 Then
                Debug "PTT ON"
                Endif
        If Value = 12 Then
                Debug "PTT OFF"
                Endif
        Pause 1000
        Debug "{A"
        PortB.6 = 0             'control line off
        Return


END
```

Easy, Creative, Digital Video Editing In YOUR Own Home!

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

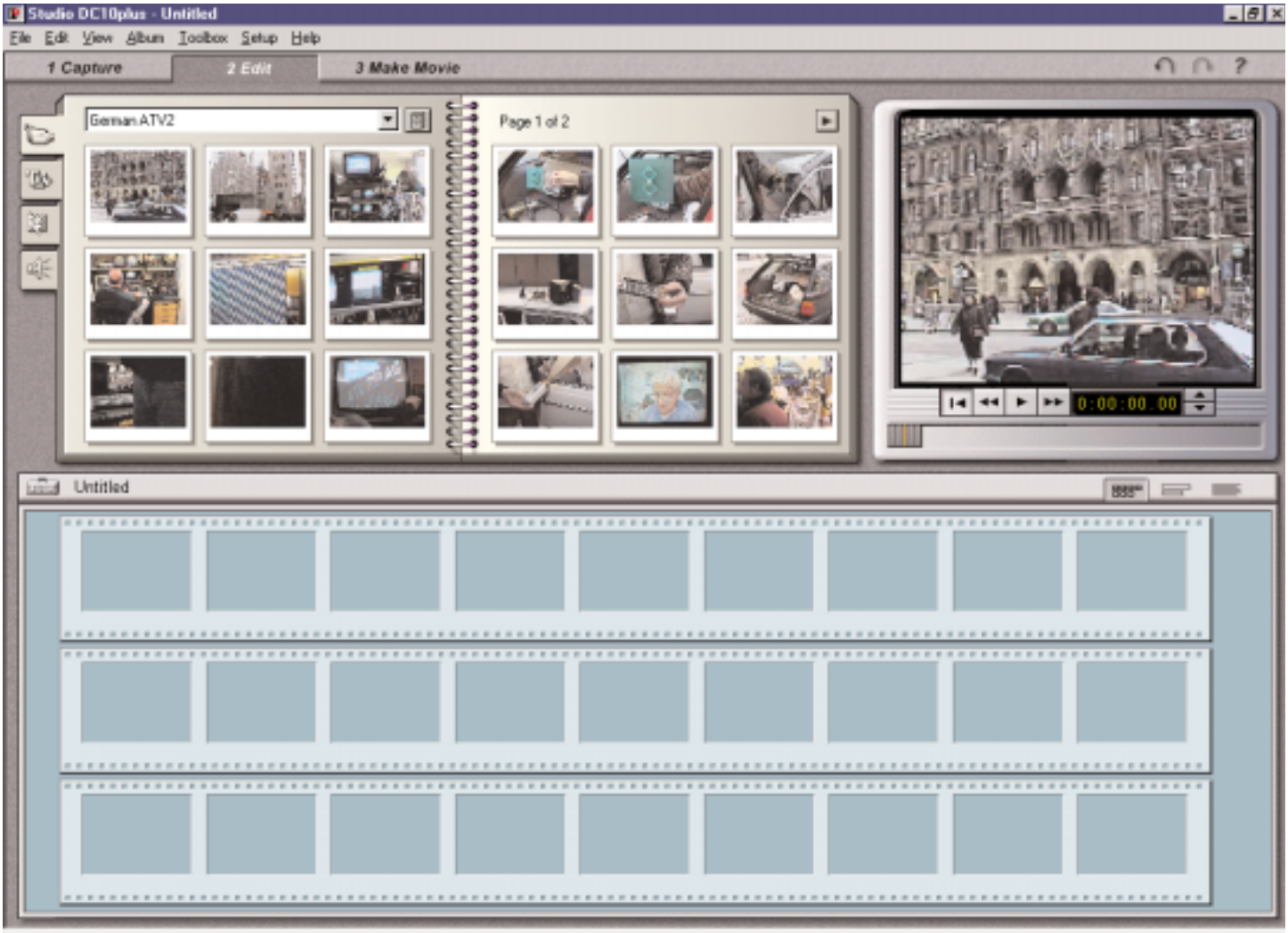
DID YOU EVER WANT TO MAKE A MOVIE/VIDEO?

Did you ever think that it would be fun do make a video. Maybe put all those vacation videos together, or the kids birthday party, or maybe something more ambitious like making an instructional movie/video. I always thought it would be fun. A little over two years ago, I was in a computer store, and thought I found a goldmine. It was called Studio 400 (Pinnacle Systems) and sold for $239.95. That was more than I wanted to spend at the time, but I read the box over and over. I really did want this program/device. It said it would let me make videos at home, complete with fades, titles, sound, everything I could think of. Well, I came to my senses, and walked out the door.

I HATE REBATES

The next Sunday,I looked at the mirad of advertising in the Sunday paper, and wouldn't you know, $30 Instant Rebate plus a $30 Mail In Rebate. I had to have it. So off to the store I went, got it home, sat down tore off the wrapper and read the manual. At the time, my video camera had died and would not record. It was just a camera. As I read the book, I soon learned that it needed more

Video Capture



Edit Screen - Drag And Drop

than just a video signal. The camera had to have what is called LANC. Never heard of this before, so I read further. The LANC delivers sync information about where in the tape it is. I thought that I could take some tapes and record from a VCR to try it, but no, nothing is that easy.

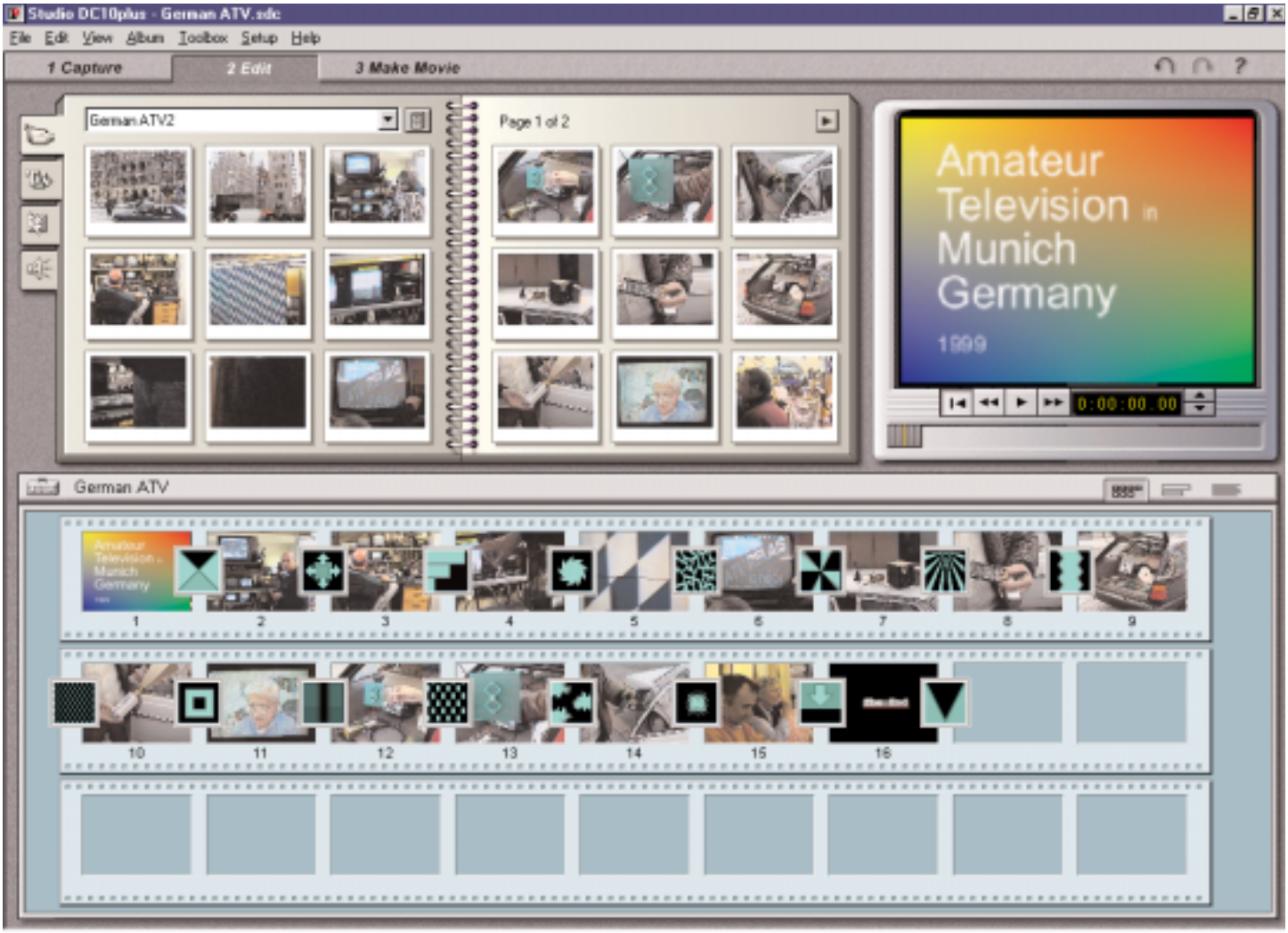
ALWAYS SOMETHING ELSE TO BUY.....

Well, how much was this new camera going to cost. The program was reasonable. I guess I will check it out. The LANC feature was not available on many cameras. Sony seemed to be the one that was mentioned most so I started looking. Ouch! The low end cameras did not have the feature. Well, it was mentioned that some VCRs have the features needed. Only found one store here in town that knew what I was talking about, and they showed me the $1000 VCR. I think not. It would be a little while before I could afford the camera and use the new toy

After a few months of looking, going back to the stores to make sure they had what I wanted, it was announced that Sony was coming out with new models. The one that I wanted was ON SALE as it would be discontinued! Instead of over $1200, they would sell it for $999. I had been searching the web also at that time looking for facts about this major purchase, so when I found that it was to be discontinued, I started searching for what I could buy it for there. Found it - $799. On order it was.

THIS STORY IS NOT ABOUT STUDIO 400

The Studio 400 comes with a parallel port device that the camera and VCR plug into. It would record a low resolution image into the computer for you to use for editing, but the final image was not created from what was on the disk drive. The user interface looked almost identical to what is shown on these pages. Yes, this story is not about the Studio 400, but I will get to the rest of the story in a minute. To make a final tape with the Studio 400, you needed to hook the camera and VCR to the computer. The computer would run the video camera back and forth, starting, stoping, searching, and back and forth again, finding each scene, and controlling the VCR to record each scene as it found them. I thought that the video camera would get worn out! When I tried playing it back, I was amazed that the titles were indeed superimposed on the video. There was a problem with fades, but a later software update fixed that. Maybe due to that fact that it required cleaning off my desk to



Scenes In Place With Transitions

make a video, it did not get used much. It just sat collecting dust.

THE START OF THE REST OF THE STORY

A couple of years went by, and after Christmas this year, I just happened to walk by the isle where the newest video capture devices were sitting. Not able to keep my hands off the merchandise, I started looking at the boxes. Studio 400 was no where to be seen. There seemed to be several brands of video capture devices available. In my searches on the web, Pinnacle Systems seems to be buying everyone up, so I looked at theirs more than the others. And along came the Studio DC10 Plus for ONLY $79.95! Another weak moment..

Studio DC10 Plus comes with a PCI card (this refers to the type of slot needed inside your computer) that has a Video In, Video Out, S-Video In and S-Video Out. That's it, no LANC. you can use any VCR or camera that has NTSC or PAL video available! The computer requirements are a PC (133 MHz or higher) with a free PCI slot, at least 32 MByte memory (64 MByte or more recommended), sufficient hard disk space for video capture (hard disks are pretty cheap today, I bought 30 GByte in December for $99), Microsoft Windows 95 Direct X5.0 or higher, and compatible audio and graphic boards.

USING THE PROGRAM

Studio DC10 Plus video-editing process is an easy three-step process. Yes, that came from the manual, but I could not say it any better. (Note: Pinnacle make digital input boards also. Make sure that if you buy one that you get what you really want.)

CAPTURE - First capture your video to your hard drive.

EDIT - Next arrange the video scenes in order. Drag and drop transitions (fades, wipes), titles, and still images. Complete your movie with sound effects, background music and voiceovers.

MAKE MOVIE - Create your final videotape or digital movie (you can make your vacation videos into a AVI file to put on CD-ROM and send to relatives for them to view on their computers).

On page 12, left side, you can see that the program allows you to create titles along with the background. You can import still pictures to use as well, if the program does not offer what you

Graphics And Titles

Transitions - Fades, Dissolves, Wipes and Slide

are looking for. The sample down the edge shows how the title fades into the first scene. Sorry that it is not in color (I decided to use that on the cover).

To start the process, hook your video to the Video In (or S-Video In) on the card. Start the Studio DC10Plus program and choose Capture. From the picture on the bottom of page 12, you can see that it shows how much disk space you have free, and about how much recording time that gives you. In my case, it shows 28 MBytes for a possible 5 hours 30 minutes of recording. As you record, your video will show in the upper right window.

Now, this is neat. The program automatically divides up what you record into scenes, as it knows when you start and stop the camera. So, when you stop the capture, you end up with the screen shown at the top of page 13. The "slides" that are shown in the "album" on the top left reflect the first frame of each scene.

ARE YOU READY TO EDIT?

Now you have to organize what you have shot. You can choose the scenes that you want to keep, and throw away (well, just not use) those where the subject just did not cooperate. To get the scenes that you want, use your mouse, left click (hold) and drag the scene to the frames below, placing them in the order that you want them in. Miss one? No problem. Just drag a new scene and drop it in between the two frames where you would like it placed. If you have one to get rid of, just tap it with your mouse and press DEL.

Any frame that you want to view to see if you want it, just highlight by selecting with your mouse, and with the FORWARD/BACKWARD arrows under the viewing window in the upper right corner, you can play that scene, or as many scenes as you want. This will work whether you have highlighted a scene at the top in the album or on on the bottom storyboard area.

TITLES

Next, you may want to think of titles. In the upper left corner of the screen, you have four tabs, the second down is the titles tab. The image at the top of this page is what you see when you choose the Titles tab. You are presented with many pre-made titles, which you can use as is, or just use the style, changing the words to what you would like to say, or just use one as a starting point changing not only the words, but modifying the looks as well. You can start making your titles from scratch as well.

In the title making area, which they call TitleDeko, you have the choice of mak-

ing a title that is full screen or an overlay. If you choose full screen, the title will fill the entire screen, while an overlay is superimposed on top of existing video.

The features available in making titles take up 3 pages in the manual, but a few are: Horizontal or Vertical Justification, Move / Resize, Rotate / Skew, Kerning / Leading, Add Rectangle, Add Ellipse, Insert Picture, Background, Typeface, Type Size, Bold, Italic, and more. You get to see your changes live as you make them

ADDING TIMING AND USING TRANSITIONS

To add a little excitement to your video production, you have the ability to have video effects, called transitions, that can give your movie a professionally-produced look. To start this, we select the third tab down on the left top of the screen.

Transitions are placed on the video track between two video clips, and include Fade, Dissolve, Wipe, and Slide. There are numerous choices of each as shown in the bottom picture on page 15.

CUTS - A cut is the absence of a transition and produces an abrupt shift from one scene to the next. At times, this can be useful.

FADE - A fade can cause a video clip to start from a black screen and fade up to a pictures, or the reverse where the picture fades down to a black screen. A fade can be useful to separate major parts in a video, such as to separate acts in a play.

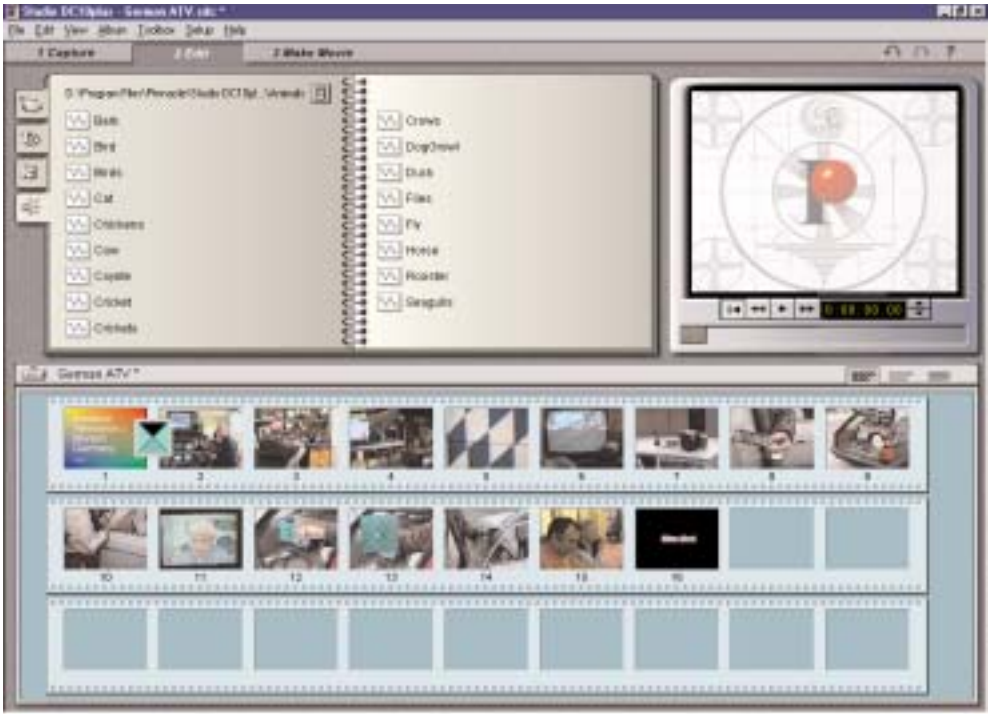
DISSOLVE - If you want a gradual change between one frame to another, you would chose a dissolve. A short dissolve can take the edge off a cut, where a long dissolve can suggest the passage of time.

WIPES - A wipe appears as if the incoming video clip is wiping over and into the video clip that is playing, replacing the playing video with the incoming one using one of many directions or patterns. Some of the patterns available are such that they draw a lot of attention to themselves, so you need to careful as to how you use them. There is an example of a wipe on the left side of page 21. It starts as a small star growing to look like a saw blade as it rotates to fill the frame.

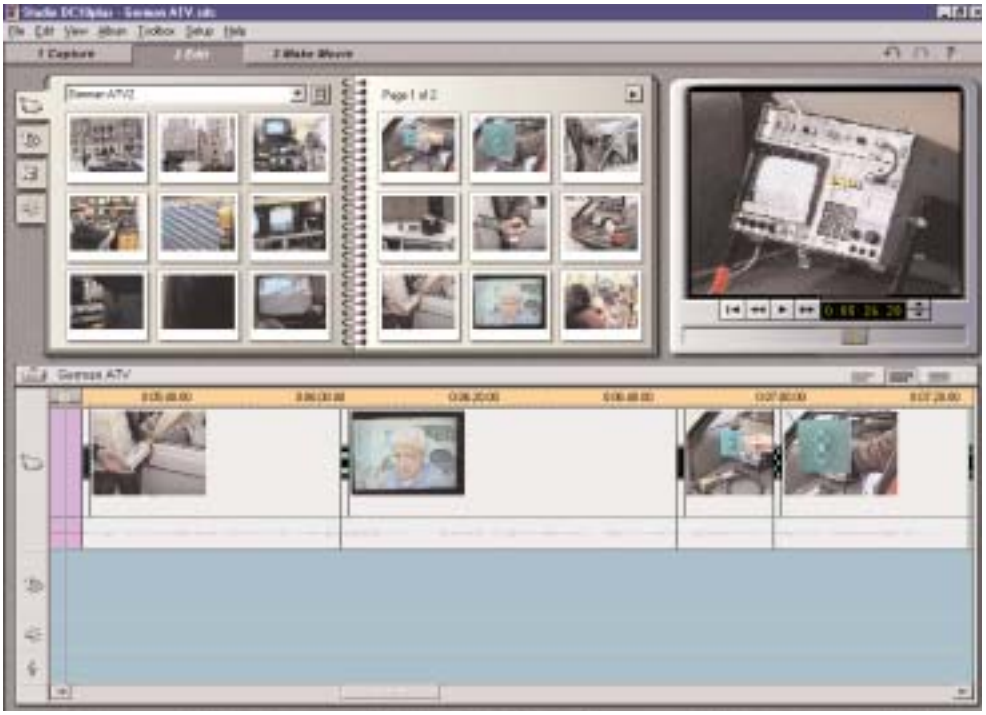
SLIDES - A slide appears as if one video clip is sliding over the previous clip. Studio provides 8 types of slides to choose from.

If you want to see what a particular transition will do, select one in the album of choices and watch the preview window to see what it does. If you want to use what you see, drag the transition to the bottom and place between two frames.

ADDING SOUND EFFECTS AND MUSIC



Sound Effects



Timeline View

You can add polish to your video production by adding background music, recording voice overs, and inserting audio effects such as applause. There are many sound effects that come packaged with Studio (see top view page 17), and you can use audio files stored on your hard drive stored as WAV files or import audio directly from and audio CD.

In the top view on page 17, you can see some of the choices that are provided, such as a Bark, Bird, Cat, Chickens Cow, DogGrowl, and so on. Selecting any clip in the album will play the sound.

On page 17, the bottom view shows the Timeline View which shows the position and duration of clips relative to the Timescale. This view also displays the four tracks on which you can place various types of clips: video scenes, title overlays, sound effects/voiceovers and background music.

The sound effect and voice over track is where you can place any WAV files such as sound effects like applause, or music or voice saved in WAV format. To choose a file, select it in the Album and drag it to the appropriate place on the timeline.

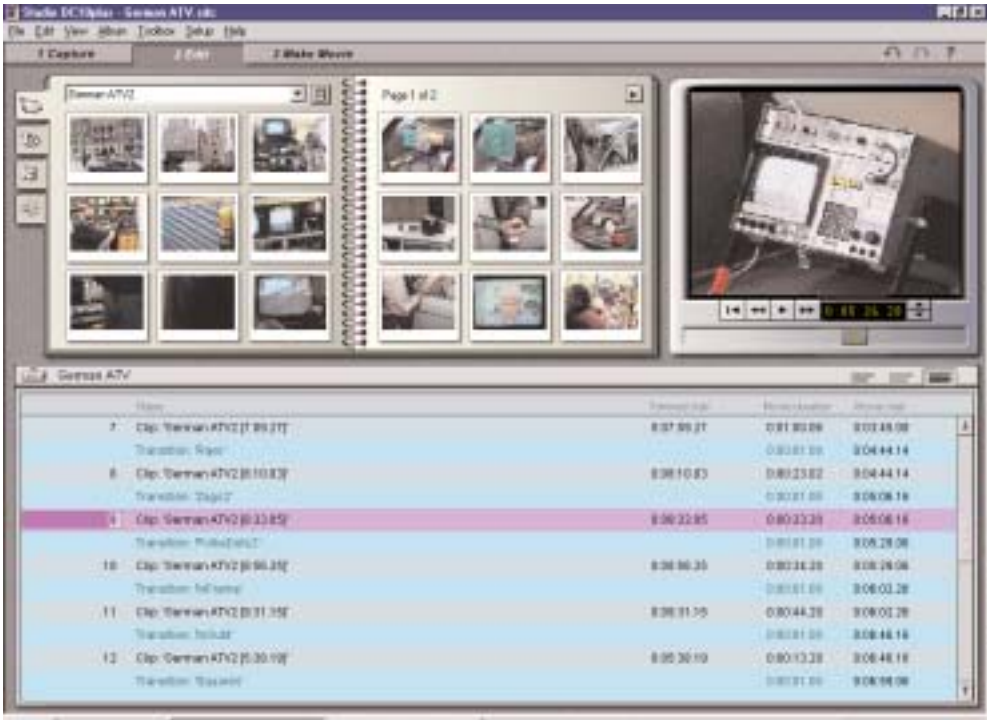
You can also select audio clips from a CD. Years ago I bought a set of audio CDs with hundreds of sounds on each CD. I might finally have a use for them.

The bottom timeline is for background music. Studio has a feature called SmartSound that creates background music to automatically fit your specifications. If you need exactly 10 seconds and 24 frames of a specific type of music for your introduction, you can use SmartSound. SmartSound combines a style of music along with a specific type to produce an appropriate background sound track.

Creating a voice over is very easy, just turn on the Voice-over Recorder and speak into the microphone. Studio uses the sound card in your computer to record all sound, even the audio that is on your video when you record the video. Voice overs can be edited and repositioned on the timeline, volume can be adjusted, and you can trim the beginning or end to get the correct length.

The volume of each track can be adjusted independently. So, you can adjust the Scene Audio separate from the Effects and Voice over channel separate from the Background Music channel. So if you are doing a Voice-over, you may need to reduce the volume of the Scene Audio and Background Audio so the Voice-over will predominate. You can click the play button to hear how

Make Video



Text View

the channels sound together and adjust until you get it right.

Another view in the lower area is the Text View. Here the list shows the start and end times of clips as well as their duration. In addition, custom names for clips are visible in this view.

Making Videotapes / Digital Movies

Once you are happy with what you see and hear on the computer, it is time to render the video and generate the final product. You have two ways that you can share your movie, as a videotape or as a digital movie.

The screen to the left shows the Make Movie window with the controls needed to make your videotape or digital movie. First you need to select Make Tape (for Videotape) or Make File (for Digital Movie).

To make a videotape, first connect the VCR to the Video Out or S-Video Out connector. Make sure you tell the program which of the two outputs you are using (Composite or S-Video).

Connect the audio output of your PC sound card to the sound input of your VCR. After all is connected, make sure the VCR is on and a tape is inserted ready to record.

Studio has a feature that is called Intelligent Rendering. This means that when you click MAKE VIDEO, the process of rendering starts right away. Many other programs must render the entire movie before it can be played to video. This takes lots of time and requires lots of disk space.

The only time Studio has to render is where you have added special effects (wipes, dissolves, title overlays, etc.).

As soon as the parts that need to be rendered are done, a status message will inform you that Intelligent Rendering is complete and your movie is ready to be played to video.

Intelligent Rendering also overcomes the 2 GB file limit in Microsoft Video For Windows. The duration of your movie need not be limited to a single 2 GB file.

To save your production as a digital movie, instead of selecting Make Tape, select Make File. You will be prompted for a file name. The completed file will be in AVI format which can be played on any Windows PC and most other computers. The AVI files can also be imported into other video clips.

Do you have these yet?

ATV SECRETS
volume one

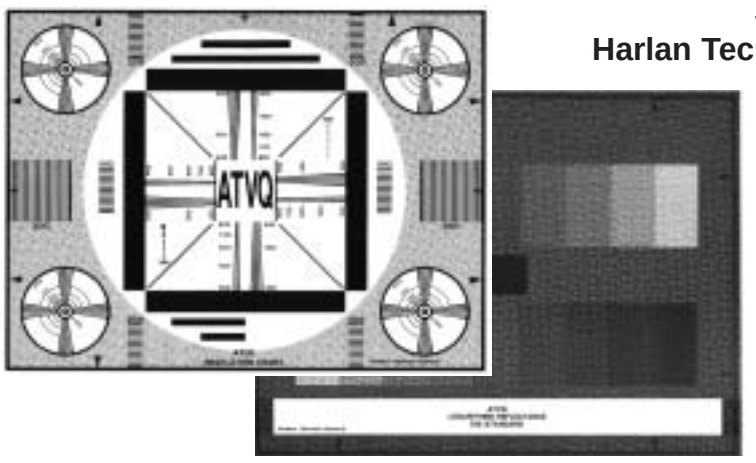
ATV SECRECTS is a great place to start your ATV adventure. Its 64 pages are are tightly packed with information that covers all aspects of getting started, where to find activity, equipment, how to DX, and answers frequently asked questions of power, antennas, vestigial sideband operation and more. Everything you need to know to enjoy ATV in one place!
$8.95 plus $4.50 shipping

TV SECRETS
volume two

A mammoth book, with 292 pages of technical material. More than 40 authors present over 90 technical projects and theory topics to fully acquaint anyone from novice to expert in the how and what of TV, video, and ham TV. Divided into 11 chapters, the book presents tested projects for all areas of interest in ham TV including antennas, amplifiers, repeaters, receivers, transmitters, video accessories, and more!
$24.95 plus $4.50 shipping

BOTH for only $29.95 plus $6.00 shipping

Just CALL 1-800-557-9469 or write
Harlan Technologies - 5931 Alma Dr. Rockford, IL 61108



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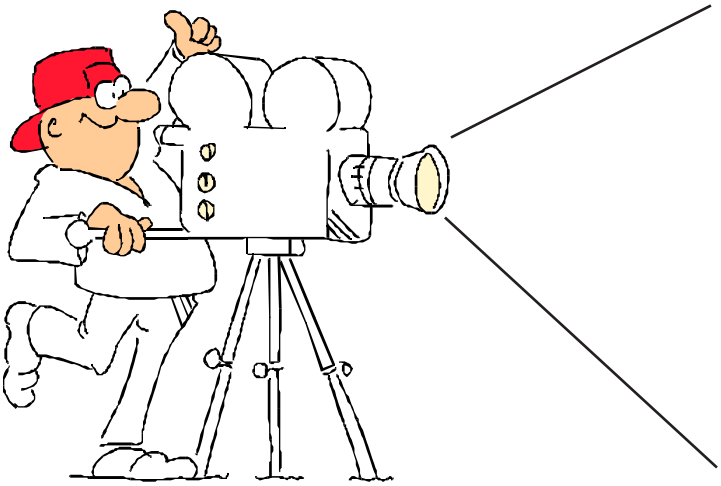

ADVERTISE IN ATVQ!

ATV'ers are hams that build projects more than other hams. They have a varied background ranging from technicial to engineer, and just might see a need for your product in their regular job as well as in their hobby. I hope to hear from you soon.

Please call TODAY!

Gene Harlan - WB9MMM - Editor/Publisher

ADVERTISING RATES AND DEADLINES

DEADLINES

COVER DATE	COPY DEADLINE	TO Printer	MAILING DATE
WINTER	January 1	January 15	Febuary 1
SPRING	April 1	April 15	May 1
SUMMER	July 1	July 15	August 1
FALL	October 1	October 15	November 1

While we will try to adhere as close as possible to the above dates, we reserve the right to adjust as needed.

If material is going to be late, please call to check if it will meet our schedule. We will try to accommodate everyone as best as we can.

Camera ready art or negative film right reading down are acceptable.

Trim Size: 8 1/2 x 10 7/8
Bleed Size: 1/8" beyond trim
Live matter: 1/4" within border

Harlan Technologies reserves the right to reject any advertising which is not in keeping with the publishers standards. Previous acceptance of any ad will not prevent Harlan Technologies from exercising the right to refuse the same advertisement in the future. Advertising orders are subject to the terms on the current rate card. Advertisers assume all responsibility and liability for any claims arising from advertisements and will protect the publisher from same.

Harlan Technologies will position ads in ATVQ at its discretion except in the case of preferred positions specifically covered by contract or agreement.

If, for any reason, the publisher fails to publish an advertisement, it will not be liable for any costs or damages, including direct or inconsequential damages.

Terms: All accounts not pre-paid are billed net 30 days. All accounts over 30 days are billed at 1 1/2% per month. Prompt payment is always appreciated.

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FULL PG COLOR	$650	$500
FULL PG B&W (Covers II, III, IV $30 extra) (2nd color add $75 per page)	$150	$130
ADDITIONAL COLORS/PAGE	$75	$75
1/2 H or V	$100	$75
1/4	$80	$50
1/6	$50	$35

Multi-page ads are billed at the combined rate based on frequency.

Covers are reserved for COLOR ads.

All typesetting and layout charges for non camera ready ads will be added.

Amateur Television Quarterly

published by Harlan Technologies
5931 Alma Dr., Rockford, IL 61108
tel (815) 398-2683 fax (815) 398-2688 orders (800) 557-9469
Internet: http://www.hampubs.com email: ATVQ@hampubs.com

Verify that the Include Video and Include Audio checkboxes are checked.

The Diskometer will show if you have enough drive space.

Click on the Make Movie button.

Studio will automatically make the movie and save the file as an AVI file on your hard drive.

To check your results, there are two ways to play it back and review it:

1. If you rendered your movie using the Studio DC10plus M-JPEG CODEC, and you have a television or video monitor connected to the Studio DC10plus board, click the Play button in the Preview window. Your movie will play in the Preview window and on your television or video monitor.

2. If you wish to view your movie at full size on your PC monitor, click the Play button located next to the File Cabinet button on the Make Movie controller. The Microsoft Active Movie player will launch and play your movie.

SUMMARY

Well, if you like to play with video, and I am sure you do, this program can be a lot of fun. If you use it for ATV videos that will be transmitted, make sure not to include music. I can see where you could make promotion tape for your local radio club, instruction tapes to help with those Technician, General and Extra classes that your club teaches. Just think, having a tape for the schools would sure save on the voice and make the classes easier.

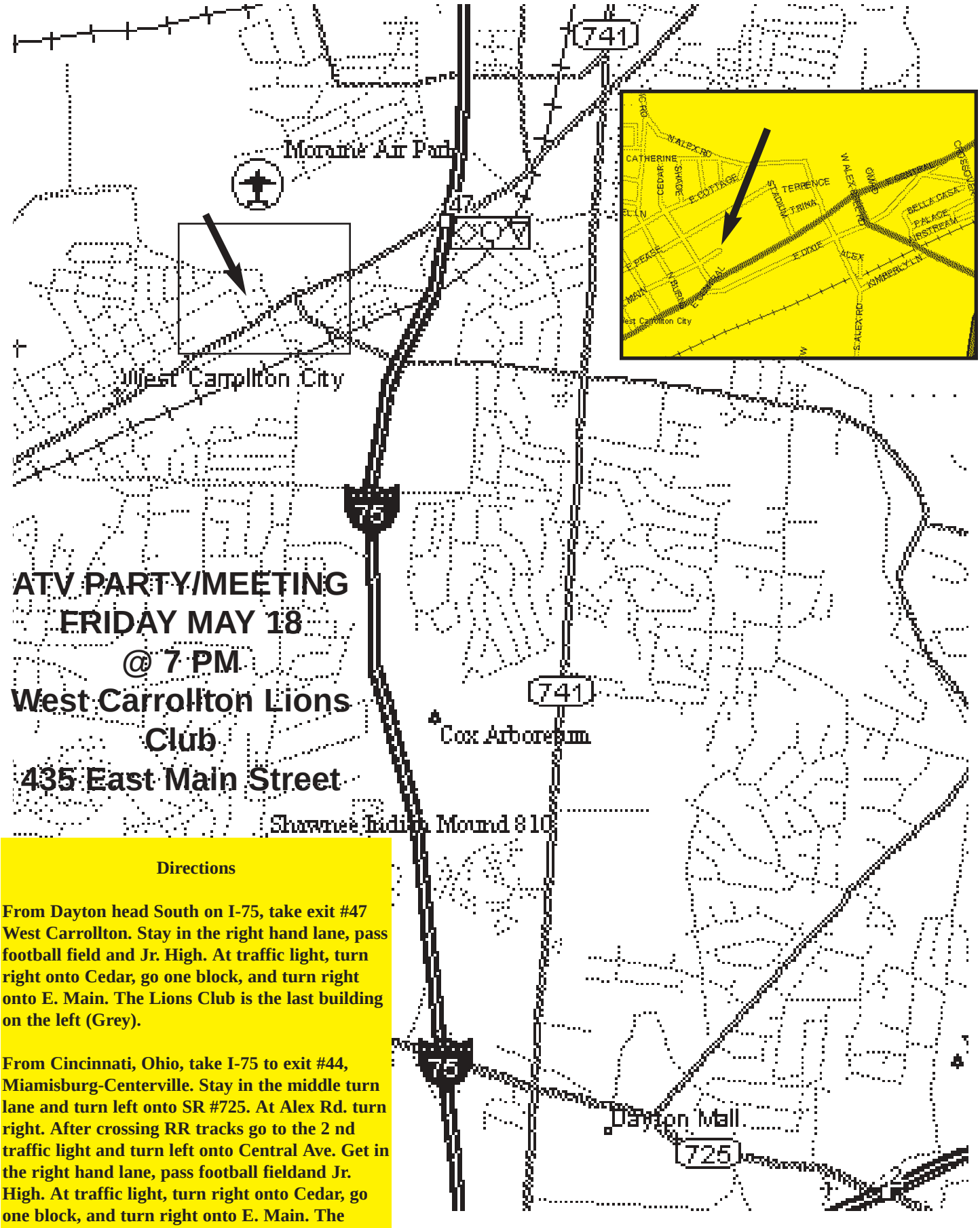
You may have uses for this in your job as well. Where I work, I remember paying $25,000 for a video that is now obsolete. Now we can produce our own (they used us as actors before, they just helped make the script with tons of input from us). The output quality from this program has passed the approval of about 6 of our employees. We fired it up on one monitor and just about threw it out, but I knew it looked better at home, so I convinced them to try another. It was sharp as a tack.

Well, now we need someone to write an article on the correct way to write a script. Any takers?

ATVQ

Wipe Above

Fade Out To Right



Directions

From Dayton head South on I-75, take exit #47 West Carrollton. Stay in the right hand lane, pass football field and Jr. High. At traffic light, turn right onto Cedar, go one block, and turn right onto E. Main. The Lions Club is the last building on the left (Grey).

From Cincinnati, Ohio, take I-75 to exit #44, Miamisburg-Centerville. Stay in the middle turn lane and turn left onto SR #725. At Alex Rd. turn right. After crossing RR tracks go to the 2 nd traffic light and turn left onto Central Ave. Get in the right hand lane, pass football fieldand Jr. High. At traffic light, turn right onto Cedar, go one block, and turn right onto E. Main. The Lions Club is the last building on the left (Grey)

Amateur Television at the Dayton Hamvention

For those of you planning on attending the Dayton Hamvention, you are in for a full weekend of ATV activities. Starting on Friday night, the ATNA (Amateur Television in North America) annual program is planned. Here is a quick summary of the ATV Events for May 2001 at Dayton.

Friday May 18, 2001 - 7 PM to 11 PM

ATNA FAST SCAN ATV meeting doors open at 7:00 pm at the West Carrolton Lions Club (see map). The Annual Fast Scan Meeting will be held Friday evening May 18 from 1900-2300. The sponsor is ATNA, Amateur Television of North America. There will be technical talks, prizes, snacks, and time for informal discussions. The meeting will be held, as before, at the:

427 East Main Street
West Carrolton, Ohio.
Talk-in on 144.34 FM simplex
Telephone during meeting night: 859-7276

The Point of Contact is John Hey, W8STB, at EMAIL **heyjo@netzero.net**

IVCA SSTV get together will also be on Friday night, 7:30 PM at the Holiday Inn South, 2455 Dryden Road, Moraine, OH. A block of rooms has been reserved here for SSTV'ers (I'm told ATV'ers are welcome!).

Saturday MAY 19, 2001 Events

The **Slow Scan Forum** is from 10:15 to 12:00 on Saturday.

Moderator: Don Miller W9NTP
Speakers:
Barry Sanderson, KB9VAK - "High Definition Digital SSTV"
Lou McFadin, W5DID - "SSTV in the U.S. Space Program (ISS)"

The **Fast Scan Forum** is from 12:15 PM to 2 PM on Saturday.

Moderator: **Bill Parker, W8DMR**
Speakers:
John Wiseman, KE3QG - "*Hang Gliding ATV Adventures*" - Thrilling 70 CM Amateur TV transmitted from the hang glider as the pilot performs, from launch to landing. Do not miss this one!
Dan Greathouse, N8NBC - *"Hot Air Balloon ATV Adventures"* What happens when transmitting ATV from 3000 feet in the sky while riding with the wind. You could call this year the year of high flying adventure with ATV!

Saturday Night May 19, 2001 Event

The Annual Saturday Night ATNA ATVers Dinner will be held at 1830 on May 19 at the:

Down The Pike
Restaurant
1603 S. Alex Rd
West Carrollton, OH

For meal planning, we must have a count of planned attendees. Those who can plan ahead should advise John Hey W8STB, by EMAIL at **heyjo@netzero.net**.

ATVQ

Going to Dayton?

Please stop by booth #361 to say hello. Tell us what you like and what you would like to see in Amateur Television Quarterly and OSCAR Satellite Report.

Also visit Booth #107 W8BI-ATV Repeater Group/ATNA

Also, ATV will be transmitted on 439.25 MHz, 434.00 MHz and 426.25 MHz from these and other booths.

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IMPORTED BOOKS:

The ATV Compendium from BATC. A great technical book applicable to UK and US systems **$16.95**.....

An Introduction to Amateur Television by Mike Wooding G6IQM. Another great technical book with projects useful to UK and US (PAL. NTSC) TV hams. **$16.95** (shipping $5 US).....

NEW! "The Best Of Beasley - K6BJH - On Amateur Television" A collection of all the cartoons that have appeared in ATVQ over the years plus many more! Only **$8.95** (shipping $3 US - $6 Overseas).....

Many issues of ATVQ are now available on CD ROM.

CD 1 contains 1988 & 89 (6 issues), CD 1 is $19.95 .....
CD 2 contains 1990 & 91 (8 issues), CD 2 is $24.95 .....
CD 3 contains 1992 & 93 (8 issues), CD 3 is $24.95 .....
CD 4 contains 1994 & 95 (8 issues), CD 4 is $24.95 .....
plus $5.00 shipping ($6 for two, $7 for three, $8 for all four - Other than USA - higher)......

Previous ATVQ issues that are still available (most from 1994 to present) sell for **$4.95 each** (postage included for USA). Quantities are limited. Some real good articles exist in these issues!.....

Color Test Chart including Color Bars, Resolution, Grey Scale, Registration **$5.00** (shipping $3).....

Software - New LOW PRICES

Blaster SSTV - A DOS program for SSTV using the Sound Blaster **$29.95** (shipping $5 US - $10 Overseas).....

Audio Analyzer - A DOS Waveform Analyzer for sound signals **$14.95** (shipping $5 US - $10 Overseas).....

SPECTRUM FFT - A Great DOS audio Spectrum Analyzer **$49.95** (shipping $5 US - $10 Overseas).....

SUBSCRIPTIONS :

CQ-TV, the quarterly ATV publication of the BATC 1999 rate **$27.00** .....

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Say you saw it in ATVQ!

AO-40: Plans for April-June 2001

Enclosed is some important information from the AO-40 command team (special thanks to James Miller G3RUH, Stacey Mills W4SM and Karl Meinzer DJ4ZC) about the upcoming activities.

73s Peter DB2OS - President AMSAT-DL
peter.guelzow@arcormail.de

Plans have had to be changed in the last few days. We have found that there is a significant effect at perigee caused (we believe) by the atmosphere. It causes the alon to decrease by some 3°/perigee when the spin rate is 2 rpm. The alon already reduces 0.7°/perigee due to precession of the orbit plane, so we are seeing nearly 4°/perigee, or some 5°/day.

Despite eclipses, the magnetorquer is a little bit stronger than this effect, and we found we were just able to counteract this, and increase the alon by about 1°/perigee. But shifting alon from 170 to 270 at that rate was clearly going to take a very long time, even given that our assumptions could be extrapolated to different geometry. Meanwhile, perigee height is decreasing steadily due to luni-solar perturbations, and we'd probably lose the advantage during the manoeuvre.

So the drive from alon 170 to alon 270 by increasing alon has been put on hold. Instead we are going to change alon the other direction, taking it down to 90 and then through 0 and hopefully off to 270 later in the year.

There are a number of benefits of this plan.

* Firstly we can use the atmospheric effect to augment the magnetorquer and achieve a more rapid change in alon.
* Second, communications will improve rapidly due to the improved alon.
* Third, as we approach alon = 0 we are in a position to try out some transponder operation sooner rather than later, which will surely be appreciated ;-)

During this procedure, the spacecraft will go into "hibernation" again. This is the name we've given to the state where the Sun sensor system cannot see the Sun, so the s/c cannot be magnetorqued by the normal means. However, if the atmospheric effect continues to work as it evidently did during the previous hibernation, this period of poor (> 45 deg) Sun angle will be short lived. Also at this time, there is a possibility that the Sun will be nearly coaxial with the spin axis. However, the spacecraft bottom will be illuminated, not the top, so the cameras will not get fried.

AO-40 Continued on page 28

Texas Tower HB1148 Public Hearing Outcome

For those of you in Texas who are interested...The rest of you, thanks for putting up with these postings. This could happen in your state.

I went to the public hearing in Austin to voice objections on this bill. This hearing pretty much was World War III between those who don't think cell phone towers are "pretty" and the best lawyers and engineers AT&T Wireless, Sprint PCS, Verizon Wireless, American Tower, etc., could hire.

To make a long story short, there was so much objection to this, and the corporate lawyers and engineers did such a good job, this bill is pretty much no more. The amateur community bombarded the House Committee with calls, letters, and e-mails to see to it that they were exempt. In fact, the Committee Chairman asked one of the amateur radio operators present to "please get on the radio and tell all of the Hams that they are now exempt."

The bill has been rewritten and severely "watered down." All amateur and noncommercial antennas are completely exempt now, and all commercial new towers must only "notify" neighbors about the tower to be constructed and give contact information. There is no permit or approval process for any towers, only notification. This only applies to rural, unincorporated areas. City restrictions will remain as is, but are not incorporated into this revised bill.

Even with this bill watered down as it is, it may not be passed. The committee did not appear supportive of it, and didn't approve it and send it to the floor, like they did most of the bills in this hearing, but merely tabled it for later.

This is a big victory for tower owners and amateurs.

Chris Hudgins N5IUF **N5IUF@aol.com** ATVQ

My First Year In Amateur Television

by Don Jefferson, KC6OCA
138 Lake Drive
Bodfish, CA 93205

Actually I took my first peek into ATV about six years ago. I had re-entered Ham Radio after a thirty year hiatus and was completely dazzled by the advances in technology. It was a little like Rip Van Winkle, all I knew was tube type radios, (real radios glow in the dark).

After getting acquainted with the HF bands and the two meter round tables, I spotted an ad in QST which informed me that I could see the space shuttle activities with a downconverter and a good antenna. I was hooked. But the long days as a machinist and our family budget didn't allow me to go any further than that. I really enjoyed being able to watch, and showed it off to all who I could drag back into my ham corner.

Well last year I retired and finally I could go about setting up my own ATV station. Wait a minute, all this was not as easy as I had thought it would be! When I retired I MOVED! To make matters worse I had moved to about the worst possible place for ATV. I had moved into a valley inside a ring of mountains. Being a person who does not give up easily, I moved ahead anyway.

The local ham club here had some pretty bad rifts so things there were in a state of disarray. I started talking up ATV with the people I knew to be the "movers and shakers". I found out that there had been an ATV repeater nearby only a few years before, but it had been taken down because of the expense and the lack of users (DARN).

I started downloading the Space Shuttle and Space Station activities. I was mesmerized by all the technology along with several other hams nearby that I was retransmitting for. However to date I am the only ham in the valley who owns ATV gear. I contacted Mike Collis, WA6SVT. He was very encouraging, My wife and I were invited to attend the semi-annual meeting of the AMATEUR TELEVISION NETWORK. They are a group of ATV hams in southern California who have a network of several linked repeaters that reach from San Diego to Santa Barbara, and to Las Vegas. They may even soon have a link into Arizona. O BOY! At last I had a chance to meet with some knowledgeable people and maybe even get a chance to pick some expert brains.

The big day arrived and my wife and I unfortunately took a lot longer to travel the 150+ miles to Mike's mountain top home where the meeting was to be held. They were unbelievably patient and waited for us to arrive before starting. Every person I talked to was friendly and helpful, even understanding of my vast lack of knowledge. I couldn't have found a better group of people to get started with. Unfortunately for me the meeting was just for a few hours and then we had to start on the long journey home.

Back to the reality of the valley I set about trying to find a mountaintop where we could pick up the signals from the "BLUE RIDGE" repeater. I have hauled my ATV gear up into the high roads of the Piute Mountains, and onto the back trails up to the tower site at Shirley Peak, (with an old motorhome yet) and set up my array of various antennas at places where there were plenty of deer and also bear droppings, (that was creepy). All to no avail. I have some other places to try, but now the high country is too cold and I'll have to wait for warmer weather. Meanwhile I'm trying to drum up what interest I can, so that if do find a site I might possibly have a little support for it.

Recently I had to go into Southern California to see family and of course I took my ATV gear and antennas to see if l could get a little on the air experience. Where I had to set up, I was about ten feet from a golf course who had put up a fifty foot double fence. Chain link backed up with chicken wire, between me and the Santiago Peak Repeater. OOOH NOOO. Not giving up I kept moving the motorhome around until I could get a somewhat snowy picture in. I was accepted right in the group and made to feel at home. Even though my first attempts were a little klutzy both in signal and operating procedure.

Then Murphy struck ! While I was off the air but still monitoring, I left the motorhome briefly. When I returned, I was in the motorhome for a few minutes when I discovered the red transmit light was on. ACK I fumbled until it went off, a few minutes later I learned that my new radio shack microphone had a faulty switch, I'll bet THAT made a good impression. These fellows

though seemed to be ready for anything and had gone on with that part of the system off.

I made a feeble attempt at explaining, and this great group of fellows just acted as if it had never happened. However after that I kind of had my tail between my legs and laid somewhat low. I did get on however to say good-by, before leaving, probably to the relief of some of them.

I got my copy of "ATV SECRETS" volumes one and two. I think I am beginning to understand what a vsb filter is, but I still have no idea what a gunnplexer is. Oh well at least I have

arrived at the bottom of the learning curve.

Last month it was suggested that I help do a public service ATV event, I tried to get in touch with the local ham club in Ridgecrest, CA where the 50K foot race was to be held in the Mojave Desert. I was elated and in hopes of learning a little from their ATV'ers. Well, Murphy was at work again and almost all of them were going to be out of town. I did get to meet Lloyd Brubaker, WA6KZV, who was heading up the hams for the radio contact from the various check points. He was extremely helpful in giving me the pointers I needed to get set up. I had hoped to get some help from an air force fighter pilot who had a model plane with ATV installed. Unfortunately he too had to be out of town. That left me and my wife, KC6RIZ.

Next the larger of two TV sets I had brought wouldn't work. I then had no monitor to use at the site.Then we had trouble with the bright desert sun; we had to bring the TV inside the motorhome so it could be seen.

Next I had trouble with my camera, because the direction I had to point was too near the sun, and everything looked green. I switched to the camcorder. It had a much better picture, but about every five minutes the battery saver would kick in and turn it off.

The hams in the area turned out to be some really neat guys and turned an otherwise very frustrating day into a really nice event. However, by the end of the day, we were pretty worn out and anxious to head for home.

One last note on this event is that at the suggestion of a couple of the local hams we stopped at the local barbecue house for supper, and it was great. Where else around here could we get 'fried sweet potatoes".

Well, such was my first year in ATV. I have high hopes that next year will be much better. I know the lessons of this year are really going to help.

Don Jefferson, KC6OCA

ATVQ

AO-40 Continued from page 25

Expected Timetable

The following is our best estimate of the way things will evolve. The Sun angle will reach a point where the Sensor will stop seeing the Sun around April 5th (-0, +3 days). Then we wait perhaps 4-6 weeks for the Sun angle to reach its nadir, and then recover again. By this time the alon should favor some decent beacon communication. Although the Sun sensor will not give data, the temperature profile gives Sun angle clues, as can be seen from study of the historic telemetry record.

DATE	ALON/ALAT	SUN AZ/EL	SA	ILLUM
2001 Apr 05	146/0	280/5	-44	72% (lock loss)
2001 Apr 18	110/0	289/11	-79	19%
2001 Apr 25	90/0	294/14	-63	45%
2001 May 03	70/0	299/17	-39	77%

The above table is an estimate. Everything is an estimate. AO-40 may be nearly half a year old, but nevertheless we are still learning, and she is trying to teach us.

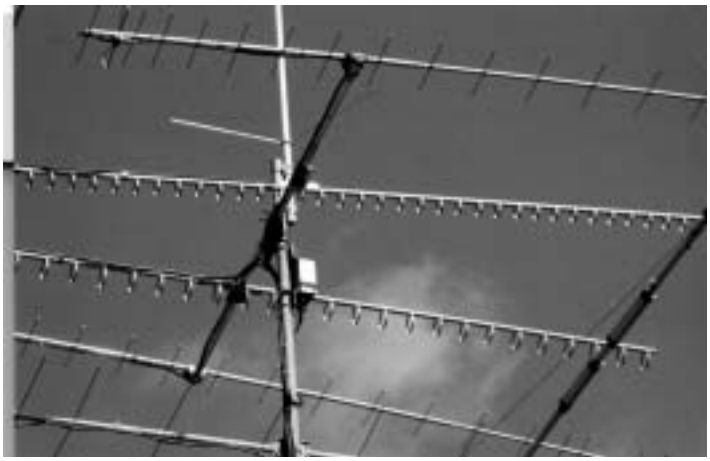
Footnote

The command team welcomes informed discussion as to why the alon is rapidly decreasing i.e. the attitude vector direction changes clockwise as viewed from above [+Z] the orbit plane. This change only occurs close to perigee. The phenomenon is clearly observed, but is not explained.

ATVQ

PRODUCT REVIEW
THE MFJ 8704 MICRO-ATV TRANSMITTER

By Jim Ward, W9DHX, Email: jrobward@worldnet.att.net
893 Saddlewood Dr.
Glen Ellyn, IL 60137
with Testing by Bob Bejana, KB9FUR



Aluminum array atop WB9FUR QTH in Addison, Illinois.

Camera on the dash.

If you were offered a "plug and play" ATV transmitter the size of a package of gum, wouldn't you say, "I'll go for that?

Well, I would and did. I knew it wasn't going to set any DX records, but that wasn't the idea. I remembered lugging a back-pack full of ATV equipment for a Parade Coverage Special Event, and this seemed a lot lighter. So that prompted me to race to the MFJ booth at the Wheaton (Illinois) Community Radio Amateur Hamfest on January 28th and take delivery on the 8704 Micro ATV Transmitter.

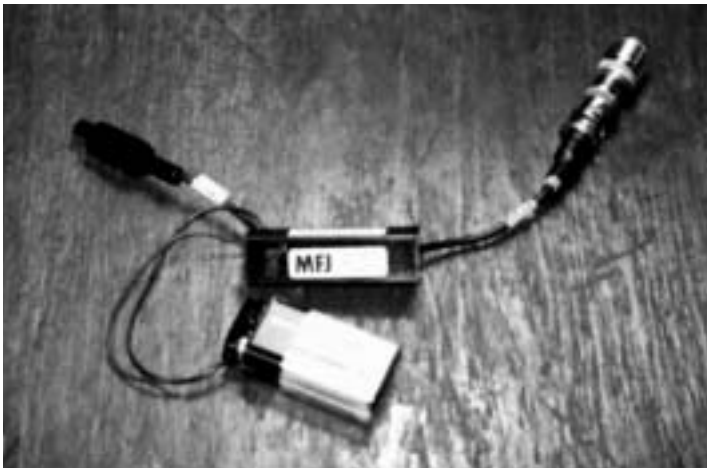
Another booth caught my eye—-the ICOM display featuring the new R-3 TV Receiver. Standing there was ATV'er Bob Bejema, KB9FUR. Bob told me I should get an R-3 to match my new 9704. I told him he should get an 8704 to match his R-3.

So with Gene Harlan, WB9MMM, in the crowd, this ATVQ article was commissioned and the testing wasn't going to wait for very long. In less than a week, Bob fed the output of his new 8704 into the big Yagi on his rooftop, cranked it up 100 feet,

Bob holding the 8704, transmitting from dashtop camera into R-3 on the hump.

R-3 on hump.

11 element yagi on standard for serious testing.



8704, battery and connectors

pointed it in the direction of Songbird Forest Preserve nearby (3 miles away). He drove to the Preserve, and stepped out of the car with his R-3. Using just the rubber duck standard antenna, he had a P5 picture!

As you may have read in Henry Ruh's article in the Winter ATV Quarterly, the R-3 has an ATV setting, and can be tuned to the 8704 output of 433.97, Cable Channel 59.

When I called Bob about additional testing, he agreed to again go to the forest preserve site and this time with an assortment of antennas. We knew the 50 mW 8704 was rolling out with the 9-volt battery power. The various antennas would determine the usefulness in various assignments.

Bob brought his trusty handheld "440 Quad Full Wave" that he has used with other assignments. I contributed a 11 element yagi 440 antenna I had used for Field Day work, plus an SMB "Doppelband" import from Germany. It is a combination 2 meter / 440 antenna picked up at the Dayton Hamfest, and very lightweight. Rounding out the fourth antenna in the collection was a mobile whip.

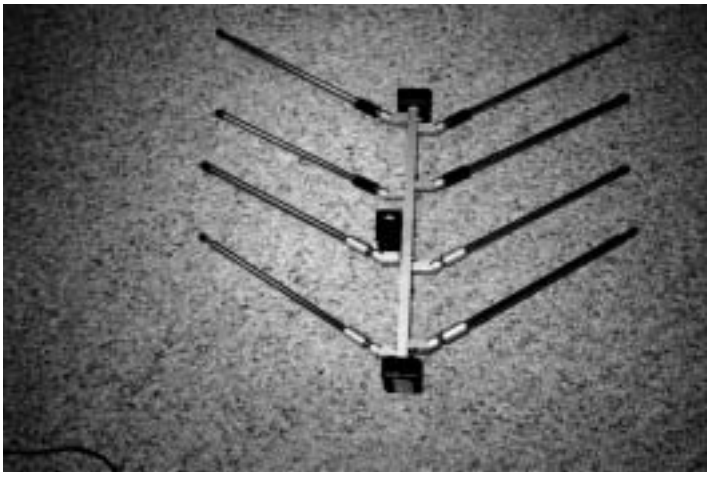
Our first hookup was to the whip. I worked fine and covered the immediately vicinity of the preserve parking lot—a cinch for local parade control work. But what about some distance without the advantage of Bob's big antenna? So we tried the 11-element yagi, and Bob took off down the road in his SUV and his 440 quad. At the other end of the park he tuned in the R-3 disconnecting the rubber duck and connecting the external antenna. Eureka, it worked with a P4. The test from the same location with the "Doppelband" on the transmitter, was not as successful, as we expected, with a P3.

Our conclusion was that the 8704 is a "winner" for light duty work at short distances, and the range can be stretched with heavy-duty antennas at both ends. For example, MFJ's specification sheet(a part of their four pages of documentation) claims 8 miles with DSFO-ATV25 antennas at both transmit and receive positions.

Factory representatives at the Hamfest reported that in spite of the 30-day trial-money back guarantee, not one unit had been returned!

I know Bob and I won't send ours back. I'll have it at this years WCRA Field Day! Thanks, MFJ, for another innovative product in your line.

440 Quad Full Wave used on Icon R-3 for distance.



SMB Doppelband Import

WB9FUR with the 440 Quad Full Wave 5 Element

Technical Data

MFJ Micro ATV Transmitter, manufacturer MFJ Enterprises, Inc. P .O. Box 494, Mississippi State, MS 39762 Price is $119.95. Model 8704.

Video Cameras. Sony and Zenith with output directly to input of the 8704.

Antennas:
1. 440 Meg Yagi with 50' boom and 11 10'elements
2. 440 Quad Full Wave custom 34' boom with two circular and three horizontal elements available from Q-Stick Antennas of Hamburg, Michigan, WB6BAC (810-231-0207)
3. SMB Doppelbeam Yagi Imported from Germany with 13' boom and four elements, independently mounted on each side of the boom and extending from 10 to 22 inches on each side.
4. Larson Magnetic Mounted Whip, 39' with center loading.

ATVQ

Power: 9 volt snap-on battery

Remote Visuals

My ATV application is for use at the Emergency Operations Center for remote visuals during emergencies. We are above line A. Looking on suggestions for coverage from 1 to 25 miles. An ATV repeater is not out of the question. I already maintain 144, 220, 440 voice repeaters.

73 Shanon KA8SPW
Deputy Races Officer/Assistant Emergency Coordinator
Wayne County, Michigan (greater Detroit area)

Shanon Lee Herron KA8SPW
5736 Lathers
Garden City, Michigan 48135-2947

ATVQ

The Wheel Antenna, Revisited Again

by Dave Clingerman - W6OAL Email: w6oal@aol.com
Olde Antenna Lab of Denver
41541 Dublin Dr.
Parker, CO 80138

"Big Wheel" closeup showing detail of hub, connector and stub.

From time to time and as the hobby acquires new blood the search is renewed for a horizontally polarized, omni-directional antenna that will be all things to all people. I have written and talked worldwide about the proven claims of the "Wheel" antenna and its myriad of applications. It has been used in caves, and at 100,000+ feet above the Earth. It has been used mobile, maritime mobile and aeronautical mobile. We have seen it on model crafts to full-blown police and rescue helicopters.

To start at the beginning, the "Big Wheel" antenna has been around since the early 1950's. It is the brainchild of Carl T. Milner - W1FVY and Robert H. Mellen - W1IJD. They were researching the possibility of developing a mobile antenna for the 2-Meter mobile Single Sideband operation that would be horizontally polarized to gain noise immunity over the all too readily available verticals. For mobile operation they want omni-directional characteristics with less of the lobyness of the crossed dipoles or Turnstile antenna and more gain and better pattern than exhibited by the Halo. The "Big Wheel" worked out very well having the gain of a dipole (2.14 dBi) in all directions and at a certain height picked up some ground gain achieving nearly 5 dBi. Stacking a pair of these "Big Wheels" produced some fairly respectable gain, actually that of a small Yagi in any one direction. As for the pattern, my research has borne out that it has a 70-degree beamwidth in the H-plane and the E-plane varies less than 1 degree throughout its 360-degree periphery of being a perfect circle.

The "Wheel" antenna resembles a three, spoked wheel. This antenna consists of three elements that are approximately 1 wavelength long, bent into what looks like a 'cloverleaf'. In that, the bends (~ 50 degrees of 6" radius) occur a quarter wavelength in from the ends of each element. A hub required to hold the elements, consisting of two 3" discs of aluminum plate that are spaced approximately 1.5" apart and can be held in place with three ceramic insulators.

The three elements are placed around a hub, each 120 degrees from one another. A common end of each element is made fast to the bottom plate of a two, plate hub. The remaining free ends attach to the top of the hub. A coaxial connector is mounted in the center, of the bottom plate, of the hub and the center conductor, extended with a piece of brass hobby tubing, attaches to the top plate. In order to acquire the proper terminal impedance of 50 ohms a stub must be built of aluminum strap, 0.75" wide and 5" long. This strap is bent into a "U" shape with the ends 1.5" apart. It is then attached to the top and bottom plates of the hub. For mounting, an "L" bracket may be affixed to the bottom plate of the hub. The vertical length of the "L" bracket should be sufficiently long to provide for the employment of a couple of "U" bolts for mounting the antenna to a pole or mast. The resonate frequency of the "Wheel" will be in the vicinity of 146 MHz. If not, it can be made to resonate there by bending the bottom elements down from the hub and the top elements up from the hub, not much, but a few tenths of an inch at a time. At some point 50-ohm terminal impedance will be achieved at the frequency of interest. If resonance is desired at 146 MHz the VSWR should not exceed 2:1 at either end of the 2-Meter band. This indicates about a 2.7 percent bandwidth, which attests to a fairly high "Q" of the array. In comparison, short Yagis exhibit about a 6% bandwidth at the 2:1 VSWR points.

I first got interested in the "Big Wheel" in the early 70's for mobile operation with Oscar 6. I used it for both, automobile mobile and maritime mobile with very good results. Due to a change in employment around 1984 I moved from California to Colorado settling in the Denver area. I became part of a group in the area that was interested in ATV. As with most groups we started out simplex on the 70-cm band. A few of us had Yagis

that we used on 432.1 MHz SSB that were usable or could be made usable on 439.25 MHz. We quickly realized that with our group scattered about the Metro area, during a round table of 10 members we could work a rotator to death in an evening of operation. I suggested a 70-cm version of the Big Wheel, which we dubbed the 'Little Wheel'. A few were constructed to see how they'd work out. The results were admirable and so much so that we found ourselves being invited to 'walk-a-thons', 'bike-a-thons' and quite a few of the public service events, along with us went our 'Little Wheels' to provide ATV coverage. We had a ball providing pedestrian portable, bicycle portable and fixed point, ATV coverage of what ever the event was. Eventually we did put a cross band (426.25 in/1253.25 out) ATV repeater on one of the mountaintops along the Front Range.

Someplace down the road a group was formed that wanted to do weather balloon ATV. A few vertical type antennas were tried and worked minimally, without much range, lots of multipath and constant fading. Someone suggested we try to use the 'Little Wheel' and with it we experienced great success. I'm sure there are miles of videotape of the Colorado countryside out East of Denver on the High Plains; also we have witnessed the blackness of space once the balloons would rise above 100,000 feet. The 'Little Wheel' served two purposes; 1) an excellent radiator of the ATV signals and, 2) an anchor that would hold the payload fast to a mesquite bush up on landing. Otherwise the chase team would have to chase it at break neck speeds, as the winds of the Eastern Plains would whisk it about. The success of the Denver based group was heralded far and wide.

Other groups across the country got into this 'balloon borne' ATV program and many an antenna was used, but the majority that achieved the greatest success was using the 'Little Wheel' antenna. I was personally contacted by dozens of groups, schools and universities to produce, for them, the 'Little Wheel' that they'd heard so much about. The big question was why did the horizontally polarized omni work so well where others failed or produced only marginal results. One of the big reasons wasn't in the transmission of horizontally polarized, signals but the receiving of them. Through the years we have been witness to the fact that 'man-made noise' is predominately vertical in polarization. If a system can negate noise to any degree the system performs so much the better. We do this with narrow filters because, in a bandpass, what is not signal, is noise. If that noise can be filtered out and only the intended signal received we have a much higher quality product. If that noise is stronger than the desired signal data can and will be corrupted if not filtered out. Filtering has its limits and in some cases the filtering will distort the intended signal. Remember the ATV signal is 12 MHz wide of which we are only interested in one of the sidebands, generally the upper 6 MHz. Now this wide a bandwidth is bound to incur some noise along with the signal so than anything we can do besides filtering is advisable. I have been part of many tests to find to what degree certain antennas and their polarization offer in immunity to noise. If you work the math the textbook figure is 27 dB, to go from vertical to horizontal. In practice 20 dB is what we find realistically, as there is no perfect vertical and no perfect horizontal in the real world. But, still 20-dB immunity is nothing to sneeze at. That's 100 times the power! Quickly the picture becomes very clear (no pun intended), if we can reduce the man-made noise by a factor of 100 the received signal from a balloon at 20 miles in altitude is going to be much sharper and seen for a considerably longer range than from a vertical radiator. The ground station can have all the gain in the world using a vertically polarized system but the fact remains having to, contend with 20 dB more noise is not conducive to a successful operation or project. If the system were employing horizontally polarized antennas the noise that would be present, due to its random amplitude, won't be pumping the AGC of your receiver.

Other horizontally polarized antennas and their deficiencies are as follows:

Simple Dipole	Bi-directional
Bow Tie	Better but still, Bi-directional
Folded Dipole	Still Bi-directional
Turnstile (crossed dipoles)	Not omni has four distinct lobes
Halo	Only a partial omni, big nulls.

At this point I hate to cut to a commercial but I'm sure some readers would like to know from where the Little Wheel is available, or a "Wheel" for any band for that matter. For the 70 cm, 33 cm or 24 cm bands, they are available from the Olde Antenna Lab of Denver (the three bands) at $54.95 and $5.00 S&H, with the connector of your choice (not stated it will be a BNC female). A catalog is available for the asking, contact w6oal@aol.com, thank you for watching 73, Dave...

ATVQ

W6OAL in his south 40 with Big Wheel mounted on a "Portaple".

Will the RF storm drown us by incremental microwatts?

ednmag.comment Bill Schweber, WA2ACU, Executive Editor
bill.schweber@cahners.com

RF WIRELESS IS HOT these days, which makes a lot of sense, because a wireless link frees you and all your electronic nodes---phone, laptop, printer, desktop PC, and headset---from the tyranny of a hard-wired link. You can roam at will, avoid connection headaches, establish seamless and transparent links, and keep your walls intact. Wireless connectivity is a virtual heaven on earth.

What makes wireless connectivity possible? This year, pundits' response is a combination of Bluetooth, HomeRF, and IEEE 802.1 lb (Wi-Fi) links. A few years ago, the approach involved some other set of wireless standards, whose names I forget. No matter, our urge to roam as free as the wind and at a low cost continues.

But as I close my eyes and dream about this wireless wonderland, I see a little crack growing in the corner of the picture, and, like RF waves, the crack starts to propagate as time goes on. The crack is labeled "RF storm;' and it represents the cacophony of many RF sources and little bandwidth. As an increasing number of low-power RF links begin to occupy the same space, even the cleverest of schemes cannot tolerate the mess.

Our industry has played down this situation, because it's much more exciting to talk about the vistas that cheap and easy short-range RF links can bring. System designers and standards groups have recognized the potential for trouble and have built some fairly robust protocols and formats in various RF-link standards. Although news stories occasionally address the possibility of RF overload in a given physical and bandwidth space, most of the attention in the technical and popular press focuses on the blissful existence we'll all lead as these links become cheap and common (references 1 and 2). Their restricted low-Power output and short range means that interference and channel overload will be a minor and manageable problem, I hear.

I worry, though. Even with the best of intentions, OEMs have a way of finding uses for new technologies and products that well-meaning standard-setting engineers and leading vendors didn't envision. For example, as home cordless phones moved to the spread-spectrum 2.4GHz band to avoid congestion, interference, and eavesdropping at lower bands, they put a relatively powerful RF source in homes that operates at a fairly high duty cycle and long "on" period when in use. Similarly, the ubiquitous microwave oven is in the 2.4-GHz band, too, and it is not confined by an RF-link standard.

These are just the beginnings of possible trouble. Although the proponents of standards such as Bluetooth claim that most of the traffic will be low-duty cycle, burst-like messages and thus present a modest overall RF burden that the planned protocols will smoothly handle, the industry is filled with creative ideas. Some vendors are already seeing the availability of lowcost Bluetooth hardware and thinking about how they can adapt it to longer range needs (translation: more power) and as an inhouse video repeater, multimediasystem speaker, or LAN link ((translation: 100% duty cycle).

If you are counting on using one of these "soon-to-be-everywhere" RF standards as the key to your product's success, be careful. Average consumers don't want to hear excuses about why the wirelessheaven story they bought into has become a nightmare of sporadic performance, intermittent failure, or low actual throughput due to NAKs (negative acknowledgments) and retransmissions. Most people want plug-and-play performance in the products they buy.

My RF dream ends in a high-tech version of Jonathan Swift's Gulliver's Travels, reminiscent of how Lillputians tied hundreds of threads that immobilized giant Gulliver. This predicament could happen to us, because the cumulative channel loading in the 2.4-GHz band and a few relatively stronger interference sources overwhelm even the sophisticated defense of wireless protocols and error-correction codes.

When my dream is over, I'll be on the lookout in a few years for a Design Idea entitled "Simple low-cost wire overcomes unreliability, insecurity of more costly wireless link." Then, I'll know that we'll have come full circle to realizing that, although wireless is the answer in some situations, a basic wire is often the sound engineering approach for low cost and high integrity.

REFERENCES

1. Sandberg, Jason, "Raft of new wireless technologies could lead to airwave gridlock,' The Wall Street Journal, Jan 8, 2001, pg B 1.
2. Mathias, Craig, "Doc, it hurts when I do this," Electronic Engineering Times, Jan 8, 2001, pg 53.

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ATVQ

ATV RFI Filters

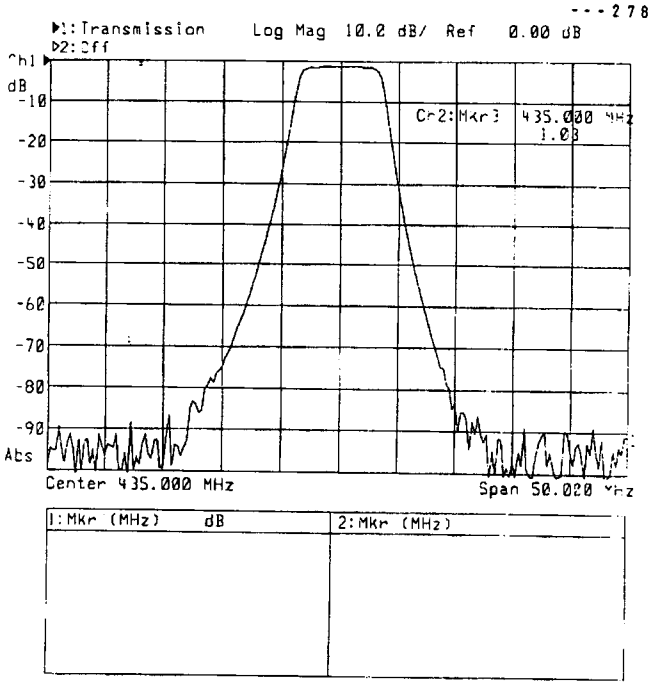
Custom tuned to your video carrier frequency

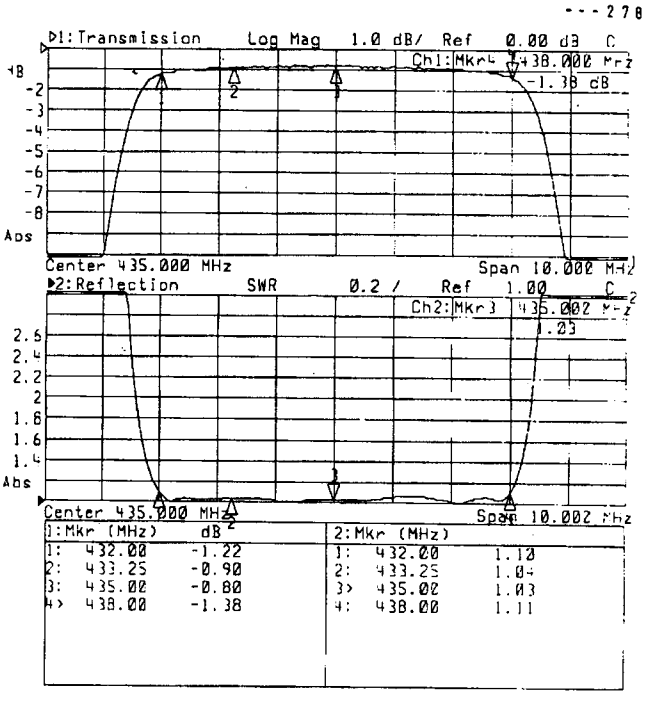
Improve your picture quality by reducing interference from pagers and other sources of RF near your reception frequency. On transmit, your signal bandwidth will be reduced so you don't interfere with other services.

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.





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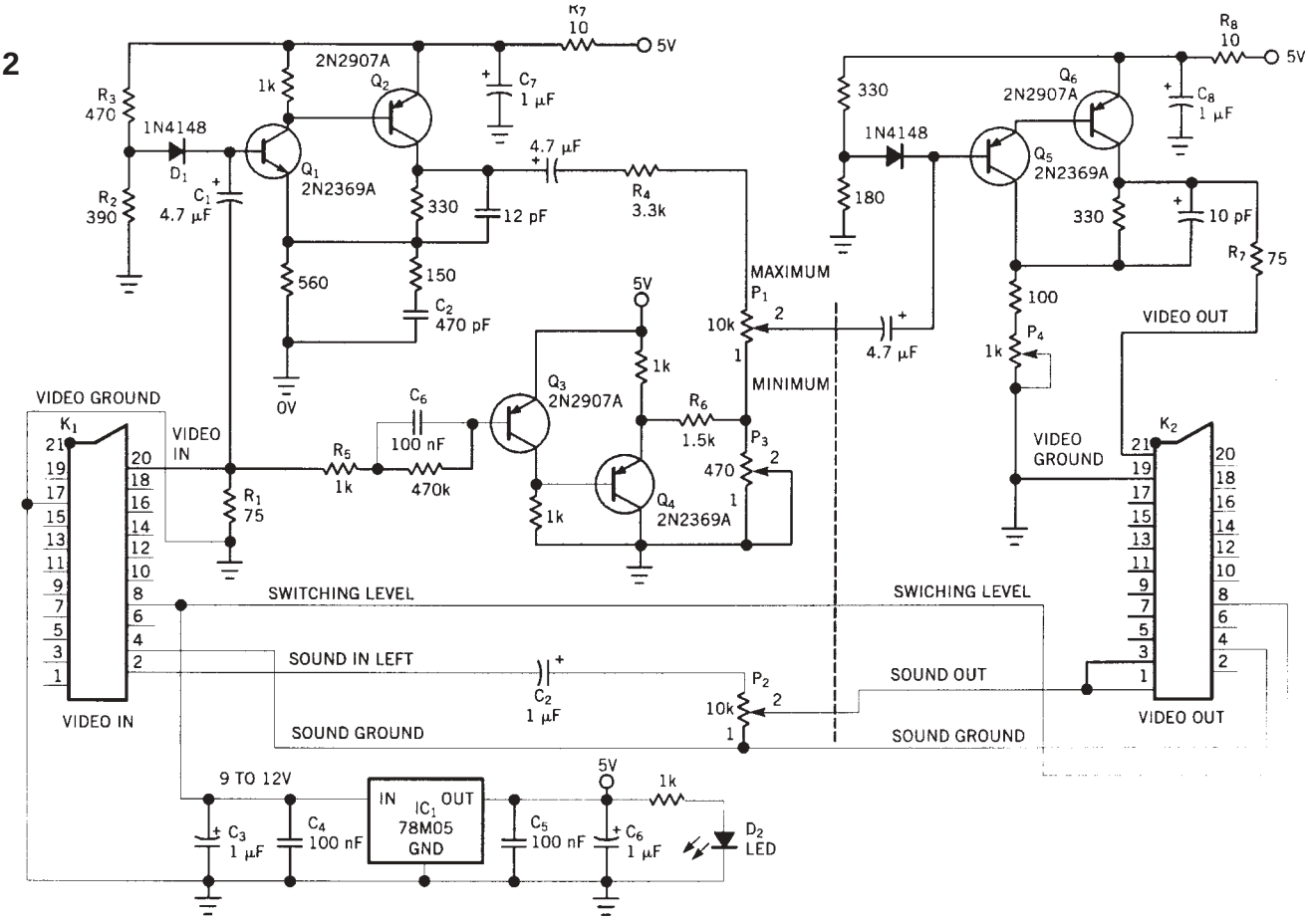
Circuit Facilitates Video Fading

JM Terrade, Clermont-Ferrand, France

When you're copying videotapes, it's sometimes desirable to suppress some passages. Using the pause control of the recorder does not yield satisfactory results. Another method produces better results (Figure 1). The video source connects to the video-in plug, and the recorder connects to the video-out plug. Turning potentiometer P1 adjusts the image brightness from normal video to a black image. With the P2 potentiometer ganged to P1, the sound also varies accordingly. The objectives in building this circuit are to use inexpensive, readily available components and to obtain batteryless operation. The video signal follows two paths (Figure 2). In the first path, the signal undergoes amplification by a factor of two and connects to one end of a potentiometer. In the second path, the synchronization pulse, separated from the input signal, connects to the other end of the potentiometer. The wiper of the potentiometer connects to the second video amplifier, which provides the video output.

When you adjust P1's wiper from one end to the other, the video image disappears and fades to a black screen. Because P1 and P2 are ganged, the sound follows the image brightness. The circuit could have used triple integrated video amplifiers, such as an AD813, and a video sync separator, such as an LM1881. However, these ICs are expensive (approximately $25) compared with the six standard transistors shown in Figure 2. R1 sets the input impedance at 75W. Q1, Q2, and associated components form a video amplifier with an approximate gain of two. R2, R3, and D1 set the dc voltage, and C1 blocks any dc voltage from the source. The amplified video signal connects to P1 through R4 and the C1 dc-blocking capacitor. R5, Q3, Q4, and associated components form a sync separator. The sync pulse connects to the bottom of P1 through R6 and P3, an adjustable voltage divider. The wiper of P1 connects to the second video amplifier comprising Q5, Q6, and associated components. You can adjust the amplification with P4. R7 sets the output impedance at 75W.

Figure 2



A handful of transistors and associated components yields a professional-quality video fader.

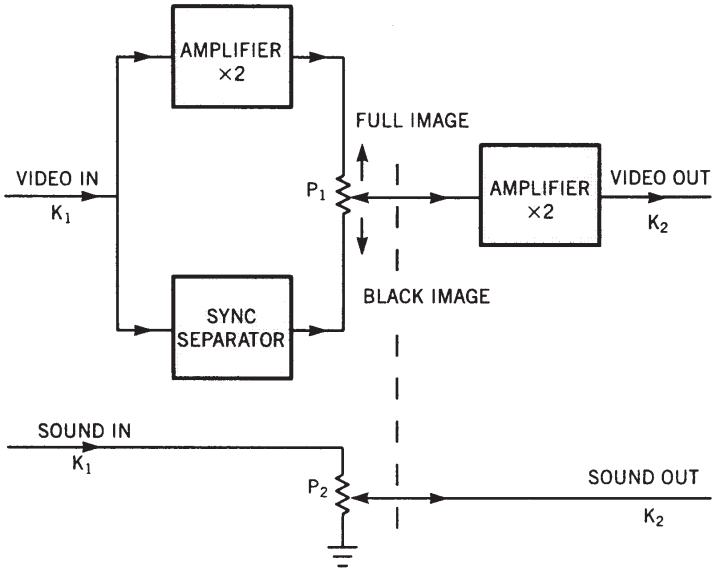


Figure 1

A simple circuit provides for effective video and audio fading when you're recording source material.

P2, ganged to P1, is a simple voltage divider, using C2 to block dc voltages. The sound input uses the left channel, and the output goes to both the left and right channels. With a video source connected to video in, a dc voltage of 9 to 12V appears at Pin 8 of the video plug. IC1 and the C2 through C6 capacitors derive power from this pin and provide a stable 5V for the circuit. D2 is a high-brightness LED that indicates that a video source is present. R7, C7, R8, and C8 provide decoupled supplies for the amplifiers. Video cables are often of poor quality. For that reason, the circuit in Figure 2 provides for amplification of the video signal. Also, compensation of the first amplifier provides amplification of color burst with a concomitant improvement of video quality. To adjust the circuit, first turn P1 fully clockwise and then adjust P4 for a good video image. Then, turn P1 fully counterclockwise and adjust P3 to obtain a stable black image.

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ATVQ

Digital Ham-TV 3rd Generation

On March 13th 2001 the DATV developer group around Prof. Uwe Kraus, DJ8DW, at the "Bergische Universitaet Wuppertal" in Germany succeeded in a real time MPEG2 link between new modules of 3rd generation digital Ham-TV. Prototype single chip MPEG encoder and decoder without computer control served a short rf link on 2,4 GHz. A more distant demonstration link will show at HAM RADIO fair end of June 2001 in Friedrichshafen.

Klaus Kramer, DL4KCK@t-online.de
AGAF e.V.
www.agaf.de

ATVQ

Houston, Windows Has Problems

by Leander Kahney 2:00 a.m. Apr. 7, 2001 PDT

The new International Space Station is already suffering from computer problems similar to those experienced on Mir.

The space station, which has been operational for less than five months, experiences almost daily computer glitches, according to the commander's log recently published on the Web.

Most of the problems appear to be related to Microsoft's Windows NT, while Russian-made software seems to be more reliable.

ATVQ

On Screen Display Programming With The PIC 16F84 & STV5730A

By Simon Blake - email: Simon.Blake@STV5730A.co.uk
The BlackBoxCamera Company Ltd

This article describes programming the popular 16F84 microcontroller to control the STV5730A On Screen Display chip. As an example it describes the PIC 16F84 On Screen Display project board demonstration code freely available from www.STV5730A.co.uk. This code is available in both MPASM assembler and PIC BASIC.

The learning curve from a simple introductory 16F84 program to a useful application program can be steep. This is particularly true when your aim is to develop an on screen display. Until recently there was no simple, inexpensive, way for the hobbyist to develop versatile microcontroller driven on screen displays. Hardware solutions for writing text over video required the use of a serial interface, had a very limited command set and virtually no software support. The PIC 16F84 On Screen Display (OSD) project board has been specifically designed to provide the hobbyist developer with the hardware and software to create both simple and complex OSD applications.

The low cost, versatility and ease of use of the PIC 16F84 have made it a microcontroller widely used by both hobbyists and industry. As a result an enormous amount of support for it exists in the form of tutorials and example application code on the internet and elsewhere. The STV5730A is an OSD chip widely used in VCRs and television set top boxes for displaying on screen programming menus. Because this device is designed to be controlled by a simple microcontroller it is ideal for providing any 16F84 program with the ability to create an on screen interface.

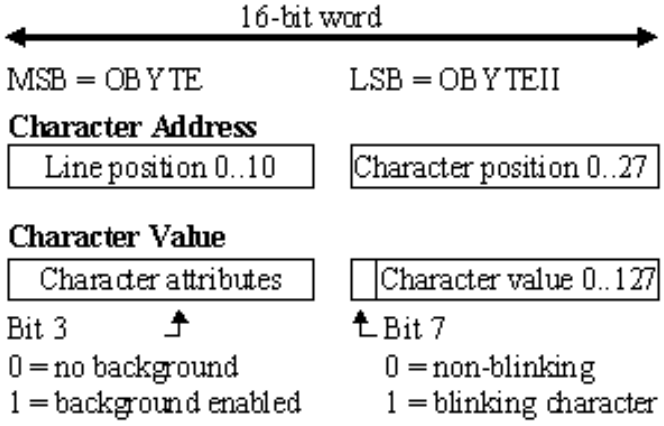
By combining a 16F84 with an STV5730A the OSD project board creates a unique environment for application program development. The interface required to control the STV5730A uses a minimum of 127 words of the 16F84's 1024 word program memory, 3 i/o lines and only 6 bytes of RAM. For the experienced programmer the small footprint of the interface means that many existing PIC applications can be adapted to run on the OSD project board by simply replacing their existing interface code. For the novice programmer the simplicity of the interface makes it extremely easy to learn to use and then to modify as experience grows.

The default STV5730A set up used by the demonstration program requires only a single routine, SETUP_5730. This routine takes care of setting up the 16F84 i/o connections, initializing the STV5730A and setting its 5 control registers. You should not need to change these values for most simple text over video applications. The STV5730A divides the screen into 11 rows

The output of the demonstration program. The STV5730A character set consists of 128 text and graphics characters that can be displayed on screen in a 28 column by 11 row grid.

each with 28 character positions. Each character position is individually addressable and can be thought of as simply a memory location to which the 16F84 writes a value. In this case of course the value written is then displayed as a character on the screen. The demonstration program defines and uses the OUT_WORD routine to write character address and value data to the STV5730A. This routine writes a 16-bit word consisting of the two bytes, _OBYTE and _OBYTEII.

Each character is written as a sequence of two words. The first



Two word character sequence

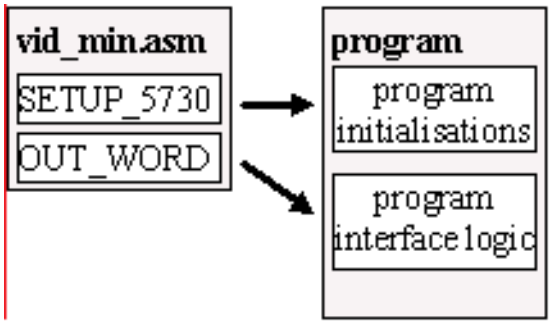
```
;-Set address pointer to line 1 see STV5730A datasheet pgs. 11 & 12
MOVF   CHAR_COUNTER, W    ; LSB for row address,STRU = 00, DEPL = character pos 0..27.
MOVWF  _OBYTEII           ; ... into second byte
MOVF   LINE_COUNTER, W    ; MSB for register address, BUF = line number 0..10
MOVWF  _OBYTE             ; ... into first byte
CALL   OUT_WORD           ; Write the word to the STV5730A

;-Write the character as a 16 bit word. LSB = character code, MSB = character attributes.
MOVF   _COUNTER, W
MOVWF  _OBYTEII           ; Character code in LSB, bit 7 controls blinking
MOVLW b'00011111'         ; MSB sets default character attributes, background = bit3 1, white text
MOVWF  _OBYTE             ; ... into first byte
CALL   OUT_WORD           ; Write the word
```

This code fragment from the 16F84 demonstration program illustrates the two word sequence required to write a character to the screen via the STV5730A. The character position is derived from the CHAR_COUNTER and LINE_COUNTER variables which are incremented in a loop to cover the entire screen. The COUNTER variable holds a value from 0 to 255 which is displayed as the corresponding STV5730A character.

word consists of the character address, composed of the line and character position values. The second word contains the 7-bit character value in its least significant byte (LSB). This value indexes the STV5730A's character ROM. Bit 7 of this byte determines whether the character blinks when displayed or not. In the demonstration program the use of a byte counter with a 0..255 value range results in the display of the entire STV5730A character set alternately unblinking and then blinking. The most significant byte (MSB) holds the character display attributes which control the character's colour and whether it is displayed with a background. Only bit 3 is of this byte, the character background control, is used as character colour is fixed to white on the project board.

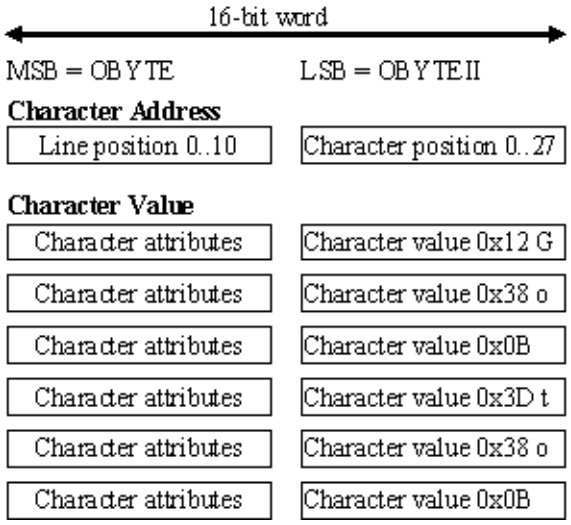
The routines in the demonstration program, vid_min.asm, SETUP_5730 and OUT_WORD provide the basis for develop-



ing any type of 16F84 program with an on screen display capability. Your program will first need to include 5730_min.asm. Then SETUP_5730 should be called as part of your program's initialization. After the interface has been initialized you can call OUT_WORD as described to write to the screen to display text as dictated by the requirements of your program's interface logic.

The sequence for writing a string to the screen is a simple extension of that used to write a single character. Internally the STV5730A holds a write pointer to the position of the next screen character which is set by the address sent as the first word of each character sequence in the demonstration program. As well as being set explicitly in this way the write pointer will also automatically increment when character value data is sent

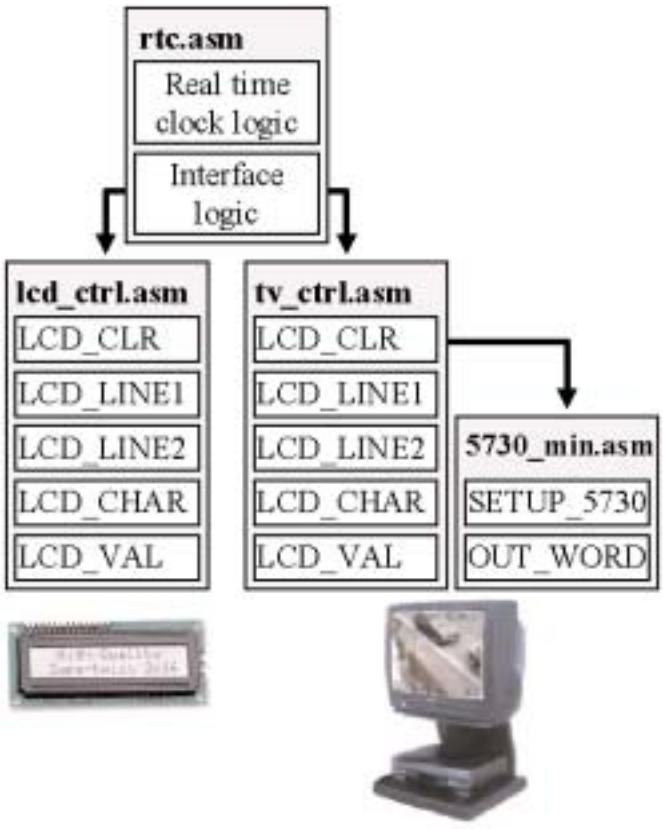
Using the simple code structure of the demonstration program text strings can be displayed with or without a background at any location on the screen.



Writing the string "Go to " to the screen. After the address word has been sent to the STV5730A, each character is then written in sequence. The STV5730A address pointer is automatically incremented after each character is written advancing the character position on the screen.

without a preceding address. This greatly simplifies the writing of text strings to the screen. Only the address of the first character needs to be set by the program, followed by the rest of the characters in the string. The individual character attributes can be set as desired to give characters with or without a background.

In many cases the ideal starting point for developing a new program is to adapt an old one. The popularity of the PIC 16F84 has led to its use in a wide range of applications. A large number of these projects have source code that is freely available on the internet. This enormous resource can be exploited to significantly reduce the development time of any new project. For example many existing 16F84 programs use a serial LCD to display information so they already have the logic required to position and write information to a screen. Translating from an LCD to a TV screen is straightforward as the serial routines can simply be replaced by the routines from the demonstration program. The file lcd_ctrl.asm is available from: **www.phanderson.com**. This site has a number of programs for interfacing the 16F84 to simple sensors for the measurement of temperature and other parameters. These programs have been written to use the routines in lcd_ctrl.asm to display their data on a serial LCD. These routines provide the actual serial interface that sends characters to the LCD. By replacing this serial code with calls to the routines from the demonstration program,



Structure of the Real Time Clock example code available from www.STV5730A.co.uk. rtc.asm can be conditionally assembled with files which provide the same interface routines for either a serial LCD or a TV screen.

Output of the real time clock program which demonstrates how to integrate the on screen display routines with existing code. The On Screen Display project board features ample space for connecting sensors, switches or relays to the 16F84's 10 free i/o lines.

tv_ctrl.asm creates an interface in which the routines for writing to the screen have the same names as the routines which write to the serial LCD. This allows any program written to use lcd_ctrl.asm to access the STV5730A. As an example the code for a real time clock is available from www.STV5730A.co.uk. This will display on an LCD or on a TV screen.

The ability to directly interface to the i/o lines of the 16F84 controlling the screen display is a great advantage. Very simple applications can monitor the state of switches connected to the 16F84 and close relays or display various text messages based on the switch settings. More complex programs can be developed that read data directly from sensors measuring values such as temperature or acceleration. This can be done directly, if the sensors themselves have a digital output, or via an A/D converter connected to the 16F84. These values can then be displayed on a screen connected directly to the project board or transmit-

The Dallas 1-wire sensors are ideal for connecting to a 16F84 and the data can be displayed or transmitted by a video link.

ted via a wireless link.

The STV5730A data sheet together with full details of the OSD project board and software, including advanced application examples can be found at www.STV5730A.co.uk.

ATVQ

ATNA 2001

ATNA would like to invite you to the annual Friday night ATV session during the Dayton Hamvention weekend. As in the past it will be held at the West Carrolton Lions Club building in West Carrolton, Ohio.

Directions will be available at the W8BI/ATNA booth #107 at the Hamfest. A list of presentations and door prizes will be announced later.

Activity of the ATNA group has been somewhat less than desirable over the past year. This has in part due to the inactivity of the members and I as your new president made little attempt to prod the board of directors. YOU, the members are ATNA. In the past some of the members complained of too much activity. Now as president I am complaining because of the lack of activity.

We do have an active high frequency net thanks to a few including Ron, K3ZKO. This is on Friday nights on the 80 meter band. Get on the list server and communicate. Ask your questions and contribute your ideas. Ron, K3ZKO and friends are attempting to revitalize the Web Site and up date it. The current newsletter should be available on the Web Site in the near future. We need to stay in communication with our Frequency Coordination groups and sell ATV, fast scan and slow scan alike.

For the past couple of years we have waived the annual dues since our expenses have been few. With the increased activity and sponsoring of the Friday night sessions we are again accepting annual dues of $ 5.00. These may be sent to Harry DeVerter, N3KYR, 303 Shultz Road, Lancaster, PA 17603. My e-mail address is **w3sst@juno.com** let me hear from you either with ideas or complaints. Just remember a good employee or, in this case, member should offer a solution if possible.

John Shaffer W3SST
President ATNA

ATVQ

3B6RF QRV SSTV !

The 3B6RF DXpedition to Agalega is confirmed to take place from 5 to 16 May. A multi-national team of 19 operators from Switzerland, Portugal, Germany, France, England, USA, Poland, Mauritius and Israel will be active with several stations (6 on HF bands) with amplifiers and a wide range of 26 antennas on all bands and modes including satellite (suggestions before departure to be sent to Matthias, DL3KUD at dl3kud@qsl.net), 6 metres, PSK 31, SSTV(for three days). More details can be found at **http://www.Agalega2000.ch**. There will be four pilot stations: Sigi, HB9DLE for Europe (hb9dle@uska.ch), Bill, K6GNX for USA (bavery@telemetry.com), Yasu, JA3LDH for Japan (ja3ldh@tcct.zaq.ne.jp) and Daniel, PT7BI for South America (mdmassun@fortalnet.com.br). QSL via HB9AGH either direct (Ambrosi Fleutsch, Lerchenweg 29, CH 8046 Zurich, Switzerland) or through the bureau. QSL for USA stations only via N3SL (Steve Larson, 22 N. Hidden Acres Drive, Sioux City, Iowa 51108, USA).

Danny Van Tricht Email ON4VT@qsl.net

ATVQ

Amateur High Altitude Ballooning Records Quarterly update

Ralph Wallio, W0RPK wallio@crosspaths.net

Here is our quarterly update on submitted Amateur High Altitude Ballooning Records as found at **http://users.crosspaths.net/~wallio/records.html** . Only the top three records are given here (if we have that many) but all submissions are listed in the web page. Pop a flare with questions and suggestions regarding these records toward **wallio@crosspaths.net** .

Welcome to Arizona Near Space Research (ANSR) which has recently organized in the Phoenix area. Their first mission is tentatively scheduled for May 13th including APRS/telemetry and ATV. Watch for an ANSR web page in the near future.

Highest GPS Reported Altitude (ASL)
1. Norm Kjome (KB7ZJT) 20Mar99 120,522ft ASL (SA)
2. SSOK (WBØDRL) 08Jan00 117,460ft ASL (SA)
3. KNSP-99A (KD4STH) 06Feb99 114,399ft ASL (SA)

Lowest Reported Maximum Altitude (AGL)
No entries

Highest Continuous Ascent Rate (averaged over >10,000ft)
1. MABEL-1 (W8IC, et al.) 05Nov00 1359.9ft/min
2. Norm Kjome (KB7ZJT) 20Mar99 1327.4ft/min
3. No Name (N9XTN) 01Jul00 1193.1ft/min

Lowest Continuous Ascent Rate (averaged over >10,000ft)
1. HABET-3 (CITS/WØRPK) 29Mar94 690ft/min

Longest Great Circle Distance, Release to Touchdown
1. SSOK (WBØDRL) 08Jan00 703.02 Miles (Floater)
2. NS0-1 (Near Space Balloon Group) 25Mar00 152.73 Miles
3. NSTAR-00A (N9XTN) 07Oct00 118.55 Miles

Shortest Great Circle Distance, Release to Touchdown (at least 50kft maximum altitude ASL)
1. KNSP-99E (KD4STH) 20Jun00 9.89 Miles
2. BEAR-2 (Balloon Experiments with Amateur Radio) 05Aug00 53.87 Miles
3. NSTAR-00B (N9XTN) 04Nov00 61.3 Miles

Longest Mission In Time, Release to Touchdown
1. SSOK (WBØDRL) 08Jan00 14:01:39>19:28:10 5h26m31s (Last GPS data right after burst)
2. BEAR-1 (Balloon Experiments with Amateur Radio) 27May00 15:13:33>19:46:36 4h33m03s
3. HABET-3 (CITS/WØRPK) 29Mar94 15:10:07>18:15:00 3h04m53s

Heaviest Payload
1. Project HALO Rockoon (WB8ELK-KE4ROC-K4ZQM) 11May97 92.0 Pounds
2. NSTAR-00B (N9XTN) 04Nov00 9.25 pounds
3. BEAR-2 (Balloon Experiments with Amateur Radio) 05Aug00 3.45 pounds

Lightest Payload
1. ITA-2 (Into Thin Air/KA2QPG) 19Mar00 0.21 Pounds - Voltage and
Temperatures via 10M CW
2. SQ3 (SkyQuest/N1LTV) 21May00 0.41 Pounds - 2m CW/RTTY Voltage and Temperatures
3. ITA-3 (Into Thin Air/KA2QPG) 04Jun00 0.46 Pounds - Voltage/Pressure/Temperatures via 10M CW

Largest Envelope(s) (Fully Expanded Volume)
1(Tie). SSOK (WBØDRL) 08Jan00 40,626ft^3 KCI-3000
1(Tie). BOI-2 (Balloons Over Idaho) 27May00 40,626ft^3 KCI-3000
1(Tie). Norm Kjome (KB7ZJT) 20Mar99 40,626ft^3 KCI-3000

Smallest Envelope (Fully Expanded Volume)
1. SQ3 (SkyQuest/N1LTV) 21May00 500ft^3 KCI-200 2m CW/RTTY Voltage and Temperatures

Greatest Telemetry Downlink Reception Range (Two Categories)
VHF/UHF near line-of-sight
1. HABET-1 (CITS/WØRPK) 04Dec93 N9NCT<>Robot - 331 Miles - 2M Packet Radio Robot QSO

HF via any mode of propagation
1. ITA-5 (Into Thin Air/KA2QPG) 15Nov00 W6VIO (N5BF opr)<Telemetry 2437 Miles - 10m CW Telemetry
2. ITA-3 (Into Thin Air/KA2QPG) 04Jun2000 WØRPK<Telemetry 983 Miles - 10m CW Telemetry

Greatest Two-Way Repeating/Transponding Great Circle Distance (QSO required)
1. EOSS-46 14Jan01 NØKQX<>N7DMO - 526 Miles - 70cm/2m Voice
2. HABET-1 (CITS/WØRPK) 04Dec93 AAØW<>N9GQR - 320 Miles - 2M Digipeating
3. HABET-4 (CITS/WØRPK) 10May94 WBØDRL<>WØRPK - 268 Miles - 23cm/70cm Voice

Ratio of Released v. Recovered Payloads
1. EOSS (Edge of Space Sciences) 47-for-47 18Nov90-25Feb01
2. KNSP (KD4STH) 19-for-19 02Nov96-10Jul99
3. SSOK (WBØDRL) 13-for-13 01Feb92-08Jan00

Longest Recovery Time (any method)
1. Bill Brown, WB8ELK 09May98-04Dec98 209 Days
2. TV-00A (KD4STH) 20May00-08Oct00 141 Days

Touchdown Prediction Closest to Actual Coordinates
1. Rick von Glahn, N0KKZ EOSS-48 01Apr01 8.17 Miles
2. Mark Conner, N9XTN NSTAR-00B 04Nov00 10.71 Miles
3. Rick von Glahn, NØKKZ EOSS-46 14Jan01 11.25 Miles

Possible Ban On 70cm ATV In ZL!

As you may or may not know the ZL 70cm band is being cut by the Ministry of Commerce (MOC - our FCC) to only 430-440 MHz. The Frequency Management & Technical Advisory Committee (FMTAG) of the New Zealand Association of Radio Transmitters (NZART - our ARRL) has proposed a plan to allow ATV simplex & ATV Repeater inputs on 70cm (431.25 MHz vision carrier, 436.75 MHz sound carrier with PAL colour on a 4.43 MHz subcarrier. VSB filtering in the IF (Superhet types of ATV transmitter) or output stage would be compulsory).

Some sections of NZART (UHF DX & AMSAT) are opposed to 70cm ATV in 430-440 MHz & want a ban. This would set a very bad precedent for the USA, UK & Europe.

I can send you a copy of the FMTAG proposals by email, if you do not have them already. I do not have the March/April 2001 "Break In" issue in electronic form.

You may be able to get electronic copies of "The VHF Scene" & "Satellite News" columns from the editor John Walker ZL3IB staf169@its.canterbury.ac.nz or paper copies from the NZART HQ business manager Debby Morgan, ZL2TDM, **nzart@clear.net.nz** (NZ$5 a copy with postage likely extra).

This is my rebuttal that I am going to post to the Editor of "Break In" for the letters to the Editor section:

****

Letter to the "Break In" Editor,

Dear Sir,

Comments in the March /April 2001 Break In VHF Scene & Satellite News columns concerning proposals for 430-440 MHz ATV repeater inputs & simplex ATV are alarmist in my view.

I believe the object (of the FMTAG proposals) is to is to preserve the investment in 70cm ATV transmitters ($500 kitsets from the Wellington VHF Group inc.) & 70cm aerials for the ATV operators affected by the loss of 440-450 MHz. This is a desirable thing. Not everyone is in well paid employment & able to "write off" their 70cm ATV equipment & start again on 23cm or a higher band.

ATV operators are aware of 70cm narrowband DX & will be likely to switch to voice modes themselves at the first sign of a UHF band opening. I don't know any ATV operators interested in DX ATV on 70cm in ZL, as there just aren't any DX ATV stations to work. Operation through crossband repeaters is the normal ATV mode in ZL, due to the bumpy landscape.

Just like on 20M SSB, 70cm ATV stations just have to "lump it" if a SSB station comes up on 432.2 MHz or a 70cm FM repeater is keyed & puts some lines on the picture while they are transmitting for an hour. A "clear channel" & "My frequency" are meaningless terms in the Amateur Service. There are far more 70cm FM & SSB mode stations than 70cm ATV stations. A prohibition of 70cm band ATV is unnecessary.

No 70cm propagation beacons will be dismantled. The major cities, where there are ATV repeaters having 70cm inputs, already have their quota of 70cm beacons & one beacon per band per geographical area is the norm so far. New 70cm beacons will be geographically far enough away as to be no problem. Beacons are deliberately made to be low power devices too. Reception of 70cm beacons at ATV repeaters is, in any case, a problem for the ATV repeater trustee to deal with by "notch" filtering and receive aerial pattern. If an ATV repeater & 70cm beacon have to be on the same site, some automatic switching could be used to mute the beacon during ATV overs. (In Auckland it was decided not to do this, but to remove the 70cm ATV repeater receiver instead, so that a remotely situated 70cm receiver with a SHF link to the ATV repeater could be contemplated in the future). Horizontal polarization is the normal mode to minimize reception of FM mobiles & repeaters. New ATV repeaters will take all the factors into account on their FMTAG Form 10 frequency co-ordination applications. FMTAG will insist on it, I believe. New ATV repeaters will likely be fitted with a receiver for another band, as well as 70cm, to cater for new ATV operators wishing to take advantage of higher bands.

Satellite users are aiming for the sky with their arrays in various elevated directions whereas 70cm ATV stations' aerials are fixed aimed along the ground towards the local ATV repeater. Directive, gain aerials are used to get the most out of the transmissions made by low powered 70cm ATV transmitters, using M57716 hybrid linear amplifier blocks, that are the standard in ZL. So the ATV operators are not spraying the neighborhood with massive amounts of RF in all directions. As I mentioned before, when the 2kW EIRP 70cm satellite station fires up in the locality, the 70cm ATV stations just have to "lump it". The ATV repeaters are designed not to be triggered by non-ATV signals &

their channel 39 (50cm band) outputs will not be affected. 23cm ATV repeaters and home stations are a reality in ZL & FMTAG has considered compatibility between these & 23cm Satellite users to have a bandplan that supports all the 23cm bands users.

ATV operators are aware of the dates & times of contest weekends & do know when it is diplomatic to refrain from transmitting ATV to let other modes "do their thing". Contest stations have been known to take 70cm ATV gear along for the extra points to be earned & the setting of distance records.

I think that the greatest use of 70cm ATV, in my locality, will be for simplex work from model cars, boats & planes as well as "across the paddock" at public events where going via a repeater is unnecessary or not possible. The ability to use "cable ready" UHF TV receivers & VCRs to receive 70cm ATV signals on these occasions is a great boost to the PR ability of Amateur Radio.

ATV operators would love to be able to use 927 MHz spectrum for repeater outputs or inter-repeater links. However the MOC doesn't appear to concur. Any 927 MHz ATV transmissions will be by very special negotiation and not available to individual amateurs.

Practically all the ZL Amateur Radio Spectrum above 146 MHz is on a secondary user basis. So the loss of any mode of operation on any band weakens the ZL amateur hold on the amateur radio spectrum. Commercial interests want radio spectrum to make money with. A juicy slice of 430 to 432 MHz might be just what they want next. Keep a close eye on the MOC web site, new horrors (called consultation papers) & "kite flying" ideas come up there all the time.

First they came for the ATVers, I was not an ATV'er so I did nothing..... When they came for me, there was nobody left.

I am an ATV operator (on 70cm & 23cm bands), a contest station operator, a 70cm packet BBS user and a FM repeater user. I have listened to the odd satellite.

("Lump it" means tolerate an unwanted situation without complaint. The expression is "Like it or lump it")

73

———————————-

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———————————-

ATVQ

Graham Shirville Replys To Possible ban on 70cm ATV in ZL!

Hi Michael,

Thanks for the update.

Here in the UK ATV has co-habited with other amateur users, Ministry of Defense networks, radio location systems, remote control device, car keys, and the mega powered OTH radar system for star wars (or similar) at Fylingdales in Yorkshire using 430-440 MHz only since our band was reduced from 420-450 some 30 years ago.

In some parts of Europe they only have 432-438 so we are considered "lucky"

We do not have any repeater inputs in the band but they do exist in Europe.

We are not required to use VSB (because of the understanding that all the hard work done at IF frequencies is usually undone in the PA)

We are not even prevented from using colour.

Generally all types of amateur activity (even packet) seems to be becoming less and the main problem is keeping access to the band at all.

If/when Oscar 40 starts to receive on the band then maybe this may change for a while.

However ZL could use the G experience as living proof of how it can work.....

I am not sure if Trevor our BATC Chairman sees this but we could get him to write to you or your Ministry if that would help you!

73

Graham Shirville G3VZV
g.shirville@btinternet.com
BATC Committee Member

ATVQ

More ZL 70cm Plan

Hi Graham,

At the moment it is the NZART Council that needs convincing that the proposed plan to allow ATV on 430-440 MHz from it's own FMTAG committee is a viable one.

It would be the DX & AMSAT interest groups trying to show that it wouldn't work.

Trevor could write to NZART Council supporting the plan. NZART HQ, PO Box 40-525 Upper Hutt, New Zealand. email nzart@clear.net.nz FMTAG would probably like a copy too. fmtag@nzart.org.nz

The MOC isn't too interested in what amateurs do on their own allocation these days, (unlike the FCC & possibly your government department) so long as there are no complaints to it that mean the MOC has to spend money sorting things out. The MOC prefers Amateur Radio to be self policing.

The plan is attached.

They talk about filters between the PA & aerial to ensure real VSB is sent. No output of LSB or sound carrier image into the non-amateur band 420-430MHz is the aim. ATVers are prepared to comply with this.

Yes numbers of amateurs on UHF (& any band for a matter of fact) is down, but the opposing groups don't see that as a valid argument. I don't like to say how few 70cm ATVers there are in case they say "great let's kick you all out, it won't be much of a loss as there aren't many of you who will have scrap 70cm gear". I'm playing up the fact that the FM repeater operation "secures" the top of the band, satellites the middle of the band, but SSB at 432.2 MHz leaves 430-432 MHz open for commercial interests to take bite out of the last 10 MHz we have in ZL. Using 431.25 as a vision carrier would plug a gap at the bottom of the band.

While there are some 433 MHz keyring things about, UHF CB is on 470 MHz & those disgusting LIPD devices (low power walkie talkies) causing trouble in Australia aren't legal here (so far).

The AMSAT group is already grumbling that the sound carrier frequency of 436.75 MHz is too close to a data downlink from Saudi-sat 1B 436.775 MHz +/-9kHz Doppler shift. ATV without sound is pretty lame in my experience. I wouldn't want the Euro ban on sound carriers to be pushed here. The USA on-(vision)-carrier alternative sound system has never caught on anywhere else that I know about.

You may need to read the "Break In" http://www.hampubs.com columns to fully appreciate the situation.

I said several times that the ATVers would expect to get QRM from all the other users on the band & would put up with it in return for being allowed to be on the band. The falling off in UHF activity of all sorts makes it not as bad as it sounds, but not saying that to the dissenting groups makes it seem like it is the ATVers making the big sacrifices.

73 Michael Sheffield ZL1ABS

ATVQ

CHANGES IN THE 70 cm AMATEUR BAND

The Ministry of Economic Development (MED) has advised NZART that no further Amateur stations will be licensed in the 440 to 449.75 MHz band, and that license applications for this band, that the MED has held up for over 18 months, will not now proceed.

The Ministry has also advised NZART that existing stations using the 440 to 449.75 MHz band will be required to change frequency over an unspecified time scale.

FMTAG therefore needs to make provision for new frequencies for the fixed links at the top of the band and for the TV transmissions between 441 and 449 MHz. In most of New Zealand, 441 to 449 MHz is used for the "up-link" to the 15 (or so) TV repeaters, and the "down-link" from a few TV transposers. The use of these frequencies is intermittent and individual TV transmissions are usually of short duration.

Because of the narrow bandwidth of the links, the MED is investigating some form of accommodation for them, above 440 MHz. However, an acceptable replacement for the TV band, 441 to 449 MHz, is proving to be very difficult, given that the lowest frequency available in some parts of New Zealand is 1274 to 1282 MHz, due to the presence of Aeronautical radar in the 23 cm band, and other problems.

The use of 1274 to 1282 MHz will be a serious impediment to TV development, when compared with 441 to 449 MHz, in

those parts of New Zealand having obstructed “up-links”, where the change of frequency will cause propagation losses to more than triple.

FMTAG has therefore investigated whether, or not, frequency sharing is possible, with TV up-links accommodated in the band 430 to 440 MHz. The impact on existing modes, and on TV, was also investigated, to determine what extra conditions would be required, to ensure that frequency sharing was a success.

Members of Branch 74, the Wellington VHF Group, have assisted by constructing frequency-agile synthesized TV test transmitters and a frequency-agile synthesized test TV repeater, to check the assumptions and calculations made by FMTAG and to evaluate the inter-mode interference.

PROPOSED NEW FREQUENCIES

The following TV frequencies were found to have the least impact to/from existing modes:

Vision Carrier 431.2500 MHz
Sound Carrier 436.7496 MHz

These were the nominal frequencies. However, FMTAG further found that interference to/from other modes could be further reduced by the use of five specific TV frequency offsets (up to +/-7.8 kHz from the nominal). FMTAG would therefore require that all 70 cm TV transmitters, in specified geographic areas, conform to specified offsets, within +/-2 kHz, to minimize interference between modes.

In order to make frequency sharing a success, FMTAG considers that several aspects of TV transmitter design need to be more closely specified than previously. We propose the following.

ALL TV TRANSMITTERS USING THESE OUTPUT FREQUENCIES MUST:

1. Use the minimum transmitter output power necessary to trigger the TV repeater and high gain, directional, horizontally polarized antennas,

2. Be crystal controlled, and use the FMTAG-specified carrier offset with better than +/-2 kHz accuracy,

3. Be fully VSB filtered, with no radiation below 430 MHz or above 438 MHz,

4. Be fed with video having a horizontal scan frequency of 15,625 +/-3 Hz

FMTAG is still investigating if particular models of transmitter require additional output filtering. Similarly, some TV repeaters will need to be upgraded. We propose the following.

ALL TV REPEATERS USING THESE INPUT FREQUENCIES MUST HAVE RECEIVERS THAT ARE:

1. Crystal controlled, on the specified offset, with better than +/-2 kHz accuracy,

2. Fully Nyquist filtered, with no acceptance below 430 MHz or above 438 MHz,

3. Carrier operated by a trigger receiver on 431.250 MHz, with an acceptance bandwidth of no more than +/-25 kHz.

WHAT ARE THE ADVANTAGES?

1. Adhering to these conditions allows continuing use of the 70 cm band for TV repeater inputs, with minimal interference to and from other modes. This is the best band for TV repeater inputs, since it has the lowest propagation losses.

2. The vision carrier and high-energy vision sidebands are outside the high usage parts of the band.

3. Poor quality, double sideband, and non-linearly modulated TV transmitters, such as the BATC, will have to be severely modified, thereby improving TV performance, and eliminating out-of-band interference.

4. Poor quality TV repeaters will have to be upgraded or replaced, also improving TV performance.

WHAT ARE THE DISADVANTAGES?

1. The tests, so far carried out, have shown that Amateur TV is the main loser from this change, as a consequence of the loss of 440 to 450 MHz, brought about by the spectrally wasteful allocation methods (for commercial licenses) of the Ministry.

2. The “up-link” TV sound carrier is inside the satellite band. The nominal carrier frequency is 436.75 MHz and the band affected is 436.70 to 436.80 MHz. Note that satellite transmissions can occur anywhere between 435 and 438 MHz. The TV transmissions will be of an infrequent and intermittent nature and can be time co-ordinated with satellite orbits. The Chairman of FMTAG, ZL2SX, has consulted with the AMSAT Command Station, ZL1AOX.

3. The TV repeater receiver input filter will need to be of high quality, if it is co-sited with a conventional 70 cm repeater. There will be intermittent in-band interference to the TV repeater if it is co-sited or near-sited with an inverted National System repeater.

4. The TV repeater receiver will suffer intermittent interference from 433 to 435 MHz FM repeater up-links, and from 435 to 438 MHz satellite up-links.

5. Specifying TV frequency offsets, in each geographic area,

places additional constraints on FMTAG's choice of frequencies, for the various types of fixed-location Amateur stations.

CONSULTATION

This proposal is published in Break-In for your consideration and feedback. Feedback should be sent to:

FMTAG
NZART
PO Box 40-525
Upper Hutt

Or by email to **fmtag@nzart.org.nz**

ATVQ

Cable TV Modulators

I occasionally get asked about driving the 20 watt PA5 amp module by a cable TV modulator. While testing a PA5 out for an order today that was going to be driven by a ham with a cable TV modulator, out of curiosity, I checked what actual input power is to get up to 10 watts which is still within the reasonable linear gain portion of the curve for the brick. I was surprised to find that it only required 10 milliwatts to get 10.5 watts out at 439.25 MHz. This means that the head end cable TV modulators that can give +60 dBmv power output (equivalent to about 13 mw into 50 ohms) can drive the 20 Watt PA5 directly. Not all cable TV modulators give this much power level but you can add an amplifier between the TV modulator and amp to get to this level like one of the MMIC's from MiniCircuit Lab, etc. Before you consider going the route, check to see what the output power rating is of the cable TV modulator you have. Don't be concerned about 50 ohms vs 75 ohms, the mismatch loss is not worth considering and the actual impedances of the cable TV modulator and the PA5 are probably not exactly 75 or 50 ohms resistive at any given frequency anyway. At the 10 watts out on 439.25 MHz, the current draw was 3 amps at 13.8 Vdc. The gain does drop a little as you go down in frequency in the band - the PA5 got 8 watts out at 421.25 MHz with the 10 mw drive.

73, Tom O'Hara W6ORG
P. C. Electronics
www.hamtv.com

ATVQ

FCC TAKES STEPS TO REALLOCATE AND ADOPT SERVICE RULES FOR TELEVISION CHANNELS 52-59.

The FCC began the process of reallocating television Channel 52-59 (the 698-746 MHz spectrum band) for new commercial wireless and broadcast services, and proposed rules for the licensing, operating, and competitive bidding of wireless and other services. News Release. Action by: the Commission. (Dkt No 99-251). Adopted: 03/16/2001.

FCC Denies LA County 2.4 GHz Application, Cancels Experimental Grant to City

Following objections from the ARRL, AMSAT and others, the FCC has turned down an application from Los Angeles County, California, for an experimental license permitting airborne microwave TV downlinks (TVDL) in the 2402-2448 MHz range. The FCC also canceled an experimental license grant to the City of Los Angeles to operate an identical TV downlink system in same band.

Amateurs have a primary domestic allocation at 2402-2417 MHz and a secondary allocation in the rest of the affected band.

''Experimental licenses are not substitutes for regular radiocommunication service licenses,'' said Charles Iseman, deputy chief of the Electromagnetic Compatibility Division in the FCC's Office of Engineering and Technology. OET issues all experimental licenses.

The ARRL, AMSAT and the Amateur Television Network had asked the FCC to deny the county's application. ARRL members Art McBride, KC6UQH, and Thomas O'Hara, W6ORG, also filed informal objections. The League, AMSAT and ATN also had objected to the city's experimental grant. The FCC gave the city until December 1 to terminate its operation but reserved the right to accelerate the cancellation date if interference occurs.

The LA County proposal, filed in August 1999, sought FCC authorization to develop a TVDL system on four 2.4 GHz channels for deployment aboard sheriff's and fire department airborne units. The FCC granted the city's WB2XEN experimental license based on a similar submittal.

In protesting the county's plan, the ARRL called the application a ''foot in the door'' toward gaining a permanent berth in the 2.4 GHz band. The county and the city already are authorized to operate TVDL systems under Part 90 rules in the 2.450-2.483.5 GHz band, but both told the FCC that they had experienced coordination and interference problems and sought the experimental TVDL authorization as a result.

In light of the denial and the cancellation, the FCC did not address potential interference issues raised by the objectors.

ARRL Bulletin

ATVQ

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Tel: **1-626-447-4565** m-th 8am-5:30pm pst (UTC - 8) Tom (W6ORG) & Mary Ann (WB6YSS) O'Hara
24 hr FAX order line 1-626-447-0489 Email: tomsmb@aol.com
Web site: http://www.hamtv.com

ORG Tests the Icom R3 Receiver on ATV

There have been articles in ATVQ, CQ and QST on the Icom R3 Receiver, but none did any real testing on ATV for sensitivity nor went to much depth on practical use. So here is my two cents worth to add to the work of Henry, AA9XW, Gordon, WB6NOA, Joe, AA1GW and Steve WB8IMY.

This wide coverage small portable receiver is the first one to include the ATV mode - both AM and FM. It is perfect for general monitoring or testing purposes in the shack as well as portable and mobile ATV applications such as R/C, finding downed balloons and rockets and public service events. The R3 is a perfect companion to the Videolynx hardhat cam to monitor your own video as well as other ATV transmitters working the same event. This receiver is also very handy for repeater owners to track down interference from legal and illegal Part 15 transmitters or other services too. It does surprisingly well for viewing in bright sun light too. When a bigger screen is desired, or you want to video tape, a video out jack is provided.

Being a multimode receiver with many functions and covering practically DC to light, it has a few multifunction buttons that have to be punched in correctly to make it work. You can spend hours trying to figure out what is what if you don't go through the manual and have an external power supply capable of at least 700 mA at 6Vdc plugged in (of course I tried without the manual first, I'm a guy, a ham, it is in the genes, etc.). The battery won't last more than about 1.5 hours in the ATV mode so you really need to hook the Icom R3 receiver up to an external regulated 6 Vdc supply or just when you think you are getting the hang of programming it, the Color LCD display will automatically shut off. So the first accessory I suggest getting is a regulated 6V supply - I got the Radio Shack RS273-1667 multi-voltage 800 mA Power Adapter (AKA wall wart) which works fine for when in the high current ATV/color LCD mode. It would have been nice if Icom provided a battery charger/shack supply with sufficient current capability to continuously operate the unit in the ATV mode. While at Radio Shack, don't forget to get the free 4.0 x 1.7 mm Adapt-a-plug RS273-1705 that fits the R3 (tip is +). For mobile, the RS273-1859 gives 6V output from a 12V cigarette lighter socket with another free Adapt-a-plug or you can buy the Icom CP-18A/E cable.

Great ATV receiver for monitoring yourself and others at public service events!

Punching in the frequencies in the VFO mode can be exasperating especially if you don't remember the process. So I suggest getting the Windows 95/98 computer Cloning Software CS-R3 and Cloning Cable OPC-478 (about $70 however) to make it real easy, and type in all your favorite modes and frequencies into its megamemory channels - 8 banks of 50 + 3 TV banks. Then you only have to jump from memory bank to band and channel to channel which is much easier than the VFO mode, especially for FM ATV and finding the sound. We intend to sell the Icom R3 with all the popular ATV frequencies programmed in plus a few customer requested ones to get you up and running immediately on ATV.

4/2001

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

While it is easy to get the AM ATV mode punched in by holding down the FUNC button and at the same time incrementing the up arrow key (if you remember), the frequency as set by the Top Knob will be 4.5 MHz higher than the video carrier frequency only if the Color LCD is *off*. Dialing in frequencies with the Color LCD off will save battery current but can be confusing when setting AM ATV frequencies and then finding you are not on frequency when you switch the Color LCD on. So again, especially if you are setting up the AM ATV memory channels, you need to do it with the Color LCD on if dialing in the video carrier frequency. The procedure for setting the AM ATV frequency and also how to program it into memory is on page 35 of the manual,

To get the Color LCD on for seeing ATV, hold the FUNC button on the side and the down arrow button down together for 2 seconds, then increment the down arrow until "tv" appears in the bottom right corner of the Sub LCD. The Sub LCD will show the video carrier frequency now and don't worry that the upper left indicates WFM, it is still in AM video but wide FM for the audio. Push the right arrow until you find the band segment for the frequency you want, then turn the knob on the top to that frequency.

There are 10 AM ATV memory channels which should be more than enough for most areas. But if you need more, you can use the broadcast TV bank of memory channels and put the AM ATV frequencies into some of the memory slots of unused UHF TV channels in your area. I could not figure out how to put names on the TV channels like you can for the voice channels, so you will have to remember which memory channel is what frequency.

AM ATV sensitivity is quite good for a broad receiver. I would put it even better than a cable TV but not quite as good as an ATV downconverter by about 4 dB. For sensitivity reference, I used the point where color just snaps in out of the noise. On the R3 this was at -93 dBm or 10 microvolts. While the color killer switch point will vary from TV to TV, this is still simple but practical way to compare ATV receiving systems if you don't have an instrument to accurately measure video to noise levels.

On FM ATV, the R3 has a full bank of 50 channels. Getting into the FM ATV mode is similar to the AM ATV mode and is found on page 36 of the manual. The FM ATV sound is hard to set up because there is no way to set for a specific sound subcarrier frequency. Instead you turn the top knob between relative numbers from +63 to -63 that has no correlation to anything. To set it, you must be receiving a strong FM ATV signal with a known sound subcarrier, hold the Func button on the side and the right arrow down for 2 seconds until the word CAR appears in the sub LCD window with a number and then turn the top knob. There are many false peaks so you have to find the loudest one. On mine I found that a setting of -15 was best for 5.5 MHz from a 1252 MHz transmitter, -12 for 6.2 MHz and -8 for 6.8 MHz sound on a 2442 MHz transmitter.

The good news on the FM ATV mode is that the de-emphasis curve used in the USA is built into the unit. The bad news is that the receiver is so broad, you can tune almost 20 MHz each side of the center FM ATV frequency and still receive the picture fine. It seems there is not much of an IF bandpass filter in this mode so the noise floor is quite high resulting in a just into color level of -77 dBm at 915 MHz in my tests - not very good compared to my original tests for the FM vs. AM ATV graph in the ARRL Handbook which gave a level of better than -90 dBm. Adding a preamp wont help much with the R3's high wide bandwidth noise floor. A 17 MHz IF filter for FM ATV would help quite a bit in the next generation - I don't know how they could squeeze more parts into this small package thought. But despite the low AM ATV sensitivity, this receiver is still very handy for testing out transmitters, finding interfering surveillance transmitters, or receiving strong FM ATV repeaters.....Tom, W6ORGy 4/01

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Please mention that you saw it in
Amateur Television Quarterly!

ISS Packet Digipeater is WORKING!

ISS is now digipeating packets via the UNPROTO call of NOCALL. I just did it at about 2225z over the east coast of the USA. There will be many more passes tonight!

Uplink is 145.99 and downlink is 145.80. Here is how to operate via ISS!

1) Do not attempt a connection to any other station. It is a fruitless exercise and only adds QRM to a very busy channel.

2) ANY TNC: Set UNPROTO to CQ VIA NOCALL. Then go to converse, and TYPE greetings or messages to others that you see on the downlink... If you see your packet digipeated via NOCALL, so did everyone else...

3) Kwd D700 or D7(G): Set one of your program memories for this application. Set data TX on band B to 145.990. Set data RX on band A to 145.800. Set packet to 1200 baud. Set path to NOCALL. Go to MSG GROUPS and add the wildcard "*" to the list so you can see messages to anyone. Operate normally. (D7A users see below)..

4) APRS: Turn off ALTNET filters. (In APRSdos set CONTROLS-FILTERS-OTHER) Set unproto path to NOCALL. Set radio to transmit on 145.99 and receive on 145.80. You can send messages to anyone you see.

SHARING THE BAND. If you see your OWN packet digipeated (MY PACKET) then everyone else in the country also saw you, so no need to repeat that packet for at least 2 or 3 minutes.

For the history on the success of UI DIGIPEATING in space see the MIR pages in **http://web.usna.navy.mil/~bruninga/astars.html**

de WB4APR, Bob **bruninga@usna.edu**

ATVQ

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

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