ATCO NEWSLETTER

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The ATCO newsletter is the official publication of a group of amateur television operators known as "AMATEUR TELEVISION IN CENTRAL OHIO Group Inc" and is published quarterly (January, April, July, and October)

ATCO SPOTLIGHT TOPIC

Here's "Mr. ATCO". Let's give him a caption! See inside for details.

ACTIVITIES ... from my "workbench"

Another year is close to the end. I hate to say it but the warm summer season is now behind us and we all know what's in front. I hope all of you got your antenna work complete. Well, some of us have, I'm sure. I too, am guilty of not enough outdoor Ham activity as my tower still needs a coat of paint…any volunteers???

The most important item to discuss this time is the one I've been eluding too for a few years now. That is, the repeater now finally has a decent 427.25MHz power amp. Dale, WB8CJW and I installed a Comark commercial TV transmitter about a month ago to replace the Mirage and WHAT A DIFFERENCE!!! As we all know, the Mirage amp is not the worlds best when it comes to TV signal reproduction but I didn't realize how much of an improvement it would be with the Comark amp in place. At this time, the new amp is running at 50 watts sync tip which is just about where the Mirage was but even though the output power is about the same the signal looks as if we gained about 1 to 2 P units. At the next trip to the repeater I'll crank it up to the 100 watt level where it is designed to operate.

Ever since we first installed the Mirage back in 1993, the received signal had a trailing ghost in it. I tried everything from replacing the antenna to installing an isolator in the transmission line and still had the ghost. I finally concluded that it was the result of some signal reflections among the downtown buildings that could not be rectified and decided we must live with it. Now, with the Comark amplifier, the ghosts are GONE. In addition, we had some minor de-sense on the 439 input coming from the 427 output. At P0 to P1 439 received signal level, the system would cycle caused from the 427 transmit signal overloading the 439 received signals. Extra filtering on both the 427 and 439 lines didn't help so we again, just lived with it. Now the de-sense is gone which makes me think that some of the filtering in place now isn't needed. It's OK for now so as they say, "If it works, don't try to fix it!"

The video quality has also improved dramatically to the point where most of us now say that the 427 output is the best of all of them. Its quality is even better than the digital signal but that's not entirely fair. The digital signal is compressed on purpose in order to allow 2 video channels within a 4MHz bandwidth. If we wanted more resolution and subsequent improved signal quality, we could do that by increasing the bandwidth and eliminating the second channel but there are no plans to modify it from the present!

I DO have one modification I want to make to the 427 transmitter, however. Since I stream the received video onto the internet during the Tuesday night net using the 1245MHz digital signal, my digital receiver doesn't work properly when I transmit to the repeater on 1280MHz. Therefore I stream a blank picture while I'm transmitting unless I switch to 427 during that time. That's great but sometimes I forget to switch. Therefore, I'd like to use 427 all the time and be able to switch the 427 transmitter on continuously during the net. I have an extra control code available to accomplish this function so it should be easy. That way when there is no received signal at the repeater, it will just send out the ID as the digital output does now. OK, now some of you may now say, "Why don't you leave the 427 transmitter on all of the time just like the digital and 10GHz?" It's all in the heat dissipation within the cabinet. The Comark is a true linear class A amplifier so if left on all the time, it may get too hot in the cabinet. (I switch off the 28 volts to it during idle times).

Now, this brings up another thought. I COULD leave the 2.4GHz transmitter on all the time. Would anyone like to see this? It is possible that if I do, we may cause problems with some commercial Wi-Fi service also on 2.4GHz. Should I chance it? Maybe yes, maybe no. We'll see.

On another note, I've noticed a significant reduction in ATV related articles and news lately. Maybe it's just me but is there much less interest in our hobby now? Maybe it's the shift to digital in the broadcast industry that's reduced analog interest but that shouldn't affect ATV I wouldn't think. Let me know your opinion and what we could do about it. We need more construction stuff. How about it, guys?

That's all for now, folks! Be sure to join us at the Fall Event on October 25 if you can. I have the antenna plotting equipment working now, thanks to Charles, WB8LGA, so I'm ready. I plan to have the setup working on the 25th at about 9AM so bring your antenna early and we'll do some gain and pattern measurements from 9 to about 12:30 at which time we can break for lunch, meeting and door prizes. We can resume after the Event if needed. That's the plan…unless the weather doesn't like us. If that happens, we'll postpone the antenna stuff till a better day. The Fall Event is indoors so it will occur rain or shine but we need good weather for the antenna stuff. Ken said we can use the parking lot and grass field beside the building so there will be plenty of room.

…73 WA8RMC

CAPTION CONTEST

OK, here's your chance to be creative and have some fun. Can you come up with a good caption for this cartoon? If it's the best one, it's worth $10 because I'll credit you with a year's ATCO dues! See what you can do so send me the best you can think of. I'll let you vote for the choices at the Fall Event and the one with the most hands up will get the prize.

Don't disappoint me. We need a lot of participants.
…WA8RMC

CARTOON HUMOR

Cartoon courtesy of N0UJR at http://incolor.inebraska.com/n0ujr.

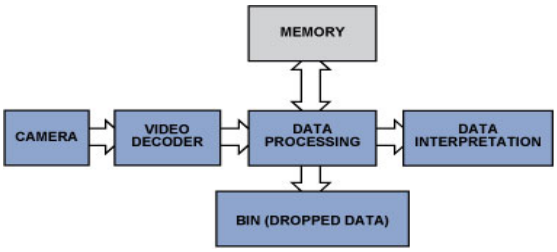
"Hang on a minute Larry...my SWR is jumping...I'm going outside and see what the problem is."

BASICS OF VIDEO DECODERS IN SUPERVISION / INSPECTION

OK guys, perhaps I'm allowing articles of a "too technical" nature in here but bear with me. The basic material, minus the serious calculations, are worth reading. That way you get an idea of what is involved to capture and analyze moving objects with a video camera! So, skip the math, sit back, read and enjoy. (No, there will <u>not</u> be a quiz later) WA8RMC

Video inspection systems are used in many commercial and industrial processes. Cameras—which range from those in inexpensive, low-definition black-and-white closed-circuit television (CCTV) systems to those in state-of-the-art high-definition digital-video systems—are used in diverse applications ranging from product inspection to traffic monitoring to real-time face recognition. Video inherently carries a lot of data, which can complicate signal-processing and data-storage tasks. Video inspection can often be simplified by cropping useless information and passing only the essential parts of the picture, which saves both memory and computational cycles. Figure 1 shows the elements of a typical system.

Figure 1. Simplified video-inspection data flow.



This article shows a few examples of how extracting useful data can minimize processing, memory size, and DSP usage—and illustrates how special features of Analog Devices video decoders can simplify video algorithms and speed up development of video inspection systems.

Example 1. Counting and Inspecting Objects

Imagine a wide conveyor belt containing many rapidly moving products. The large number of products makes manual counting difficult. In addition to automating the counting task, a camera can be used to monitor product quality. This can be accomplished by modifying the simple count algorithm to focus on particular details and artifacts.

Storing all of the video data requires a huge amount of memory, and processing a large amount of data will cost a lot in terms of hardware and power. Instead of collecting whole pictures in memory, the system can find interesting details in the pile of data and drop as much useless data as possible when inspecting the products on the conveyor belt.

In most cases, gray-scale pictures can carry enough information. So chrominance information can be dropped by converting RGB signals to Y (luminance only). The resulting monochromatic picture can then be examined for content by using *edge detection* to find products on the belt and compare their shapes with a template to determine whether the product is misshapen.

Edge detection algorithms—which require only a few lines of active video and a small amount of memory—find discontinuities in the brightness of adjacent pixels by calculating the first and second derivatives of active pictures, as described in Digital Image Processing by Bernd Jähne. Edge detection can be implemented in practice by extracting information using matrix calculations, such as the Sobel matrix operator. In an FPGA (field-programmable gate-array) implementation, doing this on a pixel basis gives satisfying results. A simple FPGA implementation is shown in "A proposed FPGA Based Architecture for Sobel Edge Detection Operator" by Tanvir A. Abbasi and Mohm. Usaid Abbasi. Noise can be removed by adding a Gaussian 2D filter, as described in "Hardware Acceleration of Edge Detection Algorithm on FPGAs" by Mathukumar Venkatesan and Daggu Venkateshwar Rao, which describes a successful implementation of a detector similar to the Canny edge detector.

Several other optimization algorithms can enhance the picture quality, but all occupy significant space on the FPGA design. However, some integrated-circuit (IC) video decoders are already equipped with useful preprocessing algorithms or filters; so choosing one of these would save space in the FPGA. For example, the ADV7802 video decoder includes both *luma transient improvement* (LTI) and *chroma transient improvement* (CTI) blocks. These blocks, which enhance the resulting picture by improving the steepness of luma and chroma transitions, use adaptive peaking and nonlinear methods—without increasing noise or introducing artifacts—and can be very useful in the process of edge detection. In addition, luma-shaping and other built-in input filters can remove high-frequency noise from the source—focusing on the signal and ignoring incidental noise.

Figure 2. LTI/CTI operation diagram.

Edge detection provides information on an object's edge transitions instead of a full picture of the object. This reduction, from 3 × 8 bits per pixel (bpp) to 1 bpp, saves a lot of memory:

- 640 pixels × 480 pixels = 307,200 bits at 1 bpp
- 800 pixels × 600 pixels = 480,000 bits at 1 bpp
- 1024 pixels × 768 pixels = 786,432 bits at 1 bpp
- 1280 pixels × 720 pixels = 921,600 bits at 1 bpp

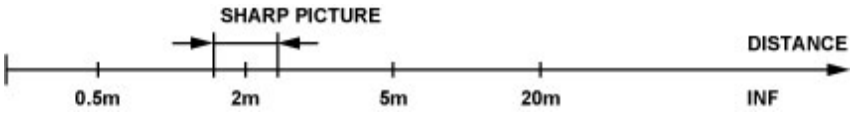
By converting RGB to Y, storing just a few lines of active video in memory, and using FPGA algorithms, we can detect objects and see their shapes. Once their locations on the moving belt are known, we can estimate their movement and collect color or other information from the next frames with the assurance that a minimum amount of memory is being used. The process involves

1.Edge detection 2.Storing information 3.Predicting next position x_{n+1} 3.Extracting information where product is supposed to be.

Example 2. Detecting Motion and Quality

A robot is looking for items at a particular distance and within a limited range. Ultrasound can be used in some applications; but if the surface absorbs ultrasound or the items are behind glass, video can be used. The camera is set to focus on nearby objects. Items within a narrow range will have sharp edges, but background items—which are outside that range—have fuzzy edges (Figure 3).

Figure 3. Focus—narrow depth of field.



Edge detection can be used to distinguish the items within the target range, as these are the only ones with sharp edges. Items in the background will be fuzzy enough to fail an edge detection test.

Processing yields a binary bitmap where a 1 means that an edge was detected and a 0 means that no edge was detected. The position (*x*, *y*) of each detected edge pixel can be used to approximate the middle of an isolated object using Equation 1:

$$x_{average} = \frac{\sum_{n}^{N} x_n}{N} \quad ; \quad y_{average} = \frac{\sum_{n}^{N} y_n}{N} \qquad (1)$$

Where x_n is the x-position of edge pixel, n; y_n is the y-position of edge pixel, n; and N is the number of edge pixels detected.

Once the position of the object and its edges are known, we can try to trace it. The key is to extract exactly one object from the picture, transforming its edges to an outline that can be used to determine if the item is moving toward the camera by checking the average distance of pixels from the middle of the object to see if the size of object is changing, as shown in Equation 2:

$$\frac{1}{N}\sum_{n}^{N}\left(\sqrt{\left(x_n^{FRAME} - x_{average}^{FRAME}\right)^2 + \left(y_n^{FRAME} - y_{average}^{FRAME}\right)^2}\right) - \\ + \frac{1}{M}\sum_{m}^{M}\left(\sqrt{\left(x_m^{FRAME-1} - x_{average}^{FRAME-1}\right)^2 + \left(y_m^{FRAME-1} - y_{average}^{FRAME-1}\right)^2}\right) \qquad (2)$$

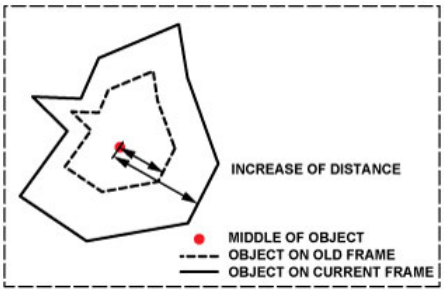
N is the number of edge pixels in FRAME; *M* is the number of edge pixels in FRAME–1.

Focusing on the horizontal axis leads to Equation 3:

$$\frac{1}{N}\sum_{n}^{N}\left(x_i^{FRAME} - x_{average}^{FRAME}\right) - \frac{1}{M}\sum_{n}^{M}\left(x_i^{FRAME-1} - x_{average}^{FRAME-1}\right) \qquad (3)$$

The value of this equation will be positive when the object is moving toward the camera (pixels are spreading from the middle of object). A negative value means that the object is moving away from the camera, as shown in Figure 4.

Figure 4. Frame change of moving object.



Note that the object has to be within the camera's range of focus. By modifying the algorithm, we can actively change the focus to scan a wider area. Once the objects are detected, they can be segmented, processed, and tracked.

Tracking objects becomes more difficult as video complexity increases, especially with textured objects and objects that lose sharpness because they move quickly. Some tracking algorithms are shown in "Good Features to Track" by Jianbo Shi. As objects lose sharpness, edge detection fails. Tracking can still be done by using complex correlation techniques such as block matching—used to estimate motion—or other methods detailed in "Video Processing and Communications" by Yao Wang, Jörn Ostermann, and Ya-Qin Zhang.

Thanks to continuous data flow from the camera, an object can be tracked to determine its acceleration and other parameters. However, a high-quality video sequence must be used in order to obtain good video analysis results. When detecting edges by analyzing adjacent pixels, the resolution will be better if progressive-scan video is used instead of low-quality interlaced PAL or NTSC signals. The ADV7401 and ADV7403 video decoders accept a variety of video standards, including progressive modes. Capable of digitizing video signals up to 140 MHz, they can handle SD, ED, and HD component signals, CVBS, and graphics. In addition, they support nonstandard video modes, allowing the use of less-popular standards, such as STANAG. The flexible pixel output bus allows data processing in 4:2:2, 4:4:4 YCbCr, or 4:4:4 RGB formats. Nonstandard video formats can be oversampled or undersampled to get a given horizontal width, as described in AN-0978, "Component Processor Nonstandard Video Formats".

$$\begin{bmatrix} Channel\_A\_out \\ Channel\_B\_out \\ Channel\_C\_out \end{bmatrix} = \begin{bmatrix} A1 & A2 & A3 \\ B3 & B1 & B2 \\ C2 & C3 & C1 \end{bmatrix} \begin{bmatrix} Channel\_A\_in \\ Channel\_B\_in \\ Channel\_C\_in \end{bmatrix} + \begin{bmatrix} A4 \\ B4 \\ C4 \end{bmatrix}$$

The built-in *color-space converter* (CSC), shown in Figure 5, transforms the color space to suit user requirements (Equation 4, where A1… A4, B1… B4, C1… C4 are adjustable CSC parameters). YPrPb or RGB input signals can be converted to other formats using configurable matrix conversion. For instance, converting RGB to YCbCr allows chroma information (Cb, Cr) to be dropped, simplifying edge detection with a monochrome picture.

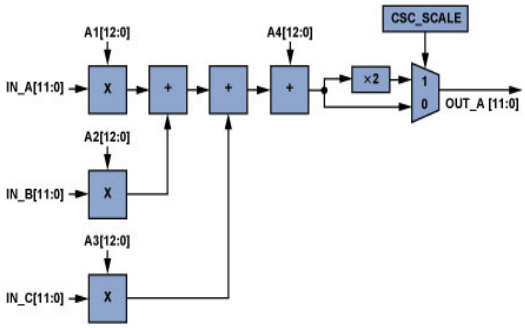


Figure 5. Single CSC Channel (ADV7403).

The CSC is very useful. With an RGB or YCbCr input, color information can be simply transformed using a color-space matrix. Figure 6 shows a YUV color space that is similar to YCbCr.

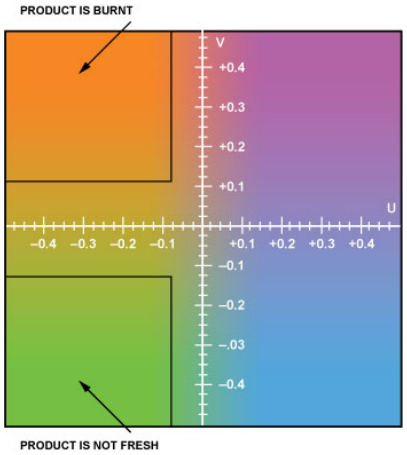


Figure 6. YUV color space in product-quality evaluation can be used to detect (for example) when a product is burned or moldy. Y (luma) is constant.

As Figure 6 shows, the color (or YPrPb value), can help to detect the quality of the product, for example, whether it is burned or moldy. Color-space conversion is necessary in video processing and for interfacing to ICs that use other standards. The ADV7401/ADV7403 include an input multiplexer that enables easy switching of video sources, a useful feature when switching from a stopped conveyor belt to a working one.

Example 3. Adjusting White and Color Balance for Video Inspection

Significant effort is required to develop a video system that extracts objects from a picture, as simple changes in light angle or intensity can affect the inspection results. Video engineers can use the ADV7401/ADV7403 gain and offset adjustments to adjust the brightness and contrast by adding two small reference stripes (one dark, one bright) to the conveyor belt. The offset and gain of the ADV7401/ADV7403 are adjusted to get comparable values, thus allowing the system to compensate for changes in light color, angle, and intensity.

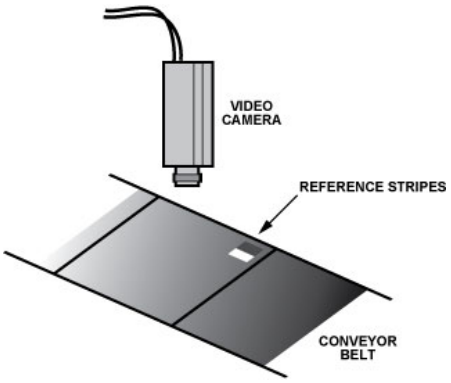


Figure 7. Small reference stripes are added to the visible area

The algorithm for adjusting proper white balance can be very simple. First, get reference RGB (or YCbCr) values for the stripes. Then, to compensate for light, simply change the offset and gain to get the same values as the reference. This algorithm can be used:

1. Get RGB (or YCbCr) values of the dark stripe.
2. Adjust offset to match desired RGB (or YCbCr) value of dark stripe.
3. Get RGB (or YCbCr) values of the light stripe
4. Adjust gain to match desired RGB (or YCbCr) value of light stripe.
5. To improve accuracy, repeat steps 2 and 4.

This procedure is especially useful during system development, as it provides the correct offset (brightness) and gain (contrast)—even when the light is too strong or too weak, as shown in Figure 8. The offset and gain registers are available via the I^2C bus, allowing quick adaptation.

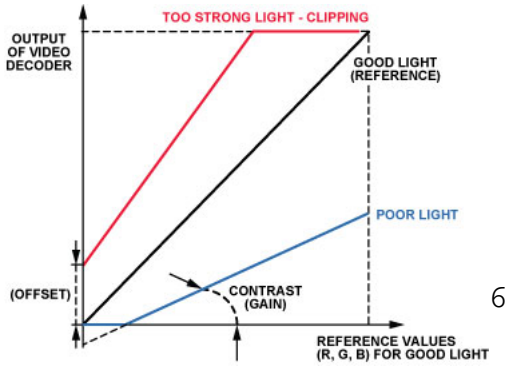


Figure 8. The offset and gain are adjusted to compensate for changes in ambient lighting.

Colors can also be used for the reference stripes. This compensation is similar to white balance, which is widely used, but while white balance matches a human's perception, the color correction is to compensate for changes due to different lighting. Although the algorithm is similar, an additional offset causes dark colors to look unnatural. The ADV7401/ADV7403 color-space conversion, flexible output pixel port, and offset and gain adjustment registers allow engineers to quickly develop algorithms using data that

is already prepared for processing. As discussed earlier, it is important to reduce the amount of data required for video processing and to avoid advanced algorithms if they're not needed for simple video. An evaluation board for the ADV7401/ADV7403 with an easily accessible pixel port is available to speed up the start of new design. It's a matter of simply plugging a video-capture board into the pixel port of the evaluation board and capturing the video-data (Figure 9).

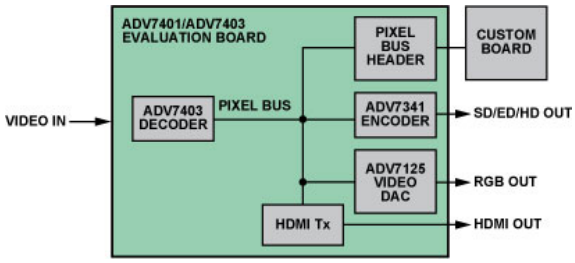


Figure 9. Pixel bus on ADV7401/ADV7403 evaluation board.

The video encoder, video DAC, and AD9889B HDMI transmitter are connected to the same pixel bus, allowing viewing of the current picture on the second output. Analog Devices video decoders include the blocks required for processing video, giving robust performance and stable pictures.

Conclusion

Video cameras provide many benefits in industrial applications. This is particularly important when moving items must be sorted, tracked, or recorded. Video technology and real-time processing with highly integrated video decoders can be used to efficiently analyze items or sort mixed products on a moving conveyor belt.

By Witold Kaczurba

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SONY TO THROW ITS WEIGHT BEHIND 3D TV

By Maija Palmer in London Published: September 1 2009 22:01

3D technology looks set to hit the home consumer market next year, with **Sony** on Wednesday announcing plans to sell 3D televisions globally by the end of 2010. Sony's decision to throw its weight behind the technology will be an important boost for the 3D industry, which has so far focused mainly on cinemas. **British Sky Broadcasting** has said it would introduce a 3D satellite channel in the UK next year, but it had been unclear whether there would be equipment available to view it on.

Speaking at the IFA technology trade show in Berlin, Sir Howard Stringer, Sony chief executive, will announce plans not only to sell 3D Bravia television sets, but to make Sony's Vaio laptop computers, PlayStation3 games consoles and Blu-ray disc players compatible with the technology. Mr Stringer is expected to tell the audience: "Today, 3D is clearly on its way to the mass market through technology, distribution and content.

"As with high definition a few years back, there are a variety of issues yet to be addressed. But the 3D train is on the track, and we at Sony are ready to drive it home." The consumer electronics industry has yet to agree on a single 3D standard, posing the risk of a format war akin to that between VHS and Betamax or Blu-ray and HD-DVD.

There are several types of 3D technology. Sony has opted for "active shutter" technology, using electronic glasses containing tiny shutters that open and close rapidly in synch with the television image to create a 3D impression. Cinema 3D uses "polarisation" technology with simpler glasses. However, this only works when viewers are at a certain angle to the screen, making it less suited to home viewing.

The electronics industry is looking for the next technology to boost sales, as high-definition television sales move past their peak. Hyundai is producing early 3D sets for the Japanese market and Panasonic has flagged up plans for products. Sony's commitment, however, improves 3D's chances of becoming mainstream. It has given no indication of prices, but analysts expect early 3D TVs to cost several thousand dollars. Hyundai's 3D TVs cost more than €3,400. In cinemas, uptake of 3D has grown nine fold over three years, with 7,000 digital 3D screens expected to be in use worldwide by the end of 2009.

SAMSUNG MAINTAINS GLOBAL LCD-TV LEAD

SAN FRANCISCO—Samsung Electronics Co. Ltd. held on to the top spot in the global LCD-TV market in the second quarter, partly due to a surge in shipments of its LED-backlit sets, according to market research firm iSuppli Corp.

Samsung's worldwide LCD-TV shipments for the second quarter amounted to 5.7 million units, up 12 percent from the first quarter, iSuppli said. It was the largest unit increase of all LCD-TV brands during the quarter, according to the firm. The 12 percent growth gave Samsung a market share of 18.5 percent, iSuppli said.

"Samsung in the second quarter was very aggressive in introducing and marketing LCD-TVs that featured LED backlights," said Riddhi Patel, iSuppli's principal television analyst, in a statement. "This put Samsung at the forefront of this fast-growing technology trend, helping to boost the company's sales during the period."

Worldwide shipments of LCD TVs with LED backlights rose to 604,000 units in the second quarter, up 75 percent from 345,000 in the first, iSuppli said. Shipments of such sets are expected to rise by 170 percent in the third quarter and by another 20 percent in the fourth quarter, the firm said.

For all of 2009, shipments of LCD-TVs with LED backlights are predicted to reach 4.5 million units, up by more than 10X from 438,000 in 2008, according to iSuppli. By 2013, shipments will rise to 98.8 million, accounting for 42.5 percent of the global LCD-TV market, the firm predicts.

Global LCD-TVs shipments rose to 30.7 million units in the second quarter, up 14.1 percent from 26.9 million in the first, iSuppli said. According to iSuppli, trailing Samsung among the global LCD-TV leaders in the second quarter were: LG Electronics (11.5 percent market share), Sharp (9.6 percent), Sony (9.1 percent) and Philips (6.5 percent).

Earlier this month, iSuppli reported that Vizio Inc. maintained the leadership position in the LCD-TV market in the U.S. in the second quarter, though the firm said Samsung closed the gap significantly.

VIZIO STILL LEADING U.S. LCD-TV MARKET

Dylan McGrath EE Times (08/17/2009 7:17 PM EDT)

SAN FRANCISCO—Samsung Electronics Co. Ltd. closed the gap significantly with leader Vizio Inc. in the U.S. LCD-TV market in the second quarter, but Vizio retained market leadership with 21.7 percent market share, according to market research firm iSuppli Corp.

Samsung's share of U.S. LCD-TV unit shipments rose to 21.3 percent in the second quarter, up 3.5 points from 17.8 percent in the second quarter, iSuppli (El Segundo, Calif.) said. The gain represented the largest increase of any LCD-TV brand in the U.S. in the second quarter, the firm said.

"Samsung in the second quarter was very aggressive in introducing and marketing its LED-backlit LCD-TVs, allowing it to boost sales of these sets," said Riddhi Patel, principal analyst of television systems for iSuppli, in a statement.

Global penetration of the LED-backlight technology for LCD-TV panels will increase to 37 percent of all shipments in 2013, up from 3 percent in 2009, according to iSuppli's latest forecast. Patel said about 2.2 percent of LCD-TVs in the U.S. in the second quarter used LED backlights, up from zero during the same quarter a year earlier.

"In mature markets like the United States, while many consumers are moving up from their CRT or rear-projection televisions, an increasing number of LCD-TV purchases are replacements of first-generation flat-panel sets," Patel said. "In these cases, consumers are gravitating toward higher-specification televisions, such as those with LED backlights."

Sony was the third-ranked supplier of LCD-TVs in the U.S. in the second quarter, holding 11.9 percent of the market, according to iSuppli. Toshiba ranked fourth with a 7.9 percent share, according to the firm.

REMOTE TOUCH TONE DECODER FOR YOUR SHACK

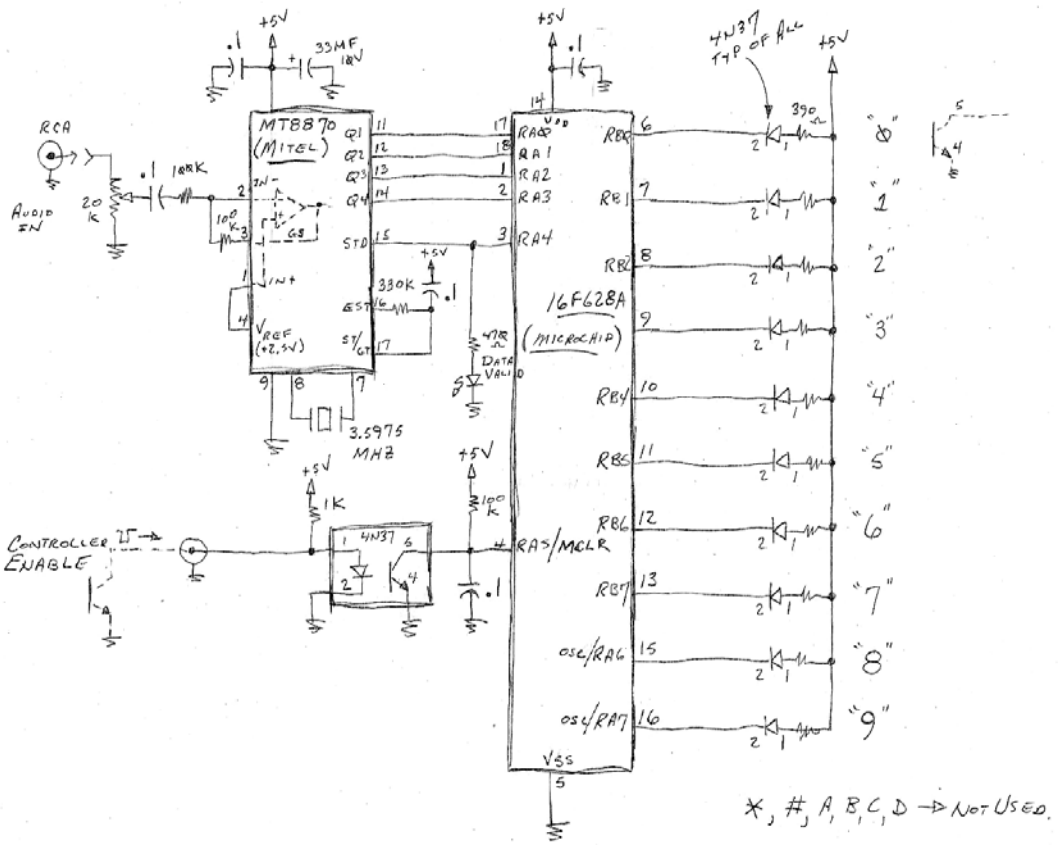
Here is a handy little circuit that can be used to control various functions remotely. Connect the speaker output of your handi talkie to the input of this circuit and control up to 10 devices by pushing the “0” to “9” keypad buttons to turn on the selected output. I used this circuit to remotely control the Red-White-Boom remote camera pan/tilt/zoom functions during the fireworks show. Each function is turned on only while the selected keypad button is depressed but it is easy to modify the software code to provide “latching” functions for some or all outputs. This circuit could also be used to enable and disable various functions at the repeater.

Intuitive Circuits makes a similar unit but it’s more fun to roll your own and tailor it to specific tasks. The code in Basic is shown here but if you don’t have programming capabilities for the Microchip 16F628A micro, let me know and I can program one for you. (This micro is the same as used in all Comtech boards). The program and circuit sketch is shown below. Thanks to WB8LGA for help with the code.

I provided a controller enable input so the circuit could be disabled externally. When the input is at ground level, the inputs/outputs are active. When the input is an open circuit, all outputs are disabled. I show an opto isolator here because the external control may come from a source with different grounds. If this enable circuit is not needed, simply connect micro pin 4 to 14 to tie it to +5V. The power source must be a regulated 5 volt supply capable of sourcing at least 50 ma. I show partial circuits of opto isolators on each output but that is up to the designer. The micro can only sink or source about 5ma so if it is needed to drive relays, a buffer IC, opto or equal will be necessary. The data valid LED shown is for visual convenience only. It is on when a valid touch tone is present so it is useful for setting the proper input signal level.

```
'REM This is a program for Art to control a Camera by remote.
'Rem it uses porta 0-3 and the number Rx and bit 4 as the input strobe.
'Rem portb is used for output control to the camera.
'Rem bit 0 to bit 7 along with porta bit 6 and bit 7 are 10 outputs
Define CONF_WORD = 0x3f38
INTCON.T0IE = 0  'DISable Timer0 interrupts
TRISA = 0x1f  'set RA0, RA1 , RA2 ,RA3 and RA4 as inputs, other PORTA pins as outputs
TRISB = %00000000  'set PORTB pins as outputs
CMCON = 0x07  'set the CMCON to 7 for the compare.
Dim strobe As Bit
Dim tone As Byte
AllDigital
PORTB = 0xff
PORTA.6 = 1
PORTA.7 = 1

loop1:
strobe = PORTA.4
If strobe = 0 Then
PORTB = 0xff
PORTA.6 = 1
PORTA.7 = 1
Goto loop1
Else
tone = PORTA And %00001111  'REM SET MASK TO ONLY SEE THE FIRST 4 BITS AS A NUMBER.
If tone = 10 Then PORTB.0 = 0
If tone = 1 Then PORTB.1 = 0
If tone = 2 Then PORTB.2 = 0
If tone = 3 Then PORTB.3 = 0
If tone = 4 Then PORTB.4 = 0
If tone = 5 Then PORTB.5 = 0
If tone = 6 Then PORTB.6 = 0
If tone = 7 Then PORTB.7 = 0
If tone = 8 Then PORTA.6 = 0
If tone = 9 Then PORTA.7 = 0
Endif
strobe = PORTA.4
If strobe = 1 Then
Goto loop1
Else
'REM CLEAR ALL OUTPUTS.
'REM  all OUTPUT BITS off
PORTB = 0xff
PORTA.6 = 1
PORTA.7 = 1
Endif
Goto loop1
```



…WA8RMC

CHINA: BEIJING TV TO START HD THIS MONTH

09.09.2009 BTV (Beijing TV Station) will become one of the first broadcasters inside mainland China to air HD programs terrestrially, starting on Monday, Sept. 28.

BTV's goal is to provide at least HD over-the-air channels by late 2012 for the vast Beijing market — and "gradually finishing the reform of HD interactive cable TV networks as well as promoting HD interactive set-top boxes at the same time," according to Xinhua News Agency.

Xinhua said BTV officials are expecting to sign on about 300,000 subscribers in its coverage area's "key urban demonstrative sub-districts" soon, and to boost its HD sub list to more than 2.6 million Chinese dwellings within three years.

Right now about 240,000 subscribers are "capable of receiving" digital HD signals in the greater Beijing region, said the news agency. The world's most populous nation, China is believed to have at least 1.3 billion citizens.

An official with Beijing's Municipal Commission of Industry& Information Technology said he expects about a $735 million market for front-end equipment within the next three years.

HDI TEASES WITH 2-D 3-D HD PROJECTION SYSTEM

09.09.2009 HDI Ltd., a research and design firm, said it is close to releasing a laser-driven 3-D projection large-display technology that it claims "surpasses" HD definition (apparently referring to 1080p).

Calling it among the first of a batch of new products to emerge after extensive R&D, HDI said it's unveiling its "2D/3D Switchable Dynamic Video Projection Display" (100 inches diagonally) that boasts stereoscopic 1920 x 1080p image quality, thanks to two RGB laser-illuminated LCoS micro-display imagers.

HDI's display is about 10-inches deep and, it said, draws up to 80 percent less power than existing 2-D (non-projection) plasma monitors of comparable size. HDI also said it anticipates its projection displays will carry price points up to 60 percent less than comparable plasma models.

According to HDI's chief scientist, Edmund Sandberg, HDI's current technology easily enables 2-D playback at a resolution higher than current HD standards. "We've already achieved effective resolution of 1080p per-eye resolution for 3-D with deep color saturation that looks incredible in a well-lit room," Sandberg claims. "In 2-D mode, by slightly overlaying the two pixel arrays, we're getting an effective pixel resolution of around 3K — which is 50 percent greater than today's digital cinema resolution…" he said.

Still, except for what HDI acknowledges as a few dozen "invitation-only" observers, few have actually seen the 2-D/3-D projection system in action yet. A spokesman has told **HD Notebook** the media will be invited to view the projection system very soon. The firm is based in Los Gatos, Calif.

D-ATV NEWS FROM FRANCE

Don't know if this is NEWS or not. They don't say what format they're using but by the description, it is probably DVB-T, the terrestrial standard in Europe. DVB-S has been used there since about 2001 there and is the same we have been using since 2004. WA8RMC

Here is some news passed along from David, F4BNF by Darren, G7LWT: This message arrived from France tonight. It sounds as if there has been another homebrew DATV breakthrough. VERY IMPORTANT INFORMATION FOR DATV. The first one was great tonight, September 9, 2009, I have received Rolf F9ZG on Digital ATV on 437 MHz with images and sound from his station, live.

F1FAU, Christian, built an interface receiving data on the USB port, flows into the parallel transmission standard DATV at 1024 bit/s. Data is taken from a computer with the one TV tuner card analog video input. The software used to generate the line runs under Linux. F1FAU has created an application to generate the feed with the addition of PIDs. I can not describe how it works for now at least I can you say that these are the first images received with a 100 percent amateur method.

Rolf will write all this in the B5 soon probably. All this was made possible thanks F1FAU F9ZG F1GFF F4BNF.
All 73's and Rolf Amand Christian David

NET NIGHT STREAMING VIDEO VIA BATC

Our Tuesday night 9PM nets are now streamed onto the internet via BATC. I'll keep it active from approximately 8:30PM till 10PM or when we close the net. If you are too far away to join our nets live, check in on the internet. I can see all check-ins and will acknowledge same. To join us on the internet, enter www.batc.tv and click on "ATV Repeaters" (you do not need to enter a username or password unless you are a member of BATC. If you're a BATC member, simply log in as your call will automatically show up without entering "nick…"). Scroll down till you see WR8ATV, click on it and then click on "view stream". Then, be sure to announce your presence by typing ***/nick*** then a ***space*** followed by ***your call*** (if not a BATC member) otherwise you will only be shown only as "guest xxxx". You can enter comments as desired that I can see and respond to. It's a lot of fun…try it! See details below.
…WA8RMC

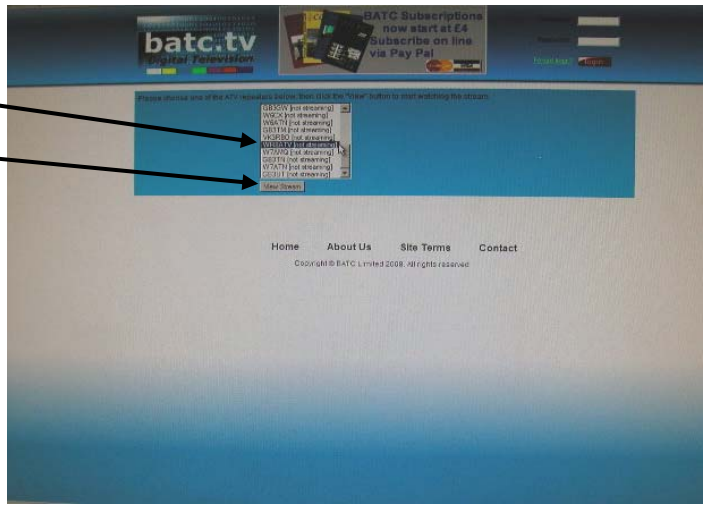
Step 1: Type in www.batc.tv The screen at the right will appear. (Log in only if you are a member of the BATC group).

Step2: Click on "ATV Repeaters" as shown.

Step 3: Scroll down the list of repeaters shown until you see WR8ATV. Single click on it.

Then single click "View stream".

That's all there is to it.

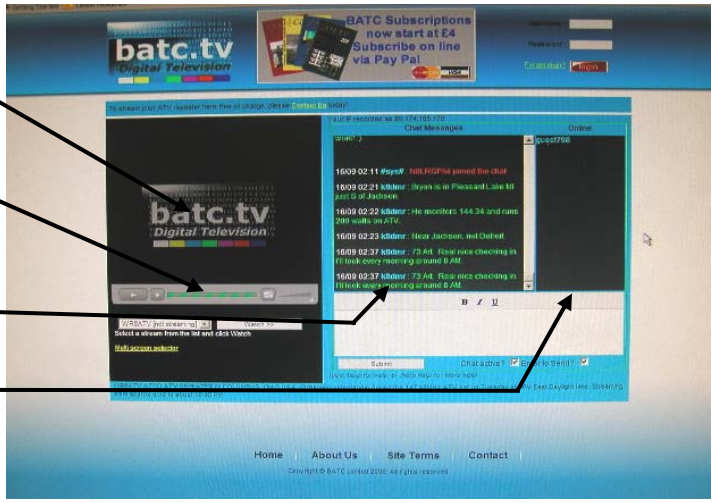


A third screen will appear as shown at the right. In place of BATC.TV will be the ATCO repeater streaming video.

The candy bar stripe below the video indicates that there is no active stream at that time. If the video is active the green bar will disappear.

The text screen to the right of the video is reserved for comments. If you have something to say, type it there and click "submit".

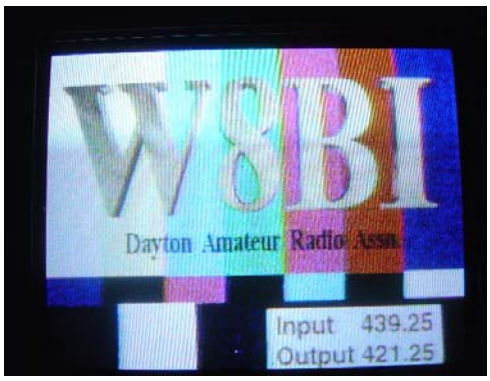
If you want your call to show up in the far right screen so all can see, type /nick [your call]



ATV VIDEO RECEIVED IN MICHIGAN

Here are some photos taken by Bryan Dygert, KC8LMI in Pleasant Lake, Michigan (near Lansing) during a band opening on 8/25/09. That night he came through our repeater about P4 just before the Tuesday night net. The ATCO screen below shows how well he received **us**. Let's be on the lookout for more ATV DX and send me photos if possible. Thanks!

And, here are 3 more pictures received at KC8LMI's QTH on 9/19/09. Bryan is sure busy. Now, let's see some DX pictures received from local folks!



$150 SPACE CAMERA: MIT STUDENTS BEAT NASA ON BEER-MONEY BUDGET

Can Bill Brown,WB8ELK top this with his balloon launches? WA8RMC

Bespoke is old hat. Off-the-shelf is in. Even Google runs the world's biggest and scariest server farms on computers home-made from commodity parts. DIY is cheaper and often better, as Justin Lee and Oliver Yeh found out when they decided to send a camera into space.

The two students (from MIT, of course) put together a low-budget rig to fly a camera high enough to photograph the curvature of the Earth. Instead of rockets, boosters and expensive control systems, they filled a weather balloon with helium and hung a Styrofoam beer cooler underneath to carry a cheap Canon A470 compact camera. Instant hand warmers kept things from freezing up and made sure the batteries stayed warm enough to work.

Of course, all this would be pointless if the guys couldn't find the rig when it landed, so they dropped a prepaid GPS-equipped cell phone inside the box for tracking. Total cost, including duct tape? $148.

Launch

Two weeks ago, on Sept. 2, at the leisurely post-breakfast hour of 11:45 a.m., the balloon was launched from Sturbridge, Massachusetts. Lee and Yeh took a road trip in order to stop prevailing winds from taking the balloon out onto the Atlantic, and checked in on the University of Wisconsin's balloon trajectory website to estimate the landing site.

Because of spotty cell phone coverage in central Massachusetts, it was important to keep the rig in the center of the state so it could be found upon landing. Light winds meant the guys got lucky and, although the cell phone's external antenna was buried upon landing, the fix they got as the balloon was coming down was close enough.

The Photographs
The balloon and camera made it up high enough to see the black sky curling around our blue planet. The Canon was hacked with the CHDK (Canon Hacker's Development Kit) open-source firmware, which adds many features to Canon's cameras. The intervalometer (interval timer) was set to shoot a picture every five seconds, and the 8-GB memory card was enough to hold pictures for the five-hour duration of the flight.

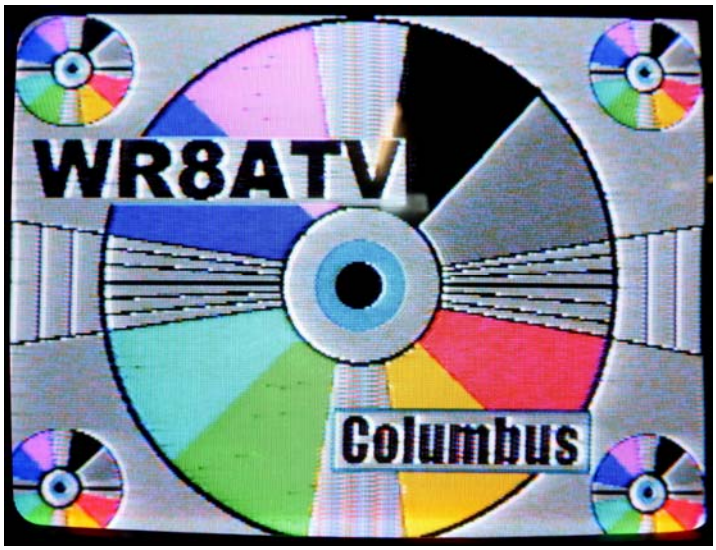
The picture you see above was shot from around 93,000 feet, just shy of 18 miles high. To give you an idea of how high that is, when the balloon burst, the beer-cooler took 40 minutes to come back to Earth.

What is most astonishing about this launch, named Project Icarus, is that anyone could do it. The budget is so small as to be almost nonexistent (the guys slept in their car the night before the launch to save money), so that even if everything went wrong, a second, third or fourth attempt would be easy. All it took was a grand idea and an afternoon poking around the hardware store.

The project website has few details on how the balloon was put together — but the students say they will be posting the step-by-step instructions soon for free.

By Charlie Sorrel September 15, 2009

10GHz RECEPTION BY W8SJV



OK guys, look at what John, W8SJV, can do from his place in Delaware. He lives about 25 miles north of the repeater and reports that the 10GHz ATV reception is better than all of the other bands. Soooo……..what about the rest of us. I have an 18" dish mounted 30 feet up on the tower and also receive it P5 but I'm only 13 miles away and have an eyeball view of the repeater.

It is an easy band to receive. Search the trash containers on trash day for a "free" Dish Network or Direct TV dish being thrown away or pick one up at a Hamfest for $5 or less, buy an LNA downconverter from G8OZP (Email g8ozp@hotmail.com) for about $50 to replace the one on the dish, connect the output to a Satellite receiver or 1200MHz Comtech board and you're in business.

The repeater output frequency is 10.350GHz and the LNA local oscillator is on 9.000GHz so tune the receiver to 1350 MHz and you're in business. The Comtech boards with my revised PIC micro will tune 1350MHz so if you have a 1200MHz Comtech board, you're in business. Even if you have an old Comtech board, it too can select 1345, 1350 and 1355MHz so there is no excuse to not at least try it. Let me know how it works out or if you need some additional help.
…WA8RMC

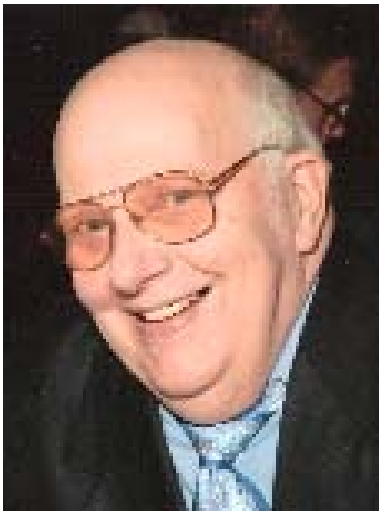
MIND BENDERS

1. An ant marks its starting point, walks two inches, turns 90 degrees right, walks two inches, turns 90 degrees right, walks two inches, and is amazed to find itself back at its starting point. Where is the ant?

2. If you had a 5-liter bowl and a 3-liter bowl, and an unlimited access to water, how would you measure exactly 4 liters?

Solutions: (Check in to the Tuesday night net for the answers)

Edwin Schleppi , K8VKA, Dedicated Amateur Radio Volunteer, SK



We at Franklin County Emergency Management and Homeland Security (FCEM&HS) were saddened by news of the recent passing of Edwin "Ed" Schleppi. Ed died peacefully at home on July 27, 2009. He was 69.

Ed developed an interest in amateur radio as a freshman in high school and became a certified ham radio operator when he was 20 years old. Ed often worked behind the scenes, coordinating volunteers for agencies such as the State Fire Marshal's Office and equipment for community events. He was recognized for his work as a Reserve Police Officer in the City of Pickerington 2003 Annual Report for "service during special events and parades…essential to the success of the department…."

Ed represented the Central Ohio Radio Club (CORC) on the Volunteer Organization Coordinating Council, a committee of volunteer agency liaisons who collaborate with FCEM&HS staff in support of the FCEM&HS mission to coordinate county-wide all-hazards disaster planning, community education, warning, training, grant funding, response, and recovery. After years of service to CORC, Ed received a CORC Life Membership in 2004, an honor that had not been granted in over 10 years.

Michel Moore, former Miss Ohio (center) presents Edwin Schleppi (right) and Jackie Notestone (left) of Comtech, Inc. a 2008 Consumers' Choice Award.

Ed's enthusiasm for radios as a hobby merged with his career in 1988, when he bought Comtech, Inc., a communication and cellular company recognized with a 2008 Consumers' Choice Award. Radio antennaes at his home and business expanded the coverage area for amateur radio operators. Ed embraced new technology throughout his life, working as the Chief Engineer at 104.9 WCVO Radio (now The River), and as Vice President of Christian Internet Radio WMCI, where he was the technician responsible for streaming radio online.

Ed's often unseen contributions to the community will not be forgotten. We at Franklin County Emergency Management and Homeland Security offer condolences to his family and friends and thanks to Ed for his years of dedication to the community. Ed's obituary, service arrangements, online guestbook and condolences may be viewed online at http://www.spencefuneralhome.com/obit-service-schedule.jsp?site=0168&id=47683.

A T C O

2009 FALL EVENT/ANTENNA PARTY

9 A M A n t . p a r t y - 1 2 : 3 0 P M L u n c h / m e e t i n g

S u n d a y O c t o b e r 2 5 , 2 0 0 9

A B B P R O C E S S A U T O M A T I O N

C A F E T E R I A

5 7 9 E X E C U T I V E C A M P U S D R I V E

F O R M O R E D E T A I L S , C O N T A C T

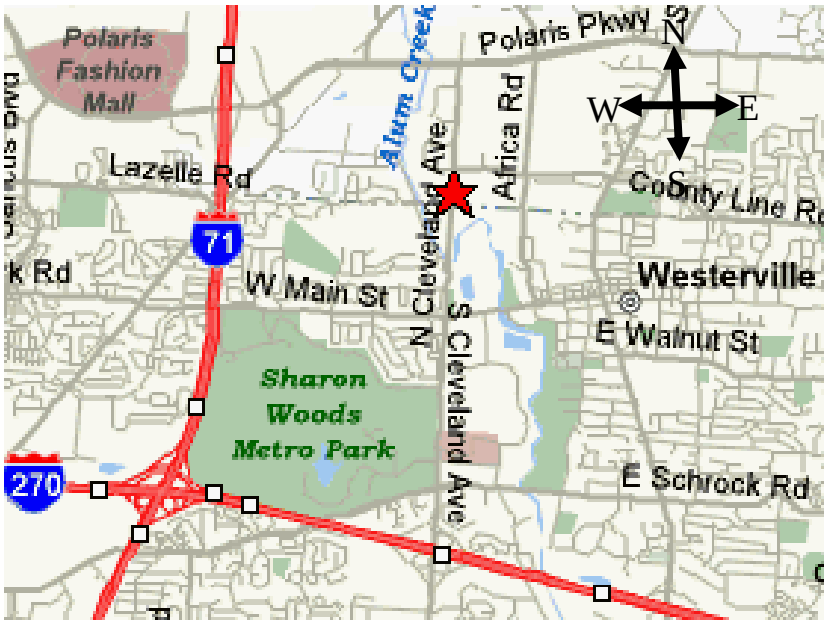
A R T - W A 8 R M C 8 9 1 - 9 2 7 3

L U N C H P R O V I D E D - D O O R P R I Z E S -

B R I N G A F R I E N D A N D S E E O L D B U D D I E S

M I N I H A M F E S T - S H O W A N D T E L L

DIRECTIONS TO THE ATCO FALL EVENT



From I-70 WEST Bound:
Take I-270 Northbound around and turning to the west to Cleveland Ave. Exit north onto Cleveland Ave and travel north about 2 miles to Executive Campus drive. (It's the next street past Westar Crossing Street). Turn left (west) to the ABB building at the end of the street.

From I-70 EAST Bound:
Take I-270 Northbound around and turning to the east past SR 315 and past I-71. Get off on the Cleveland Ave second exit and travel north (to Westerville). Continue north on Cleveland past Schrock Road and then past Main Street. Continue north about ½ mile past Main Street to Executive Campus Drive. (It's the next street past Westar Crossing Street) Turn left (west) to the ABB building at the end of the street

From I-71 NORTH bound toward Columbus:
Drive through Columbus on I-71 to I-270 on the north side. Take I-270 east to the first exit, Cleveland Ave. Get off the Cleveland Ave second exit and travel north (to Westerville). Continue north past Schrock Road and then past Main street. Continue north about ½ mile past Main Street to Executive Campus Drive. (It's the next street past Westar Crossing Street) Turn left (west) to the ABB building at the end of the street.

From I-71 traveling SOUTH bound toward Columbus (North of I-270):
Exit the Polaris Ave exit and travel east about 1 mile to Cleveland Ave. Turn right on Cleveland Ave to Executive Campus Drive. Turn right again on Executive Campus Drive. ABB is on the right side of the street about half way around the semi-circle.

This year we're going to combine an antenna party with the Fall Event. I will set up equipment by 9AM so we can measure antenna gain and patterns till about 12:30PM then take a break for lunch, meeting and door prizes. After that we can measure more antennas if needed. Bring your favorite 430, 1200 or 2400 MHz antenna for a gain and pattern check. (Pray for no rain!)

CONSTRUCTION ARTICLE INDEX

The following list is an index of all construction related material that has appeared in the ATCO Newsletter since its inception in the early '80's. This is a handy reference for that particular construction article that you knew existed but didn't want to wade through each issue to find it. All Newsletters below are also listed in order in the ATCO homepage under "Newsletters". Once you locate the Newsletter section, the displayed list can then be re-sorted as needed by clicking on the "date" in the header.
…Bob N8OCQ

Issue	Page(s)	Article
Vol 1 II	5	439 Beam
Vol 2 I	4	439 Beam
Vol 2 II	8,9	439 Parabolic Ant
Vol 2 II	9	Video Modulator
Vol 2 III	7	1296 Ant 45 Ele loop yagi
Vol 2 III	10	RF Power Indicator (in-line) for 1296 MHZ
Vol 2 SE	2,3	Diode Multiplier for 23 CM
Vol 2 SE	4,5	1296 MHZ 10 Watt Solid State Linear Amp
Vol 4 I	3	RF/Video Line Sampler
Vol 4 II	3	P-Unit Meter
Vol 4 II	7,10,11	UHF Gated Noise Source
Vol 4 II	12	420 – 450 Broom Handle Rhombic Ant
Vol 4 III	4,8	25 Element 1.26 Loop Yagi
Vol 4 IIII	6	Video Modulator (Tube Type)
Vol 5 I	3	Video Modulator One Transistor
Vol 5 II	4,7	900 MHZ Yagi Ant
Vol 5 II	6	Video Modulator for 2C39 Final
Vol 5 III	3	440 MHZ Hidden Transmitter Finder
Vol 6 I	3	Video Line Amp
Vol 6 I	8	25 Ele 910 MHz Loop Yagi
Vol 6 II	4,6,7	Microwave Oven ATV Xmiter
Vol 6 II	5	Matching a Quad Driven Ele
Vol 6 II	8	Power Divider for 33CM
Vol 9 IIII	5,7	16 Ele Loop Yagi for 439.25 MHz
Vol 10		No Articles
Vol 11 II	4,5,6	439 48 Ele Collinear Ant
Vol 11 IIII	7	1280 MHZ Cavity Filter
Vol 12 I	6,7,8	439 & 1200 Horz Polarized Mobile Ant
Vol 12 II	5,6,7	ATV Line Sampler
Vol 12 II	10	439 & 1280 Interdigital Filter(s)
Vol 12 III	6,7,8	439 Cheap Attic Ant
Vol 13 I	9, 10	High Level Modulator for ATV
Vol 13 II	5	VGA to NTSC Converter for Computer
Vol 13 III	9, 10	AM Video Modulator
Vol 13 IIII	4	1200 MHZ Transistor Linear Amp
Vol 13 IIII	6	900 & 1200 MHz Loop Yagis
Vol 14 IIII	8	439 31 EleYagi
Vol 14 IIII	12, 13	1250 MHZ FM ATV 3 Watt Xmiter
Vol 15 I	16	427.25 Horz J-Pole Ant
Vol 15 II	14	2400 MHZ Loop Yagi
Vol 15 III	8	Wavecom Modification
Vol 15 III	12,13,14	2.4 Gig Antenna's
Vol 16 II	20	2.4 Gig Helix Ant
Vol 16 IIII	4	1280 MHZ Loop Yagi
Vol 17 I	14, 15	Video Amp (Multi Output)
Vol 18		No Articles
Vol 19 IIII	4	Pwr Supply for 28 Volt Ant Relay
Vol 20 III	9, 10	Video Sampler
Vol 21 II	4	RF Pwr Amp for 900/1200 MHZ
Vol 21 II	14	10-14 Volt Doubler for 28 Volt Ant Relays
Vol 21 III	5	S-Video To Composite Adaptor
Vol 21 IIII	3,4	Video Noise Rejection Amp
Vol 21 IIII	14,15,16 ,17	"S" Meter For Comtech Boards
Vol 22 I		No Articles
Vol 22 II	10	1260 MHZ Cavity Filter
Vol 22 III		No Articles
Vol 22 IIII		No Articles
Vol 23 I		No Articles
Vol 23 II	5,6	Linear 60 Watt For 70CM
Vol 23 II	8,9	Video Modulator Update
Vol 23 III		No Articles
Vol 23 IIII		No Articles
Vol 24 I	13	RF Sniffer For 2.4 GIG
Vol 24 II		No Articles
Vol 24 III	3	Quantum 1500 Rec Tuner Mod
Vol 24 IIII	9	Battery Recharge Ckt
Vol 25 I		No Articles
Vol 25 II	6,7	Comtech TX Module Improvement
Vol 25 III	11	Comtech TX Module Improvement Correction
Vol 26 I	6	Isolator (Circulator) Modification 850 To 1260 MHz
Vol 26 II	5,6	Comtech 1200 MHz receive module improvements
Vol 26 III		No Articles

This is the complete list for construction articles shown in past ATCO newsletters. The page numbers listed may not match the actual page in the newsletter. They are the number shown in the PDF file. Some issues are missing, Art did not have a Copy of every year. This list is complete through Vol 26 III.
…Bob N8OCQ

LOCAL HAMFEST SCHEDULE

This section is reserved for upcoming hamfests. They are limited to Ohio and vicinity easily accessible in one day. Anyone aware of an event incorrectly or not listed here; notify me so it can be corrected. This list will be amended, as further information becomes available. …WA8RMC.

1 Nov 2009 Massillon Amateur Radio Club http://www.marcradio.org Talk-In: 147.18/.78 Contact: Dan Anastis, N8DZM 4770 12th Street SW Canton, OH 44710 Phone: 330-478-6149 Email: ddann@sbcglobal.net Massillon, OH Massillon Boys and Girls Club Complex 730 Duncan Street SW

7 Nov 2009 Grant Amateur Radio Club http://www.garcohio.net/ Talk-In: 146.730- (tone will be off) Contact: Rodney Crawford, WD8CTX 2585 State Route 138 Sardinia, OH 45171 Phone: 937-446-2338 Fax: 937-446-2338 Email: wd8ctx@juno.com Georgetown, OH ABCAP Building 406 West Plum Street

14-15 Nov 2009 Indiana State Convention (Fort Wayne Hamfest & Computer Expo) Allen County Amateur Radio Technical Society http://www.fortwaynehamfest.com Talk-In: 146.880(-) Contact: James D. Boyer, KB9IH PO Box 10342 Fort Wayne, IN 46851-0342 Phone: 260-579-2196 Email: chairman@fortwaynehamfest.com Fort Wayne, IN Allen County War Memorial Coliseum 4000 Parnell Avenue

17 Jan 2010 Sunday Creek Amateur Radio Federation Talk-In: 147.150 or 147.225 Contact: Jeramy Duncan, KC8QDQ 10847 Walnut Street Glouster, OH 45732 Phone: 740-767-2554 Email: jeramy_duncan30@yahoo.com Nelsonville, OH Tri-County Vocational School 15676 State Route 691

31 Jan 2010 Tusco Amateur Radio Club (W8ZX) http://tuscoarc.org Talk-In: 146.730 Contact: Kyle Quillen, KD8HDJ 518 Fair Avenue NW New Philadelphia, OH 44663 Phone: 888-447-2403 Email: hamfest@tuscoarc.org Strasburg, OH Wallick Auction House 965 North Wooster Avenue

14 Feb 2010 Mansfield Mid-Winter Hamfest & Computer Show InterCity Amateur Radio Club http://www.w8we.org/hamfest.htm Talk-In: 146.940/71.9 Contact: Dean Wrasse, KB8MG 1094 Beal Road Mansfield, OH 44905 Phone: 419-589-2415 (1-7 PM please) Email: metal07man@yahoo.com Mansfield, OH Richland County Fairgrounds 750 North Home Road

18 Apr 2010 56th Annual Hamfest, Electronics, and Computer Show Cuyahoga Falls Amateur Radio Club http://www.cfarc.org/hamfest2010.html Talk-In: 147.27 Contact: Ted Sarah, W8TTS 239 Bermont Avenue Munroe Falls, OH 44262 Phone: 330-688-2013 Email: w8tts@w8tts.com Cuyahoga Falls, OH Emidio & Sons Party Center 48 East Bath Road

NEW MEMBER(S)

Let's welcome the new members to our group! If any of you know anyone who might be interested, let one of us know so we can flood him or her with information. New members are our group's lifeblood. It's important that we actively recruit new faces aggressively.

N9CX Bill Erwin Gahanna, Ohio.

…WA8RMC

INTERNET ATV HOME PAGES (list verified 10/08/09)

Domestic homepages

http://www.atco.tv	Ohio, Columbus, homepage (ATCO)
http://www.w8bi.org/atv/atvresources.html	Ohio, Dayton ATV group (DARA)
http://www.citynight.com/atv	California, San Francisco ATV
http://atn-tv.org/ATN.htm	California, Amateur Television Network in Central / Southern
http://members.tripod.com/silatvg	Illinois, Southern, Amateur Television group
http://www.ussc.com/~uarc/utah_atv/id_atv1.html	Idaho ATV
www.bratsatv.org.	Maryland, Baltimore Radio Amateur Television Soc. (BRATS)
www.qsl.net/k7atv/	Salem, Oregon Amateur Television Associations-Salem
http://www.qsl.net/kd2bd/atv.html	New Jersey, Brookdale ARC in Lincroft
http://www.ipass.net/~teara/menu3.html	North Carolina, Triangle Radio Club (TEARA)
http://www.oregonatv.org	Oregon, Portland OATVA Oregon Amateur TV Association
?	Pennsylvania, Pittsburg Amateur Television
http://members.bellatlantic.net/~theojkat/	Pennsylvania, Phila. Area ATV
?	Texas, Houston ATV (HATS)
http://www.hotarc.org/atv.html	Texas, WACO Amateur TV Society (WATS)
?	Utah ATV
www.qsl.net/ww7ats	Washington, Western Washington Television Soc. (WWATS)
http://www.shopstop.net/bats/	Wisconsin, Badgerland Amateur Television Society (BATS)

Foreign homepages

http://atv.hamradio.si	Slovenia ATV **(BEST OF FOREIGN ATV HOMEPAGES)**
http://www.batc.tv.	British ATV club (BATC)
http://www.cq-tv.com	British ATV Club and CQ-TV Magazine
http://oh3tr.ele.tut.fi/english/atvindex.html	Finland ATV, OH3TR repeater.
http://www.darc.de/distrikte/g/T_ATV/atv.htm	German ATV

Misc other ATV related sites

http://www.atv-tv.org	The Amateur Television Directory
http://www.atn-tv.org	Amateur Television Network
http://www.atvquarterly.com	Amateur Television Quarterly Magazine
http://gb3lo.camstreams.com	"GB3LO" Repeater Camstream westoft, UK
http://www.ham-radio.com/sbms	"SBMS" San Bernardino Microwave Society
http://www.qsl.net/kc6ccc/	“METS" Microwave Experimenters Television System

TUESDAY NITE NET ON 147.48 MHz SIMPLEX

Every Tuesday night @ 9:00PM WA8RMC hosts a net for the purpose of ATV topic discussion. There is no need to belong to the club to participate, only a genuine interest in ATV. All are invited. For those who check in, the general rules are as follows: Out-of-town and video check-ins have priority. A list of available check-ins is taken first then a roundtable discussion is hosted by WA8RMC. After all participants have been heard, WA8RMC will give status and news if any. Then a second round follows with periodic checks for late check-ins. We rarely chat for more than an hour so please join us if you can.

ATCO TREASURER'S REPORT - de N8NT

OPENING BALANCE (07/20/09)…….$1532.19
RECEIPTS(dues)……. $ 10.00
Anonymous Donation……$ 250.00
Paypal expenses……$ (0.59)
Internet domain name fee…… $ (29.99)
Flowers for K8VKA……$ (62.91)
CLOSING BALANCE (10/10/09)……$ 1698.70

ATCO REPEATER TECHNICAL DATA SUMMARY

Location: Downtown Columbus, Ohio
Coordinates: 82 degrees 59 minutes 53 seconds (longitude) 39 degrees 57 minutes 45 seconds (latitude)
Elevation: 630 feet above average street level (1460 feet above sea level)
TV Transmitters: 427.25 MHz AM mod,, 1260 MHz FM mod,, 1245 MHz QPSK digital, 2433 MHz FM mod, and 10.350 GHz FM mod.
multipole filters in output line of 427.25, 1245, 1260 , 2433 and 10.35 transmitters
Output Power - 427.25 MHz :50 watts average 100 watts sync tip
1260 MHz: 30 watts continuous (Analog ATV)
1245 MHz 10 watts continuous (DVB-S digital ATV - 2 channels)
2433 MHz: 15 watts continuous
10.350 GHz 1 watt continuous
Link transmitter - 446.350 MHz 5 watts NBFM 5 kHz audio
Identification: 427, 1245, 1260, 2433, 10.35 GHz xmitters video identify every 30 min. with ATCO & WR8ATV on 4 different screens
1245 MHz & 10.35 GHz - Continuous transmission of ATCO & WR8ATV with no input signal present
Transmit antennas: 427.25 MHz - Dual slot horizontally polarized "omni" 7 dBd gain major lobe east/west, 5dBd gain north/south
1260 MHz - Diamond vertically polarized 12 dBd gain omni (Analog ATV)
1245 MHz - Diamond vertically polarized 12 dBd gain omni (Digital DVB-S ATV)
2433 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni
10.350 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni
Receivers: 147.48 MHz - F1 audio input with touch tone control
439.25 MHz - A5 video input with FM subcarrier audio (**lower sideband**)
449.975 MHz - F1 audio input aux touch tone control
1280 MHz - F5 video input or DVB-S digital (digital input fed direct to 1245 MHz digital output channel 2)
2398 MHz - F5 video input
10.350 GHz - F5 video input (future – not installed yet)
Receive antennas: 147.48 MHz - Vert. polar. Hustler G6-270R 6dBd dual band (also used for 446.350 MHz output)
439.25 MHz - Horiz. polar. dual slot 7 dBd gain major lobe west
1280 MHz - Diamond vertically polarized 13 dBd gain omni
2398 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni
10.450 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni (not installed yet)

Input control:

Touch Tone	Result (if third digit is * function turns ON, if it is # function turns OFF)
00*	turn transmitters **on** (enter manual mode-keeps xmitters on till 00# sequence is pressed)
00#	turn transmitters **off** (exit manual mode and return to auto scan mode)
264	Select Channel 4 Doppler radar. (Stays up for 5 minutes) Select # to shut down before timeout.
697	Select Time Warner radar. (Stays up till turned off). Select # to shut down.

Manual mode functions:

00* then 1 for Ch. 1 Select 439.25 receiver
00* then 2 for Ch. 2 Unused at this time
00* then 3 for Ch. 3 Select 1280 receiver
00* then 4 for Ch. 4 Select 2411 receiver
00* then 5 for Ch. 5 Select video ID (the 4 identification screens)

01* or 01#	Channel 1 439.25 MHz scan enable (hit 01* to scan this channel & 01# to disable it)
02* or 02#	Channel 2 (not in use at this time)
03* or 03#	Channel 3 1280 MHz scan enable
04* or 04#	Channel 4 2398 MHz & camera video scan enable
A1* or A1#	Manual mode select of 439.25 receiver audio
A2* or A2#	Unused channel at this time
A3* or A3#	Manual mode select of 1280 receiver audio
A4* or A4#	Manual mode select of 2398 receiver audio
C0* or C0#	Beacon mode – transmit ID for twenty seconds every ten minutes
C1* or C1#	unused at this time
C2* or C2#	unused at this time

ATCO MEMBERS AS OF October 10, 2009

Call	Name	Address	City	St	Zip	Phone	URL
KD8ACU	Robert Vieth	3180 North Star Rd	Upper Arlington	OH	43221	614-457-9511	rfvieth@yahoo.com
KC3AM	Dave Stepnowski	735 W Birchtree Ln	Claymont	DE	19703		kc3am@verizon.net
W8ARE	Larry Meredith III	6070 Langton Circle	Westerville	OH	43082-8964		lcmeredith@prodigy.net
KC8ASD	Bud Nichols	3200 Walker Rd	Hilliard	OH	43026	614-876-6135	kc8asd2@netzero.com
KC8ASF	Tom Pallone	3437 Dresden St.	Columbus	OH	43224	614-268-4873	kc8asf@sbcglobal.net
KC8BTX	Dudley Field	357 N. Ridge Heights Dr	Howard	OH	43028		kc8btx@37.com
W6CDR	Wynn Rollert	1141 Pursell Ave	Dayton	OH	45420	937-256-1772	w6cdr@hotmail.com
WB8CJW	Dale & Sharon Elshoff	8904 Winoak Pl	Powell	OH	43065	614-210-0551	delshoff@columbus.rr.com
N8COO	C Mark Cring	3941 Three Rivers Lane	Groveport	OH	43125	614-836-2521	cmarkcring@gmail.com
N8CXI	Garry Cotter	2367 Northglen Drive	Columbus	OH	43224		gjcotter@aol.com
WB8CXO	Mike Young	289 Gaylord Drive	Munroe Falls	OH	44682		
N9CX	Bill Erwin	231 Gateside Ct.	Gahanna	OH	43230		werwin@columbus.rr.com
WA2CZD	Jim Gilbert	1204 Aspen Pines Drive	Wilder	KY	41071-0404		jgilbert@fox19.com
N3DC	William Thompson	6327 Kilmer St	Cheverly	MD	20785		
N3DGE	Mike Trachtenberg	3777 Lankenau Avenue	Philadelphia,	PA	19131-2816		mikect@verizon.net
WA8DNI	John Busic	2700 Bixby Road	Groveport	OH	43125	614-491-8198	jabusic@yahoo.com
W8DMR	Bill Parker	2738 Florbunda Dr	Columbus	OH	43209		w8dmratv@copper.net
K8DW	Dave Wagner	2045 Maginnis Rd	Oregon	OH	42616	419-691-1625	
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	OH	43026	614-876-6033	MHZ52525@aol.com
KC8EVR	Lester Broadie	108 N Burgess	Columbus	OH	43204		kc8evr@beol.net
N8FRT	Tom Flanagan	1751 N Eastfield Dr.	Columbus	OH	43223		chuck78@wowway.com
WA8FLY	Rod Shaner	16012 London Rd.	Orient	OH	43146	740-279-3614	wa8fly@copper.net
W8FZ	Fred Stutske	8737 Ashford Lane	Pickerington	OH	43147		w8fz@arrl.net
KB8GHW	Mike Amirault	11354 Reussner Dr SW	Pataskala	OH	43062	740-927-5005	kb8ghw@ee.net
WA8HFK,KC8HIP	Frank, Pat Amore	3630 Dayspring Dr	Hilliard	OH	43026	614-777-4621	famore@wowway.com
W4HTB	Henry Cantrell	905 Wrenwood Dr.	Bowling Green	KY	42103	270-781-9624	w4htb@insightbb.com
WG8I	Chris Vojsak Sr,	3536 W Henderson Rd	Columbus	OH	43220-2232	614-203-6000	wg8i.ham@gmail.com
WB2IIR	Michael Anthony	370 Georgia Drive	Brick	NJ	08723		
N8IJ	Dick Knowles	1799 Homeward Ave	Lima	OH	45805		rgrant2001@yahoo.com
KD8JLO	David Nulter	510 Millag Drive	Sunbury	OH	43074	614-579-6425	davnul@wideopennetworks.com
K8KDR,KC8NKB	Matt & Nancy Gilbert	5167 Drumcliff Ct.	Columbus	OH	43221-5207	614-771-7259	k8kdr@arrl.net
W8KHW	Kevin Walsh	2396 Anson St	Columbus	OH	43220	614-442-7748	kwalsh@datrix.com
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	OH	45331	937-548-2492	walkingcross@bright.net
N8LRG	Phillip Humphries	3226 Deerpath Drive	Grove City	OH	43123	614-871-0751	phumphries@columbus.rr.com
WB8LGA	Charles Beener	2540 State Route 61	Marengo	OH	43334		cbeener@columbus.rr.com
KA8LWR	Mel Alberty	1645 Olentangy Road	Bucyrus	OH	44820	419-468-2971	malberty@columbus.rr.com
W8MA	Phil Morrison	154 Llewellyn Ave	Westerville	OH	43081		w8ma@arrl.net
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	OH	45660		ka8mid@qsl.net
W0MNE	Mike Doty	4300 Winchester Southern Rd	Circleville	OH	43113	740-420-9060	mcubed2@hughes.net
N8NT	Bob Tournoux	3569 Oarlock Ct	Hilliard	OH	43026	614-876-2127	n8nt@atco.tv
WD8OBT	Tom Camm	63 Goings Lane	Reynoldsburg	OH	43068	740-964-6881	mitchellb25@netzero.com
WU8O	Tom Walter	15704 St Rt 161 West	Plain City	OH	43064	614-733-0722	wu8o@emec.us
N8OCQ	Bob Hodge Sr.	3750 Dort Place	Columbus	OH	43227-2022		hodgerob@yahoo.com
KB8OFF	Jess Nicely	742 Carlisle Ave	Dayton	OH	45410		kb8off@sbcglobal.net
W6ORG,WB6YSS	Tom & Maryann O'Hara	2522 Paxson Lane	Arcadia	CA	91007-8537	626-447-4565	w6org@ arrl.net
KC8OZV	George Biundo	3675 Inverary Drive	Columbus	OH	43228	614-274-7261	george@biundo.org
W8PU	Gary Poland	3347 State Route 28	Midland	OH	45148		gpoland1@cinci.rr.com
K2PMS	Paul Schmitter	57 East Main Street	Springville	NY	14141		pschmitter@roadrunner.com
KE8PN	James Easley	1507 Michigan Ave	Columbus	OH	43201	614-421-1492	jeasley11@hotmail.com
W8PU	Gary Poland	3347 S.R. 28	Midland	OH	45148		gpoland1@cinci.rr.com
KC8QJR	Adam Burley	1796 Queensbridge Drive	Columbus	OH	43235	614-886-2326	adam@digitalcave.org
W3RCJ	Thomas Farrell	1912 Burnwood Road	Baltimore	MD	21239		w3rcj@operamail.com
WA8RMC	Art Towslee	180 Fairdale Ave	Westerville	OH	43081	614-891-9273	towslee1@ee.net
W8RRF	Paul Zangmeister	10365 Salem Church Rd	Canal Winchester	OH	43110		w8rrf@copper.net
W8RRJ	John Hull	580 E. Walnut St.	Westerville	OH	43081	614-882-6527	jhull@wcmi.org
W8RUT,N8KCB	Ken & Chris Morris	3181 Gerbert Rd	Columbus	OH	43224	614-261-8583	w8rut@aol.com
W8RVH	Richard Goode	9391 Ballentine Rd	New Carlisle	OH	45334	937-964-1185	w8rvh@ctcn.net
W8RQI	Ray Zeh	2263 Heysler Rd	Toledo	OH	43617		zehrw@glasscity.net
KB8RVI	David Jenkins	1941 Red Forest Lane	Galloway	OH	43119	614-878-0575	kb8rvi@hotmail.com
W8RWR	Bob Rector	135 S. Algonquin Ave	Columbus	OH	43204-1904	614-276-1689	w8rwr@sbcglobal.net
W8RXX,KA8IWB	John & Laura Perone	3477 Africa Road	Galena	OH	43021	740-548-7707	jper@insight.rr.com
W8SJQ	Rocky Eramo	795 Riverbend Ave	Powell	OH	43065	614-207-2740	rockyeramo@aol.com
W8SJV, KA8LTG	John & Linda Beal	5001 State Rt. 37 East	Delaware	OH	43015	740-369-5856	w8sjv@nexgenaccess.com
KB8SSH	Mike Cotts	3424 Homecroft Dr	Columbus	OH	43224	614-371-7380	mcotts@wideopenwest.com
W3SST	John Shaffer	1635 Haft Dr.	Reynoldsburg	OH	43068	614-751-0029	w3sst@juno.com
K8TPY, K8FRB	Jeff & Dianna Patton	3886 Agler Road	Columbus	OH	43219		cqcqk8tpy@yahoo.com
NR8TV	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123	937-981-1392	s.crew@in-touch.net
KB8UGH	Steve Caruso	6463 Blacks Rd. SW	Pataskala	OH	43062-7756		dael4@columbus.rr.com
WB8UGV	Bruce Jaquish	22375 Montanna Drive	Lawrenceburg	IN	47025-7447	812-637-3805	brucewb8ugv@comcast.net
W8URI	William Heiden	5898 Township Rd #103	Mount Gilead	OH	43338	419-947-1121	wb8uri@earthlink.net
KB8UWI	Milton McFarland	115 N. Walnut St.	New Castle	PA	16101		kb8uwi@yahoo.com

Call	Name	Address	City	St	Zip	Phone	URL
WA8UZP	James R. Reed	818 Northwest Blvd	Columbus	OH	43212	614-297-1328	wa8uzp@yahoo.com
K8VKA	Ed Schleppi	5900 Bowen Rd	Canal Winchester	OH	43110		ejs@comtech-ohio.com
N8WAC	Tony Everhardt	6512 Emch Road	Walbridge	OH	43465	419-666-5178	natewac@aol.com
KB8WBK	David Hunter	45 Sheppard Dr	Pataskala	OH	43062	740-927-3883	hiram@hiramhunter.com
KC8WRI	Tom Bloomer	PO Box 595	Grove City	OH	43123		ohiomec@aol.com
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	OH	43224-3011		sdiggs1@insight.rr.com
N8XYJ	Dan Baughman	4269 Hanging Rock Ct.	Gahanna	OH	43230		danohio@wowway.com
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	OH	43064		kb8ymq@aol.com
KC8YPD	Joe Ebright	3497 Ontario St	Columbus	OH	43224		----------
N8YZ	DaveTkach	2063 Torchwood Loop S	Columbus	OH	43229	614-882-0771	n8yz@amsat.org
K3ZKO	Ron Cohen	915 Rowland Ave	Cheltenham	PA	19012	215-828-1263	k3zko@verizon.net
KA8ZNY,N8OOY	Tom & Cheryl Taft	386 Cherry Street	Groveport	OH	43125	614-202-9042	ttaft@columbus.rr.com

ATCO MEMBERSHIP INFORMATION

Membership in ATCO (Amateur Television in Central Ohio) is open to any licensed radio amateur who has an interest in amateur television. The annual dues are $10.00 per person payable on January 1 of each year. Additional members within an immediate family and at the same address are included at no extra cost.

ATCO publishes this newsletter quarterly in January, April, July, and October. It is sent to each member without additional cost.

The membership period is from January 1ST to December 31ST. New Members will receive all ATCO newsletters published during the current year prior to the date they join ATCO. For example, a new member joining in June will receive the January and April issues in addition to the July and October issues. As an option for those joining after mid July, they can elect to receive a complementary October issue with the membership commencing the following year Your support of ATCO is welcomed and encouraged.

NOTE: Dues records on your individual portion of the ATCO website are listed as the date money is received and shows due one year from that date. The actual expiration is on January of the following year so we can keep the dues clock consistent with the beginning of each year.

ATCO CLUB OFFICERS

President: Art Towslee WA8RMC
V. President: Ken Morris W8RUT
Treasurer: Bob Tournoux N8NT
Secretary: Frank Amore WA8HFK
Corporate trustees: Same as officers

Repeater trustees: Art Towslee WA8RMC
Ken Morris W8RUT
Dale Elshoff WB8CJW
Statutory agent: Frank Amore WA8HFK
Newsletter editor: Art Towslee WA8RMC

ATCO MEMBERSHIP APPLICATION

RENEWAL ○ NEW MEMBER ○ DATE _____
CALL _____
OK TO PUBLISH PHONE # IN NEWSLETTER YES ○ NO ○
HOME PHONE _____
NAME _____
INTERNET Email ADDRESS _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____-_____
FCC LICENSED OPERATORS IN THE IMMEDIATE FAMILY
_____
COMMENTS _____
_____
_____
ANNUAL DUES PAYMENT OF $10.00 ENCLOSED CHECK ○ MONEY ORDER ○

Make check payable to ATCO or Bob Tournoux & mail to: Bob Tournoux N8NT 3569 Oarlock CT Hilliard, Ohio 43026. Or, if you prefer, pay dues via the Internet with your credit card. Go to www.atco.tv and fill out the “pay dues” section. Alternately, you can use the ATCO web site www.atco.tv/PayDues.aspx directly. Payment is made through "PayPal" but you DO NOT need to join PayPal to send your dues. Simply DO NOT fill out the password details and there will be no “PayPal” involvement.

ATCO Newsletter
c/o Art Towslee-WA8RMC
180 Fairdale Ave
Westerville, Ohio 43081

FIRST CLASS MAIL

REMEMBER...CLUB DUES ARE NEEDED.
CHECK THE RIGHT CORNER OF THE MAILING LABEL
OR
MEMBERS PAGE OF ATCO WEBSITE FOR THE EXPIRATION DATE.
SEND N8NT A CHECK OR USE PAYPAL IF EXPIRED.