

# ATCO NEWSLETTER

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VOLUME 26 NUMBER 1

January 2009

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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)*  
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## ATCO SPOTLIGHT TOPIC

OK, here's another contest idea. I'd like to see an antenna/tower picture from each of you. When I get them all, I'll list them in a future Newsletter so you can judge the best (or most creative)! You don't have to be local; those of you that live out of state are also eligible. I'm hoping for a wide variety of antenna types so I think it would be interesting to see what everyone has. Even if you send and receive with rabbit ears, I'd like to see that too. How about it? To start, I'll submit my antenna and tower below. We'll come up with a prize or award later.  
...WA8RMC



## ACTIVITIES ... from my “workbench”



Hello again ATVers! Well, I should have started The Newsletter way before this because I now have time but procrastination got in the way. It's like this, my wife has been on my case for a couple of weeks before Christmas to put up the Christmas lights. So I finally put them up and now she isn't talking to me. See picture at right. (I even plugged them in). Therefore I could have Started the Newsletter earlier but NO, I had to put it off. Now it's January and I'm in rush mode again. Will I ever learn?



There have been some issues at the repeater lately but all are fixed now. The 1260MHz 50 watt amp decided it was on the air too long (since 1997) and requested help to boost the now 5 watts output back up to about 50. I took my spare 10 watt amp there to replace it while I troubleshot the problem. After some testing, I concluded that one of the (4) MH67762 Mitsubishi bricks was dead. This brick amp is obsolete now but still available at RF Parts for about \$100 so I thought about it for a while. I then decided to recover my 10 watt amp, remove the single MH67762 brick in it and put it in the 50 watt amp leaving my amp without a final stage. As it turned out, the 3 watts output driver stage is sufficient to operate through the repeater P5 so I may leave it as is. If I DO decide to boost the output, I will probably rework the circuit to accommodate the newer LDMOS brick amps now available for about \$50.

In any case, back to the 50 watt amp. After brick replacement, the amp is now outputting 50 watts again. In the replacement process, I checked all components thoroughly to find a corroded wire connection to one of the Wilkinson hybrid networks inside connecting the paralleled bricks. It had been arcing. I concluded that if the SWR was high enough, the connection would be temperature stressed and fail thereby damaging the brick. This condition is possible with a very weak incoming signal containing mostly noise and increased bandwidth signal. The bandwidth extremes are attenuated by the output filter so the signal doesn't get transmitted but guess what? They now get reflected back to the transmitter where it then is dissipated as heat. Voila, a possible reason for the bad brick. The message here is ALWAYS INCLUDE AN ISOLATOR in the output line between the transmitter and filter. See my article on this on later pages. The isolator (sometimes called a circulator) is a “one way gate” where the signal passes through it with little loss (0.3dB here) going toward the antenna but is diverted out a third port when going the other way. Therefore all energy coming back from the filter is diverted through that third port and into a dummy load. The same thing is true if the antenna becomes disconnected or damaged. I now have an isolator in the line and the SWR is now 1:1 at the transmitter as expected even when I disconnect the antenna. I learned the hard way! The reported signal now is much better too.

Also, the 10 GHz transmitter is back on the air. It has been off the air since last summer but I haven't had the time to troubleshoot it. Since the entire transmitter is mounted in a stainless weatherproof enclosure close to the antenna and fed with waveguide, I figured I would have to remove the whole thing and take it home to find the problem so I left it go till other things were operational. As it turned out, it was extremely simple to fix. I apparently unplugged the lightning protection box feeding power and other signals to it while working on something else and forgot to plug it back in again. So now the 10 gig signal is alive and well again! Sorry folks.

Next on the list is to re-work my 427 driver module so I can operate the Comark 100 watt 427 amplifier. This project has been in limbo for a number of years now and finally getting done. When complete, we'll have a true vestigial sideband 427MHz 100 watt transmitter on the air! Then I can retire the D1010 Mirage amp of which it so rightly deserves. (Don't use a Mirage for repeater service if you can avoid it)! More details on the Comark amp when it's up and running at the repeater but works fine on my bench. I've been working with the DARA group in Dayton for they just bought a Comark amp for their system also.

Last but not least are the Comtech boards. I finally got my custom software correctly running so if anyone needs their 1200 MHz Comtech board retuned to 1260MHz, you can do it now. Let me know. I re-worked the software to be able to use the less expensive 16F628A pic so it makes it cheaper to convert. The original pic IC is now obsolete so the ones still available are rather expensive. The new software makes the DIP switch selections the same as the boards that used to be available from Giles, G1MFG. Also, I found the temperature problem with the 1200 transmit boards. I won't go into detail here but will write it up and will appear in the winter issue of ATVQ. It involves changing a resistor and capacitor inside the module can so it isn't easy to get to.

That's about it for this time guys except to challenge you to come up with a “NEAT Hamshack” picture. Last time we had a “MESSY hamshack” contest so it is only natural now to give those of us that are NEAT a chance. Are there any? I think there ARE so send me your “NEATEST HAMSHACK” picture and I'll post it for all to see. The neatest one will get a year ATCO membership free. How about it? ...73, WA8RMC



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## **EMPIRE STATE BUILDING GETS NEW BROADCAST BOSS**

Broadcast pioneer Shane O'Donoghue has been appointed director of broadcasting for the Empire State Building, the site of transmitters for every major broadcast station in New York City.

The 102-story tower, completed in the 1930s, also boasts the largest FM combiner system in the Western Hemisphere.

“Joining the iconic Empire State Building is definitely the high point of my diverse career in broadcasting,” said O'Donoghue. “It's an exciting time to be a part of the team, as we renovate and upgrade the ESB's broadcast capabilities and identify the potential growth areas for this business.”

O'Donoghue will be responsible for increasing and strengthening the building's position as the leading broadcast facility in the region.

“The Empire State Building continues to be an industry leader in radio and television broadcasting in New York City—the media center of the world,” said James T. Connors, the building's general manager. “As such, we needed a broadcast director to join our team that could lead the building to meet its business goals and provide top-notch services for our broadcast tenants. We are confident that Shane will take ESB broadcasting to the next level.”

O'Donoghue was working at ODA Consulting Inc., where he served for more than nine years as President, consulting for a range of broadcast, cable and satellite networks.

Prior to that, he served as vice president for technical services and quality assurance for CBS Television Network.  
...from TV Technology Magazine 11/21/08

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## **DATV FROM SPACE - YOUR HELP NEEDED**

An email from Graham G3VZV:

A meeting of the ARCOL (Amateur Radio on Columbus) team was held last month in Belgium to further develop the plans and specifications for the amateur radio equipment to be installed in the Columbus module of the ISS.

The Columbus module was delivered to the ISS early this year and has two dual band L/S antennas already installed on the outside. In addition there are plans for the installation of two additional VHF/UHF dual band antennas during a spacewalk in mid to late 2009.

These new antennas would provide even greater flexibility for ARCOL operations but the main focus of the planning team remains to incorporate a digital video downlink and possibly some form of video uplink capability as well.

There are tremendous constraints on what can be done, the mass, power consumption and thermal dissipation will have to be very small. However the intent is to provide a system which astronauts could use whilst making their schools contacts (these are currently voice only affairs!) and which could be used by individual radio amateurs at other times.

With the mass and power limitations comes the challenge of the link budget...how big an antenna would be needed on the ground? It looks likely that the video will have to be restricted to 200-400kB data rate but that is still conjecture.

What is REALLY needed at this moment is an injection of fresh ideas and equipment designs from additional ATV experts in this field.

There are further meetings planned with ESA for early next year but if you are interested in becoming part of the ARCOL team and contributing towards the future of ATV in space please contact me in the first instance!

[http://www.esa.int/esa-mm/mmg.pl?b=b&type=I&mission=Columbus%20Mission%20\(Astronaut%20Eyharts%20and%20Schlegel\)&single=y&start=3&size=b](http://www.esa.int/esa-mm/mmg.pl?b=b&type=I&mission=Columbus%20Mission%20(Astronaut%20Eyharts%20and%20Schlegel)&single=y&start=3&size=b)

...Graham Shirville G3VZV g3vzv-at-amsat.org

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## AMATEUR TELEVISION QUARTERLY - [www.ATVQuarterly.com](http://www.ATVQuarterly.com)

Dear ATVQ subscribers, contributing editors, (advertisers were notified by a separate email). The following is a quote taken from a portion of the letter Gene prepared for the advertisers.

"It is time for a new publisher for ATVQ. I was diagnosed on January 3rd 2008 with ALS (Lou Gehrig's disease). I have lost a fair amount of strength in my left leg and left arm but getting weak on my right side as well, my speech is slurred at times (Shari can only understand 10% I say, again when I get tired it is worse.

I have chosen Bill Brown, WB8ELK and Mike Collis WA6SVT as the replacement team. Bill will handle the layout and Mike will handle subscriptions. The actual date of transfer will be on December 1, 2008. Thanks for your support all these last 10 years; I hope you will support the new guys as well.  
Regards, Gene Harlan - WB9MMM"

Bill and Mike have a long history with ATVQ from the start. Currently we have been contributing editors and helping at the ATVQ booth at the Dayton Hamvention. We both pledge to keep ATVQ the leading ATV publication. Our new website is [www.ATVQuarterly.com](http://www.ATVQuarterly.com) and our contact information is located there. We wish to thank Gene for all his hard work over the many years publishing ATVQ. The current schedule of ATVQ will be continued so look forward to the winter issue.

A sad addendum, we were just notified that Gene Harlan passed away Wednesday November 26, 2008, he will be sorely missed. Mike will be traveling to the Harlans' December 1st as originally planned to help Shari (Gene's wife) with the transfer.

Thank you for your support of ATVQ.  
...73's Bill and Mike

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## NXP SET TO SAMPLE SINGLE-CHIP LCD-TV PLATFORM

LONDON — NXP Semiconductors will start sampling early next year a single chip LCD TV platform that integrates the company's ground-breaking PNX85500 digital TV processor, its proprietary Motion Accurate Picture Processing (MAPP2) technology and hybrid silicon tuner.

NXP (Eindhoven, the Netherlands) says the TV550 platform will allow mid range TV manufacturers to achieve high definition TV features and internet capability so far restricted to high-end sets.

The device also features DVB-T, MPEG4/H.264 decode, HDMI reception and decoding of digital SD and HD content, as well as Ethernet and CI+ security capabilities for the delivery of IP TV content.

The company suggests the integrated platform will allow TV manufacturers to widen the availability of high-end features including LED (2D) sectional backlight dimming, guaranteeing optimum contrast and up to 50 percent lower power consumption in digital TV processing. It says the MAPP2 removes the visible halo effect in motion pictures with technologies as frame rate conversion, movie judder cancellation, motion sharpness and vivid color management.

Production-ready reference designs based on the TV550 will, NXP says, speed manufacturers' development and significantly reduce bill-of-materials

.... [John Walko EE Times Europe](#) (12/04/2008 8:09 AM EST)

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# RADIO SHACK DIGITAL TV RECEIVER DETAILS

## Accurian™ 7 Portable Handheld TV



Model: 16-454  
Catalog #: 16-454  
\$199.99

Featuring a 7" widescreen LCD display, this portable TV delivers high-quality images that you can take with you anywhere. Its slender design makes it super portable, and a built-in NTSC/ATSC TV tuner lets you enjoy over-the-air analog and digital TV broadcasts.

- Large 7" widescreen LCD with 16:9 aspect ratio delivers crisp, clear TV images
- Built in NTSC/ATSC tuner so you can receive both analog and digital over-the-air TV signals
- A/V input let's you connect other external audio and video sources
- Built-in rod antenna lets you reposition it easily for the best reception possible

### What's in the box

- Accurian 7" Portable Handheld TV
- Remote control with battery
- Audio/Video Cable
- AC adapter
- Car power adapter
- L shaped F connector
- User's guide

**Product Rating:** *Here is the first portable digital TV receiver that I've seen but no doubt there will be more in the near future. I'd like to know and more details from some of you if you were lucky enough to get one for Christmas. I have been told that this one is, "A piece of junk". However, I don't know under what circumstances that statement was made. One suggestion was that the analog tuner is poor and subject to overload. This may be true but after February, it won't matter. In addition, if we want to also use it for ATV, we'd probably put a preamp in front of it so again, it doesn't matter. In any case, it probably is a good choice but do we HAVE a choice at this point? The price seems to me to be on the high side that I'm sure will come down after more receivers show up. My guess is that the leveling off price point is around \$100 to \$130 by the later part of this year. We'll see!*

*About 2 months ago I saw a 7" portable ATSC receiver on the internet selling for \$150. I can't find it now so who knows what happened there. I guess we'll just have to be patient.*

... WA8RMC

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## ATV Google Map Update

A number of people were having problems using the ATV Map. Charles, WB8LGA, has added features that you should check out. Charles explains in part as follows. If you have never visited Charles' website and his ATV map you need to give it a look. Also, if you are new to ATV and looking for others in your area it's a great place to start. Great Job Charles.

*"I changed my Help page for the ATV Map. On the second line of text on the ATV map page there is text help. If you click on that text it will take you the Help Page or just click on <http://home.roadrunner.com/~cbeener/index.html>. It has pictures and text to help in the use of my Map Page. Hope this helps.*

The Fastscan ATV Google map: <http://home.roadrunner.com/~cbeener/GMapATVQ.html>

...Charles Beener  
WB8LGA

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## CONGRESS APPROVES ANALOG EXTENSION

President Bush signed the Rockefeller-Capps S.3663 bill so it looks like analog full-power TV broadcasting may *not* end on Feb. 17, 2009. The bill does not allow the continuation of commercial broadcasting but only information as to how to convert to the digital signal. So if you tune in after Feb 17, all you will see on the over the air signal is a "how to convert to digital" and emergency messaging. At this time it is a voluntary requirement and not mandatory.

"Coupled with our billion-dollar campaign to educate Americans on the digital TV transition, this legislation gives broadcasters one final resource to ensure that no TV viewer is left behind due to insufficient information," said Dennis Wharton, NAB executive vice president.

BUT, hold on! It's possibly going to change again. President elect Barack Obama asked congress to potentially delay the switch over till early June 2009. Now that he's president, we'll wait and see what happens! Apparently some of those who bought the \$40 coupons either forgot to redeem them or waited till after the 90 day allocation to do so, so they are now out of luck. The funding for the coupons has run out and they need to appropriate more money to issue more coupons which will take time. Go figure. I knew the government would find yet another way to screw it up. As far as I'm concerned, the public was already duly notified and those that must watch snow after Feb 17 deserve it! It won't hurt them to find an alternate activity while they figure out how to get the digital signal. After all, if their existing TV failed on its own, they'd have to either call the repair man, fix it their self or buy a new TV. Why must this situation be any different?

...WA8RMC

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## ISOLATOR (CIRCULATOR) MODIFICATIONS

I needed an isolator to insert into the 1260 MHz transmission line at the repeater as described in my "Workbench" conversation on the second page. However, isolators for the 1260 band are non-existent except on special order. RX/TX quoted me a special one per my specs for \$500 last year at Dayton. This seemed unreasonable so I researched the makeup of these devices. I won't get into isolator/circulator theory here but suffice it say that it consists of a housing through which the transmission line passes surrounded by magnets. There is an input port, an output port and a "load" port. Signals passing through the input to output are met with little resistance but signals passing from output toward the input are diverted to the load port where a dummy load is usually placed.



Since 1260MHz isolators are not readily available and 850MHz isolators are, I decided to see how much loss an 850 one had at 1260. It was about 6dB and unacceptable as is so I started fiddling with the magnets inside. As they are moved to or away from the line passing between them, the bandpass is altered. I finally found a magnet position where the loss at 1260 was about 0.3dB so I felt confident I had a winner! It turns out that it is easy to RAISE the bandpass but not lower it and 1260 for a 850 unit is just about the upper limit with the existing magnets. Added magnets outside the case also help if needed.

As you can see in the photo below, the magnets have round aluminum and steel spacers of various thicknesses. The spacers are varied in position in front of or behind the magnets until the desired bandpass is achieved. It is best observed on a spectrum analyzer but a simple wattmeter on the output can be used also. Just vary the spacer positions for maximum power to the load. The one pictured is a DB Products unit with the sides only glued together so disassembly was easy. A sealed one would be more difficult.



Therefore an isolator is good to have in the transmission line for a power above 20 watts or so because a damaged output transistor or "brick" amplifier is expensive. If you're on 1200 and can find an 850MHz isolator at a Hamfest, go for it, it's easy to modify!

...WA8RMC

# ANALOG/DIGITAL TV STATION LOCATOR

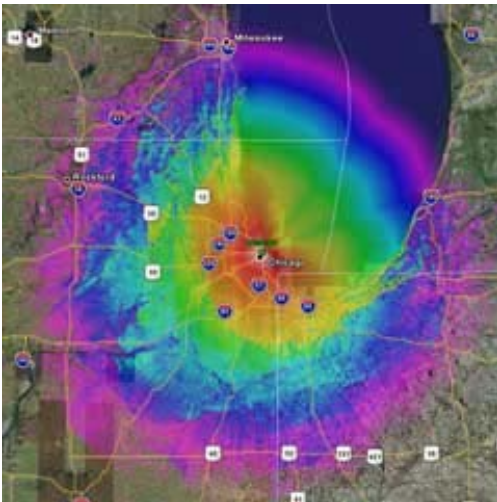
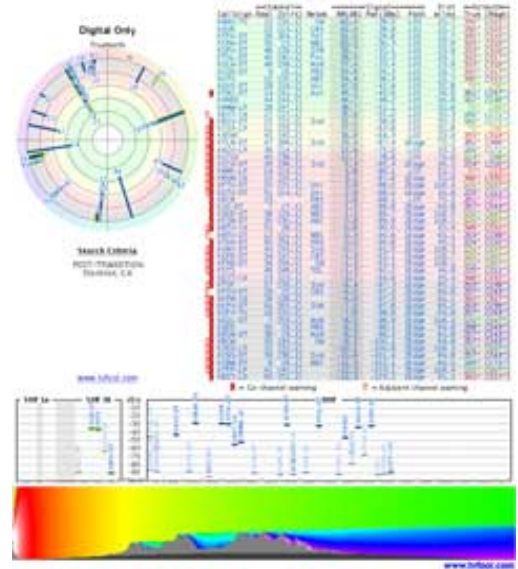
Have you ever wondered what television signals are being broadcast in your area? Perhaps you've recently purchased a new HDTV and you're looking for some High Definition content. Or maybe you're just looking for some additional sources to compliment your existing cable and/or satellite services. Well, here's a tool that can analyze your location to help determine what FREE broadcasts might be available in your neighborhood. Check it out at <http://www.tvfool.com/>

This tool can help answer questions like: - Which broadcasters are transmitting locally? - How far are the transmitters from me? - Which direction should I point my antenna? - How strong are the signals in my area? - What analog and digital channels are available? - How will things look after the analog shutoff in Feb-2009?

If you'd like to test your location, then click on the following link, enter your location and see the TV station listing complete with locations, signal strength and station power.

[http://www.tvfool.com/index.php?option=com\\_content&task=view&id=13&Itemid=1](http://www.tvfool.com/index.php?option=com_content&task=view&id=13&Itemid=1)

**Note:** This uses the same processing techniques that are used in generating the [coverage maps](#) except that this analysis is done with much greater precision. The coverage maps are great for seeing general signal trends, but this tool can provide a more precise reading for your specific location. If you would like additional information, you can also check out the [Signal Analysis FAQ](#).

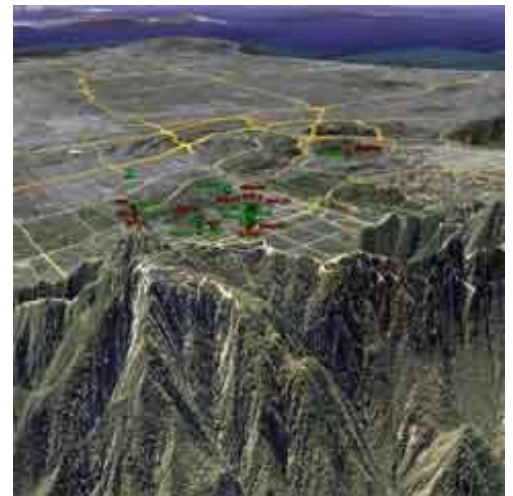


If you're wondering what your local broadcaster's coverage area looks like, then here's a way to find out. The files listed here contain transmitter placemarks and coverage maps for viewing in Google Earth (available for free). Each package, organized by metro, lets you "see" the TV environment for all the local broadcasters, and lets you explore their coverage maps in a virtual 3D world. In addition to helping you understand your OTA reception prospects, these maps can also be quite fun to play with! For the TV coverage map click on this URL:

[http://www.tvfool.com/index.php?option=com\\_content&task=view&id=15&Itemid=1](http://www.tvfool.com/index.php?option=com_content&task=view&id=15&Itemid=1)

Here is a file that contains all the TV transmitters in the FCC database converted to Google Earth format. It will let you visualize the location of all the transmitters relative to your home and you can even learn a few things about them by clicking on their icon. For the complete collection of transmitter icons click on this URL:

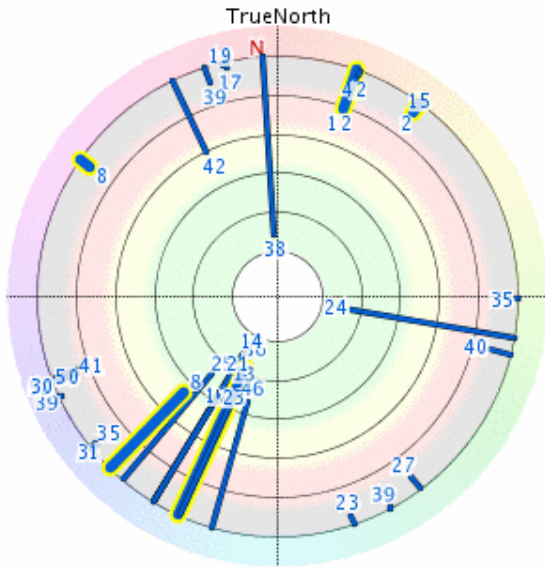
[http://www.tvfool.com/index.php?option=com\\_content&task=view&id=16&Itemid=1](http://www.tvfool.com/index.php?option=com_content&task=view&id=16&Itemid=1)



On the following page I show a listing relative to my QTH. You can enter your zip code to get a chart listing in digital, analog or both analog and digital transmitters. It's pretty neat! Enjoy!

...WA8RMC

# Columbus TV Stations Digital Only



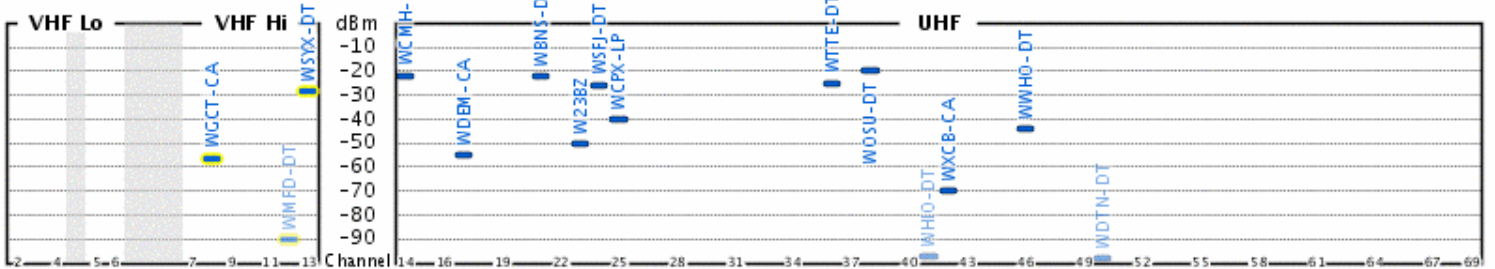
### Search Criteria

Address: exact  
Westerville, OH  
Zipcode 43081  
Height: 50.0 ft.

[www.tvfool.com](http://www.tvfool.com)

Callsign	==Channel==		Netwk	====Signal=====			Dist miles	==Azimuth==	
	Real	(Virt)		NM(dB)	Pwr(dBm)	Path		True	(Magn)
WOSU-DT	38	(34.1)	PBS	71.2	-19.6	L0S	3.5	356°	(3°)
WCMH-DT	14	(4.1)	NBC	69.2	-21.7	L0S	11.1	211°	(218°)
WBNS-DT	21	(10.1)	CBS	68.9	-21.9	L0S	11.1	211°	(218°)
WTTE-DT	36	(28.1)	Fox	66.0	-24.8	L0S	13.0	205°	(211°)
WSFJ-DT	24	(51.1)	Ind	65.3	-25.6	L0S	12.0	100°	(107°)
WSYX-DT	13	(6.1)	ABC	62.3	-28.5	L0S	13.0	205°	(211°)
WCPX-LP	25	(48.1)		50.6	-40.3	L0S	8.3	220°	(227°)
WMHO-DT	46	(53.1)	CW	46.7	-44.2	L0S	37.4	196°	(203°)
W23BZ	23	(23.1)		40.6	-50.3	L0S	16.4	204°	(211°)
WDEM-CA	17	(17.1)		35.7	-55.1	L0S	11.1	211°	(218°)
WGCT-CA	8	(8.1)		34.7	-56.2	L0S	9.7	224°	(231°)
WXCB-CA	42	(42.1)		20.8	-70.0	L0S	15.8	334°	(341°)
WMFD-DT	12	(68.1)	Ind	0.6	-90.2	2Edge	48.1	19°	(26°)
WHIO-DT	41	(7.1)	CBS	-6.6	-97.4	2Edge	74.9	250°	(257°)
WDTN-DT	50	(2.1)	NBC	-7.1	-97.9	2Edge	75.6	249°	(256°)
WHIZ-DT	40	(18.1)	NBC	-9.4	-100.2	2Edge	50.9	104°	(111°)
WRGT-DT	30	(45.1)	Fox	-10.2	-101.0	2Edge	75.4	249°	(256°)
WOCB-CA	39	(39.1)		-12.5	-103.4	2Edge	36.7	342°	(349°)
WOUB-DT	27	(20.1)	PBS	-12.6	-103.5	2Edge	68.4	144°	(150°)
WPTD-DT	58	(16.1)	PBS	-13.7	-104.6	2Edge	75.3	249°	(256°)
WLI0-DT	8	(35.1)	NBC	-14.3	-105.1	Tropo	77.9	305°	(311°)
WKYC-DT	2	(3.1)	NBC	-14.6	-105.5	Tropo	109.8	36°	(43°)
WKRC-DT	51	(22.1)	ABC	-15.2	-106.0	2Edge	75.4	249°	(256°)
WSAZ-DT	23	(3.1)	NBC	-16.0	-106.9	Tropo	116.7	162°	(168°)
WLWT-DT	35	(5.1)	NBC	-16.5	-107.4	Tropo	108.7	231°	(238°)
WKRC-DT	31	(12.1)	CBS	-17.3	-108.1	Tropo	108.2	231°	(237°)
WGGN-DT	42	(52.1)	Ind	-17.5	-108.4	Tropo	71.4	20°	(27°)
WEWS-DT	15	(5.1)	ABC	-17.6	-108.4	Tropo	108.2	36°	(43°)
WTOL-DT	17	(11.1)	CBS	-17.9	-108.7	Tropo	111.1	347°	(354°)
WTVG-DT	19	(13.1)	ABC	-18.4	-109.2	Tropo	112.2	347°	(353°)
WBDT-DT	18	(26.1)	CW	-18.4	-109.3	2Edge	75.4	249°	(256°)
WOUC-DT	35	(44.1)	PBS	-19.1	-109.9	Tropo	86.1	91°	(98°)
WLPX-DT	39	(29.1)	I0N	-19.2	-110.1	Tropo	128.5	152°	(159°)
WK0I-DT	39	(43.1)	Ind	-19.4	-110.3	Tropo	99.7	246°	(252°)
WJW	31	(8.1)	Fox	-20.2	-111.0	Tropo	107.7	36°	(43°)
WBGU-DT	56	(27.1)	PBS	-20.9	-111.8	Tropo	88.3	324°	(331°)
WCPO-DT	10	(9.1)	ABC	-21.0	-111.9	Tropo	107.7	231°	(238°)
WLMB-DT	5	(40.1)	Ind	-21.1	-112.0	Tropo	127.4	333°	(340°)
WVAH-DT	19	(11.1)	Fox	-21.3	-112.1	Tropo	129.4	156°	(162°)
WCET-DT	34	(48.1)	PBS	-21.6	-112.4	Tropo	108.7	231°	(238°)
WTLW-DT	44	(44.1)	Ind	-21.7	-112.5	Tropo	80.7	304°	(311°)
WOAC-DT	47	(67.1)	Ind	-22.1	-113.0	Tropo	108.6	50°	(57°)
W16BT	16	(16.1)		-22.3	-113.1	2Edge	51.7	102°	(109°)
WPT0-DT	28	(14.1)	PBS	-22.5	-113.3	Tropo	109.9	232°	(238°)
WSTR-DT	33	(64.1)	MyN	-22.9	-113.8	Tropo	105.5	233°	(240°)
WCHS-DT	41	(8.1)	ABC	-23.8	-114.6	Tropo	129.4	156°	(162°)
WDLI-DT	39	(17.1)	Ind	-24.1	-114.9	Tropo	95.9	47°	(54°)
WPTA-DT	24	(21.1)	ABC	-24.8	-115.6	Tropo	138.1	300°	(307°)
WISE-DT	19	(33.1)	NBC	-25.0	-115.8	Tropo	137.4	300°	(307°)
WNE0-DT	45	(45.1)	PBS	-25.2	-116.0	Tropo	119.6	62°	(69°)
WEA0-DT	50	(49.1)	PBS	-25.3	-116.1	Tropo	95.7	45°	(52°)

■ = Co-channel warning ■ = Adjacent channel warning



## ATCO FALL EVENT SUMMARY

Our Fall Event was again held at the Westerville ABB cafeteria on Sunday October 26, 2008. I counted 30 people in attendance. Great job! By the looks of things, everyone had a great time and it was terrific getting together to exchange ideas. We had a mini hamfest in the parking lot before lunch which I always miss because I bring the food but I'm told that a number of items changed hands. We then had lunch courtesy of ATCO. This time I brought Lasagna and salad instead of the usual chicken. I think it was a hit. If not, give me suggestions for next time. After lunch we had a short business meeting where we re-elected the present officers. Finally the door prizes were handed out. Mike, WOMNE graciously donated a transistor/semiconductor checker as a main door prize to the first ticket drawn. As I remember, Paul, W8RRF went home a happy guy. (Paul, now you'll be able to check those transistors in each of your Ameco preamps).

The pictures below are proof that at least, the food was great! As you can see, everyone is eating. The last picture at the bottom is a sample of the door prizes. To all of those who didn't attend, SEE WHAT YOU MISSED?



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# FRESCO MICROCHIP EDITORIAL BRIEFING PAPER

## Introduction

Recently, a great deal of attention has been focused on the transition from analog to digital television broadcast taking place in North America and around the world. A paradigm shift is underway and Fresco Microchip Corp., an innovative pioneer in the world of semiconductor technology, has developed a paper designed to address some of the key issues surrounding this dynamic issue. This paper discusses the transition of analog to digital TV (DTV) on a global scale as regionally specific market dynamics such as transmission methods for receiving television (cable, satellite, over-the-air), regulatory guidelines, and spectrum allocation each influence the pace of migration from an analog platform to a digital platform. In North America, the digital transition is well underway for over-the-air TV reception, however simulcast of analog and digital cable will continue for a few years after the 2009 mandated analog terrestrial shutoff. In Europe, there continues to be strong demand for both analog and digital – hybrid – TV reception as each EU country implements terrestrial and cable DTV deployments and corresponding analog transmission shutoffs at a different pace. Finally, in emerging markets such as China and India, today analog television dominates, though there is high potential for DTV growth in the longer term. The paper also discusses how these regional dynamics continue to drive growth for TV IC solutions that address the significant market opportunity in hybrid television. Founded in 2004, Fresco Microchip is an innovative fabless semiconductor company that has taken a new approach to an old problem - the challenge of converting analog to digital. Focused on global consumer electronics markets and headquartered in Toronto, with design centers of excellence in Ottawa, and Irvine, California, Fresco uniquely brings together three core technology areas: next-generation RF, mixed-signal and digital signal processing (DSP). Using its patent-pending technologies, Fresco Microchip is redefining the multi billion dollar television tuner and demodulator market. While digital TV transitions globally, analog TV continues to co-exist in much of Europe, Asia and North America. Fresco is helping to bridge this analog-digital broadcast divide with its unique approach which significantly reduces system cost and improves performance across the broad TV market.

## The global analog to digital TV transition heats up

Over 500 million TV tuners and demodulators are sold each year worldwide, with close to 900million units projected to sell by 2011. Significant growth is anticipated, as consumers demand digital and analog reception across broader market TV platforms, including PCs, set-top boxes (STBs), digital versatile disk - recordable (DVD-Rs), personal video recorders (PVRs) and TVs.

The digital TV (DTV) revolution continues to progress with Europe/Asia (primarily Digital Video Broadcasting - Terrestrial (DVB-T)) and North America (Advanced Television System Committee (ATSC)) leading adoption. At the same time, analog TV systems continue to co-exist in Europe and North America and proliferate in the rest of the world. As these transitions unfold, hybrid (analog and digital) systems represent a significant market share, as TV content is available anyplace, anytime and on any device. This article will explore the key market drivers for the strong growth expected for semiconductors in the global broad television market. In addition, the demand trends for hybrid- and analog-only ICs in Europe and other parts of the world will be discussed.

## DTV Transitions around the World

Today, viewers have instant access to content on a wide variety of popular consumer electronics platforms, from full-screen televisions to PCs, digital video recorders (DVRs), STBs and portable devices. Broadcasters deliver the latest content via cable, satellite, over-the-air (OTA or terrestrial), Internet or a combination of any of these broadcast mediums. To minimize the impact on viewers and facilitate a smooth transition, in certain countries, governments have mandated the co-existence of analog and DTV signals well beyond 2015. Still, in other countries, there is no mandated date to shutoff analog broadcasts or plan to upgrade or retrofit existing analog equipment to support DTV. In such regions, the DTV migration will span years, and hybrid broadcast systems represent a significant market share. Television broadcasts are delivered in multiple formats around the world, and different standards exist for analog and digital transmission as shown in Table 1. In most countries, consumers have the choice of receiving television via cable, satellite or terrestrial. (Terrestrial broadcasts are often referred to as OTA or rooftop antenna TV transmissions.) Typically, one or two of these transmission methods account for the majority of the installed base due to country-specific regulatory guidelines, availability of TV content and consumer preferences. OTA or terrestrial broadcasts are very popular in Europe; many parts of Asia, including Japan; and some areas in the Middle East and Africa. In contrast, cable is much more pervasive throughout North America, certain countries in Europe and across China. Satellite is mainly deployed in North America and Asia and is gaining traction in parts of Europe (i.e., Austria and the United Kingdom). Many countries have a strict DTV mandate with plans which extend many years to shutoff analog terrestrial and cable broadcasts, driving the requirement for consumer electronic devices to handle hybrid broadcasts during the transition. Many countries that have already migrated to DTV and have shutoff analog terrestrial broadcasts continue to support analog cable. Moreover, there are many countries that have yet to mandate any DTV transition plan or voice their intention to terminate analog broadcasts. In these markets, analog television continues to proliferate and grow. Without a doubt, DTV is heating up, but the pace of growth and deployment to fully replace legacy analog TV systems vastly differs by region.

**Table 1. Global Television Standards**

<b>Television Standard</b>	<b>Countries Used</b>
<b>Analog Terrestrial and Cable</b>	
National Television Standards Committee (NTSC)	United States, Canada, Mexico, Japan, Philippines, South Korea, Taiwan, Argentina, Peru, Venezuela and Central America

Phase Alternating Line (PAL)	Most of Europe; parts of S. America; some areas in Asia, China & India; parts of Africa; parts of Middle East, Australia, New Zealand
Système en Couleur avec Mémoire (SECAM)	France, part of Middle East, part of Africa, select countries in S. America
<b>Digital Terrestrial</b>	
Advanced Television Systems Committee (ATSC)	North America, South Korea, Canada, Mexico and Honduras
Digital Video Broadcasting-Terrestrial(DVB-T)	Europe; parts of the Middle East and Africa; Australia; New Zealand; parts of South East Asia, including Taiwan and Singapore; and India
Integrated Services Digital Broadcasting – Terrestrial (ISDB-T/C/S)	Japan and Brazil
Digital Terrestrial Multimedia Broadcast (DTMB)	China, including Hong Kong
<b>Digital Cable</b>	
Digital Video Broadcasting-Cable (DVB-C)	Europe, the Middle East, Africa, China, Asia (except Japan), Australia and New Zealand
OpenCable Specifications, Society of Cable Telecommunications Engineers (SCTE) Standards	North, Central and South Americas
Integrated Services Digital Broadcasting-Cable (ISDB-C)	Japan
<b>Digital Satellite</b>	
Digital Video Broadcasting-Satellite (DVB-S)	Most countries with digital satellite broadcasting except Japan
Integrated Services Digital Broadcasting-Satellite (ISDB-S)	Japan

#### **North America – Terrestrial DTV: Analog-Digital Cable DTV Simulcast Imminent**

The United States Federal Communications Commission’s (FCC) highly publicized DTV transition mandate states that February 17, 2009 is the last day that OTA analog television will be broadcast<sup>1</sup>. One of the main drivers for the U.S. DTV mandate was to free up the analog television spectrum for public safety communications and next-generation wireless broadband services. Since March 2007, all TVs shipped with an NTSC tuner imported into the U.S. must also have an integrated digital ATSC tuner. Similarly, the Canadian Radio-Television and Telecommunications Commission (CRTC) has mandated that after August 31, 2011 only digital OTA signals will be permitted in Canada. However, the majority of U.S. households (57%) receive their primary television through cable compared to under 22 million U.S. households (19%) relying on OTA transmissions<sup>1</sup>. As a result, the anticipated timeline for transitioning cable systems to digital will be much longer. In fact, by law, as long as cable companies continue to offer analog programming, they “must carry” local broadcasts in analog for at least three years after the February 2009 OTA deadline<sup>2</sup>. . As such, although the transition to digital OTA is imminent in North America, there still exists the need for analog and digital simulcast for some years to come. For TV IC providers, the well-established ATSC standard and government mandate has moved the industry towards a heavily integrated back-end with single system-on-chip (SOC) solutions that support both analog terrestrial and cable.

#### **Europe: Analog and Digital Television, a Fine Balance**

In contrast to the definitive DTV mandates in the U.S. and Canada, the shift to DTV in Europe can be described as a series of mini transitions, with each European Union (EU) member implementing DTV on a per country basis. According to a recent Eurostat/European Commission e-communications household study<sup>4</sup>, nearly half of European households receive their primary television through either analog or digital OTA broadcasts, followed by cable and then satellite. A few select EU member countries, such as Germany, the Netherlands, Luxembourg, Belgium and Denmark, have a high penetration of cable; however, many television households in these countries still use an antenna for secondary sets located in the bedroom or kitchen. Several Western European countries have started the transition, however, analog shutoff (ASO) for both OTA and cable broadcasts is not expected for many years, in some cases through 2015 as shown in Table 2. In parts of Eastern Europe, analog television continues to be widespread, as there is no government mandate to transition to DTV or deploy digital broadcast transmission equipment due to the allocation of limited communications dollars to green/energy efficient pan-EU initiatives. Moreover, in contrast to North America, the standards in Europe continue to evolve for performance (NorDig) and functionality (DVB-T2) driven by a desire to improve portability and diversity to ensure coverage in secondary TV areas such as the bedroom and kitchen. For TV IC providers, integrating functions, such as a digital demodulator, into the TV back end has been slower due to the extended transition period across Europe and the evolving standards which slow down DTV chipset integration. As a result, most TV manufacturers will continue to build and design a common television

with cost-competitive TV receivers that support the high-end performance required for hybrid broadcast-quality television to support the analog digital simulcast across Europe. .

**Table 2. Sample of Announced ASO Dates in EU**

<b>Country</b>	<b>Expected ASO date</b>
Germany	2008 (Terrestrial); 2010 (Cable)
Norway, Denmark	End of 2009
Austria	2010
Spain	2010
Malta	2010
Belgium	2011
Slovenia	2011 (Start June 2009)
France	November 2011 (Terrestrial)
Hungary	December 2011
United Kingdom	2012
Italy	2012
Portugal	2012
Slovakia	2012
Estonia	2012
Cyprus	2012
Latvia	2012
Bulgaria	Delayed until Dec. 2012
Lithuania	2012 to 2015
Poland	2014
Greece	2015
Romania	No Announced Strategy

Source: European Commission, March 200

### **Emerging Markets: Analog TV Still Matters**

While there is high potential for long-term DTV growth in key emerging markets, such as China and India, today, analog television dominates. According to industry estimates, China has approximately 350 million television household subscribers, but only about 20% of these households will be digital by 2010. Cable is the most popular method of receiving television in China, with approximately 100 million subscribers in 2006, 10% of which subscribed to digital cable services. Nonetheless, many TV IC manufacturers remain bullish on the Chinese digital cable market due to strong expected digital subscriber growth resulting from the government continuing its efforts to transition from analog to digital. While early targets sought to have 100 million DTV households by 2008 in time for the Beijing Olympics, the deadline to shutoff analog transmission is now 2015. Similarly, in India, the majority of the 100 million TV households receive analog-only broadcasts, and shipments of analog-only TVs are projected to grow through 2011. As a result, the demand for analog-only TVs is expected to continue for a number of years in these markets offering TV IC manufacturers a well-established, immense market to sell analog TV ICs today and position themselves for the explosive DTV growth in the years to come.

### **Conclusion**

Regionally centric market dynamics are driving strong demand and growth for TV platforms capable of receiving digital, analog and hybrid broadcasts around the world. Television is increasingly pervasive, creating a significant global opportunity for TV IC providers and consumer electronic manufacturers alike to tap into growing consumer demand for TV available anywhere, anytime and on any device.

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### **Resources**

- 1 U.S. FCC DTV website: [www.dtv.gov](http://www.dtv.gov).
- 2 U.S. Government Accountability Office (GAO) Testimony, "Estimated Cost of Supporting Set-Top Boxes to Help Advance the DTV Transition," February 17, 2005.
- 3 U.S. FCC Website: <http://www.dtv.gov/consumercorner.html#faq14>.
- 4 European Commission, "E-Communications Household Survey", Published July 2006.

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## BUILD 80M TRANSMITTER FROM A FLUORESCENT BULB

*The following article has no connection to ATV other than the creativity aspect. However, I thought it intriguing so I included it here to hopefully inspire you to become more creative and TRY things. If you have an idea and don't know where or how to start, the Tuesday night net is an excellent place to discuss it. Talk about it there and I'm sure good things will happen!*

*While on the subject of compact fluorescents, it turns out that many fail prematurely because of excessive heat. They are intended for "base down operation" if maximum life is expected. If operated in a "base up" inverted configuration, the electronics contained within are excessively stressed. Because of inexpensive components inside by off shore countries (did I say "China"?); the capacitors fail from increased heat. For a teardown observation, read the EDN article at <http://www.edn.com/article/CA6607201.html?text=compact+fluorescent>.*

... WA8RMC

By Michael Rainey, AA1TJ. Reprinted with Permission.

"Yesterday, I replaced a "kaputt" compact fluorescent light in my kitchen. It turns out, this bulb going dim illuminated another bulb inside my noggin. Provided the bulb failed on account of the fluorescent tube, the question came to mind, "Would it be possible to build an 80m QRP transmitter using the handful of components contained in this light bulb?" In a matter of minutes I'd sawed around the plastic base in order to gain access to the little circuit board; being careful not to break the mercury-bearing glass bulb. I was greeted by two high-voltage NPN transistors (BUL128's), four resistors (two 22 Ohms and two 470k Ohms), some capacitors, four inductors (one of which is wound on a little ferrite toroid) and a handful of diodes. With building excitement, I un-soldered the components and determined their values. The data sheet for the BUL128's indicate they are made for high-speed switching; a promising revelation. On the other hand, these high voltage transistors tend to have low current gain. Beyond that, I wondered if it would be possible to bias the oscillator using the four resistors that I found. Basically, I had before me the pieces to a puzzle of my own making. Luckily, I love puzzles so I picked up my chalk and began to noodle on the blackboard. First things first; get an oscillator running! My first attempt was a crystal-controlled Colpitts (yes, I'm going to allow myself the use of a quartz crystal) oscillator. That one led me down a blind alley, so I changed over to a Pierce. It took twenty minutes fiddling with the biasing, but "Bingo!" Nice signal. As I put down the PA stage using the second BUL128, it occurred to me that if this rig worked it was going to roughly resemble Doug Demaw's (W1CER) "Tuna Tin." I spent a couple of pleasant hours working out the coupling between the oscillator and the PA. The end-product was simple as pie; 9 turns around one of the 1mH chokes. I stripped the ferrite toroid of its wire and rewound it as the output, impedance matching transformer. One of the diodes came in handy from the base to ground of the PA stage; it cleaned up the drive waveform and helps insure I'm not stressing the base to emitter junction with excessive reverse voltage. Things were looking pretty sweet by this time so I headed up to the house for my supper. Once the dishes were put away I went back to the shack and set to work on the output low pass filter. Now, this is the second place where I'm going to allow myself the use of external components. I used a "cookbook" five component filter; 820pF<sub>x2</sub>, 1700pF and two junk box toroid cores wound for 2.1uH. Plugging in this LPF, I had 1.5 watts of optically clean signal into a 450 Ohm dummy load. I decided to key the emitter return in the oscillator. I ended up using a total of six components besides those I found in the bulb; a quartz crystal and the five-element LPF. Some diodes and a MOV, were the only components that I had left-over from the bulb. By this time it was late in the evening, but I hooked-up my EFHW wire and called CQ for fifteen minutes. No joy. I jumped out of bed this morning and shoveled my way to the Hobbit-hole through six inches of heavy snow. There was little activity on the band, but I plugged in one of my rocks for 3516KHz and began to call CQ. The first answer came sometime later from WA0RAD in southwestern Missouri. Randy gave me a 449, but he was only 559 so the path was a bit marginal. We gave it up pretty quickly. But the next few calls netted, N3RIK, just north of Philadelphia. I was 559 and he was 579. Bruce was running an FT990 at 10 watts to an end-fed, random wire antenna. We had an excellent, half-hour, rag chew and I came up for breakfast with an extra bounce in my step! The light bulb (das Licht) may be "kaputt fuer Licht" but it seems to be doing FB for RF! Next I'll try to write-up this little project on my web site, come this weekend. I think what's especially neat about this is that every make of compact fluorescent light bulb is going to present the designer/puzzler with a different set of components. And so the rig that you build from your bulb will necessarily be different than mine. I found this exercise to be great fun. It really piques one's creativity! FYI; the bulb I used is at least three or four years old. My burned out bulb was a "TriMax Electronic Fluorescent Lamp," Model #SKT320EAH, 20W, 120VAC, 60Hz. It was made in Korea by, or for, an outfit called, "MaxLite." But again, the challenge is to build a rig from the next derelict compact fluorescent that you come across. I think the next one that fails here is turn into a matching 80m receiver. I'll be QRV on 80m again with Das DereLicht come next Monday afternoon/evening. It would be great fun to do a two-way, so please let me know if/when you have your own DereLicht on the air. Question: How many QRPer's does it take to change a light bulb?"

73, Mike, AA1TJ ([mjraine@gmail.com](mailto:mjraine@gmail.com))

*OK guys, NOW it's time for someone to come up with an ATV related project using these parts. How about it?*

***Here's the deal!*** *If you can come up with a working ATV related circuit using only CF parts, it's worth a year of ATCO dues. (If you can do it by having a MESSY HAMSHACK, I'm sure this one is a piece of cake).*

... WA8RMC

## NELSONVILLE HAMFEST...A midwinter “blah” remover!

It has been VERY cold lately and by the looks of it, there is some cabin fever relief in the room on Sunday. The Nelsonville hamfest was held on Sunday January 18 in the Nelsonville High School cafeteria. It's a small fest but it always has something not found elsewhere with low prices to match. This time the crowd seemed large as ever and all tables were sold. However, I saw very few people parting with their money which makes sense in this economy!



The general layout of the facility.



Above L to R are Tom, KA8ZNY (sitting) with Jeff, K8TPY, Dianna, K8FRB and Jay, KB8YMQ. Table activity was light.



Here is Mike, KB8GHW, who just made a sale!



Finally we see Mike, WOMNE, and his business partner, also Mike, explaining the M<sup>3</sup> products they have for sale.

## 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 listed in order in the ATCO homepage under "Newsletters". Once you locate the Newsletter section, the displayed list can be re-sorted as needed by clicking on the "date" in the header.

Newsletter 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 Xmitter
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 Xmitter
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

...Bob N8OCQ

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## 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.

**18 Jan 2009+** 13th Annual Hamfest Sunday Creek Amateur Radio Federation Talk-In: 147.150+ Contact: Jeramy Duncan, KC8QDQ  
5000 Angel Ridge Road Athens, OH 45701 Phone: 740-593-3451 Email: [kc8qdq@hughes.net](mailto:kc8qdq@hughes.net) Nelsonville, OH  
Tri County Career Center 15676 State Route 691

**25 Jan 2009+** Tusco Amateur Radio Club <http://noard.com/tuscoarc.htm> Talk-In: 146.730 (PL 71.9) Contact: Kyle Quillen, KD8HJD  
4925 West Main Street Berlin, OH 44610 Phone: 330-231-6269 Email: [hamfest@tuscoarc.org](mailto:hamfest@tuscoarc.org) Strasburg, OH  
Wallick Auction House 965 North Wooster Avenue

**1 Feb 2009+** Winter HAM Fest Northern Ohio Amateur Radio Society <http://www.noars.net> Talk-In: 146.70- (open repeater)  
Contact: Darlene Ohman, KA8VTS 4122 Bush Avenue Cleveland, OH 44109 Phone: 216-398-8858 Email: [dfohman@att.net](mailto:dfohman@att.net) Lorain,  
OH Gargus Hall 1965 North Ridge Road

**15 Feb 2009+** Mansfield Mid-Winter Hamfest & Computer Show InterCity Amateur Radio Club <http://www.w8we.org>  
Talk-In: 146.940 (PL 71.9) Contact: Dean Wrasse, KB8MG 1094 Beal Road Mansfield, OH 44905 Phone: 419-589-2415  
Fax: 419-884-6177 Email: [metal07man@yahoo.com](mailto:metal07man@yahoo.com) Mansfield, OH Richland County Fairgrounds 750 North Home Road

**15 Feb 2009+** Mansfield Mid-Winter Hamfest & Computer Show InterCity Amateur Radio Club <http://www.w8we.org> Talk-In:  
146.940 (PL 71.9) Contact: Dean Wrasse, KB8MG 1094 Beal Road Mansfield, OH 44905 Phone: 419-589-2415 Fax: 419-884-6177  
Email: [metal07man@yahoo.com](mailto:metal07man@yahoo.com) Mansfield, OH Richland County Fairgrounds 750 North Home Road

**15 Mar 2009+** Hamfest and Computer Fair Toledo Mobile Radio Association <http://www.tmrahamradio.org> Talk-In: 147.27+ (no  
CTCSS) Contact: Brian Harrington, WD8MXR 4463 Holly Hill Drive Toledo, OH 43614 Phone: 419-385-5624 Email:  
[brian.harrington@utoledo.edu](mailto:brian.harrington@utoledo.edu) Maumee, OH Lucas County Recreation Center 2901 Key Street

**19 Apr 2009+** 55th Annual Hamfest, Electronics, & Computer Show Cuyahoga Falls Amateur Radio Club  
<http://www.cfarc.org/hamfest2009.html> Talk-In: 147.27 Contact: Ted Sarah, W8TTS 239 Bermont Avenue Munroe Falls, OH 44262  
Phone: 330-688-2013 Email: [w8tts@w8tts.com](mailto:w8tts@w8tts.com) Cuyahoga Falls, OH Emidio & Sons Party Center 48 East Bath Road

**26 Apr 2009+** Athens Hamfest 2009 Athens County Amateur Radio Association <http://www.ac-ara.org> Talk-In: 145.15 Contact: Drew  
McDaniel, W8MHV 61 Briarwood Drive Athens, OH 45701 Phone: 740-592-2106 Fax: 740-593-9184 Email: [mcdanied@ohiou.edu](mailto:mcdanied@ohiou.edu)  
Athens, OH Athens Community Center 701 East State Street

**15-17 May 2009\*** ARRL National Convention (Dayton Hamvention) Dayton ARA <http://www.hamvention.org> Talk-In: 146.940  
Contact: Mike Kalter, W8CI Phone: 937-776-7898 Email: [w8ci@arrl.net](mailto:w8ci@arrl.net) Dayton, OH Hara Arena Shiloh Springs Road (Trotwood)

## 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.

W8PU Gary Poland Midland, Ohio.

...WA8RMC

## LOCAL HAM CLUB LISTING

Club/Organization	Web Site	In Person Meetings See the Club's Web Site for Location	Nets	ARRL Affiliated ?
ARC OF OHIO STATE UNIVERSITY	<a href="http://arc.org.ohio-state.edu/">http://arc.org.ohio-state.edu/</a>	2nd Mon of the month at 18:00		Y
ATCO-AMATEUR TELEVISION IN CENTRAL OHIO	<a href="http://www.atco.tv">http://www.atco.tv</a>	Last Sun in October First Sun in May	Tue's at 21:00 on 147.480 with Repeat Audio on 446.350	
BUCKEYE BELLES-OHIO LADIES AMATEUR RADIO CLUB	<a href="http://geocities.com/kc4iyd">http://geocities.com/kc4iyd</a>		Mon's at 09:00 on 3.945 Mon's at 21:00 on 147.060 Tue's at 20:00 on 3.972 Tue's at 20:30 on 7.236	
CCRA-CAPITAL CITY REPEATER ASSN	<a href="http://www.qsl.net/ccra/">http://www.qsl.net/ccra/</a>	2nd Sat of the month at 19:30	Mon's at 20:30, the Swap'n'shop Net on 147.24; followed by a Discussion Net	
CENTRAL OHIO SLOW SCAN TV	<a href="http://www.qsl.net/n8tut/sstv/">http://www.qsl.net/n8tut/sstv/</a>		1st Sun at 19:00 on 145.490	
COARES-CENTRAL OHIO ARES	<a href="http://www.coares.org/">http://www.coares.org/</a>	3rd Wed of the month at 20:00	Wed's at 20:00 on 147.060 except the 3rd Wed of the month.	Y
COLUMBUS FOX HUNTERS	<a href="http://www.qsl.net/cfh/">http://www.qsl.net/cfh/</a>			
COOKEN-CENTRAL OHIO OPERATORS KLUB EXTRA TO NOVICE	<a href="http://www.cookn.org/">http://www.cookn.org/</a>	2nd Sat of the month at 12:00	<a href="#">Wed's at 20:30. See web site for details on freqs.</a>	Y
CORC-CENTRAL OHIO RADIO CLUB	<a href="http://www.corc.us/">http://www.corc.us/</a>	Check web site		
COSHOCTON COUNTY AMATEUR RADIO ASSOC.	<a href="http://www.w8cca.org/">http://www.w8cca.org/</a>	1st Tue of the month at 19:00	Sun's at 21:00 on 147.045	
COSWN-CENTRAL OH SEVERE WEATHER NET	<a href="http://www.severe-weather.org/">http://www.severe-weather.org/</a>		Tue's at 19:30 on 146.76 PL of 123.0hz Spring & Summer; 3rd Tue's Fall & Winter	Y
COTN-CENTRAL OHIO TRAFFIC NET	<a href="http://www.technology-corner.com/cotr/">http://www.technology-corner.com/cotr/</a>		Daily at 19:15 on 147.240	
CQRP-COLUMBUS QRP CLUB	<a href="http://www.qsl.net/cqrp/">http://www.qsl.net/cqrp/</a>	1st Sat of the month at 10:30		
CRES-ARC	<a href="http://www.qsl.net/w8zpf">http://www.qsl.net/w8zpf</a>	Check web site	Sun's at 21:00 on 146.070	Y
DELARA-DELAWARE AMATEUR RADIO ASSOCIATION	<a href="http://www.k8es.org/Home.html">http://www.k8es.org/Home.html</a>	3rd Wed of the month at 19:30	Mon's at 20:00 on 145.17	Y
LANCASTER & FAIRFIELD CTY ARC	<a href="http://www.k8qjk.org/">http://www.k8qjk.org/</a>	1st Thu of the month at 19:30	Mon's at 21:00 on 147.030 Thu's at 18:30 on 147.030 is Radio Night.	Y
LICKING COUNTY ARES	<a href="http://www.licking-ares.org/">http://www.licking-ares.org/</a>		1st & 3rd Wed of the month at 21:00 on 146.88	
MOUNT VERNON ARC	<a href="http://mvarc.net/">http://mvarc.net/</a>	2nd Mon of the month at 19:00		Y
NARA-NEWARK AMATEUR RADIO ASSOCIATION	<a href="http://nara.eqth.org/">http://nara.eqth.org/</a>	2nd Sat of the month at 19:00	Tue's at 21:00 on 146.88	Y
OHIO NAVY-MARINE CORPS MARS	<a href="http://www.ohionavymars.org/">http://www.ohionavymars.org/</a>			N/A
QCWA MID-OHIO CHAPTER	<a href="http://www.qcwa.org/qcwa212/">http://www.qcwa.org/qcwa212/</a>	Check web site	Thu's at 20:30 on 146.76	
RUSTY ZIPPER HF & DX CONTEST CLUB	<a href="http://www.qsl.net/na8kd/">http://www.qsl.net/na8kd/</a>			
SOUTH WEST COLUMBUS HAM RADIO CLUB	<a href="http://swchrc.com/">http://swchrc.com/</a>		Fri's at 20:00 on 145.230 or 53.550	Y
VOICE OF ALADDIN ARC	<a href="http://www.qsl.net/w8fez/">http://www.qsl.net/w8fez/</a>			Y
ZARC-ZANESVILLE AMATEUR RADIO CLUB	<a href="http://zarc.eqth.org/">http://zarc.eqth.org/</a>	1st Tue of the month at 19:00	Wed's at 21:00 on 146.610	Y

## INTERNET ATV HOME PAGES (list verified 07/01/08)

### Domestic homepages

<a href="http://www.atco.tv">http://www.atco.tv</a>	Ohio, Columbus, homepage (ATCO)
<a href="http://www.w8bi.org/atv/atvresources.html">http://www.w8bi.org/atv/atvresources.html</a>	Ohio, Dayton ATV group (DARA)
<a href="http://www.citynight.com/atv">http://www.citynight.com/atv</a>	California, San Francisco ATV
<a href="http://www.qsl.net/atn">http://www.qsl.net/atn</a>	California, Amateur Television Network in Central / Southern
<a href="http://members.tripod.com/silatvg">http://members.tripod.com/silatvg</a>	Illinois, Southern, Amateur Television group
<a href="http://www.ussc.com/~uarc/utah_atv/id_atv1.html">http://www.ussc.com/~uarc/utah_atv/id_atv1.html</a>	Idaho ATV
<a href="http://www.bratsatv.org">www.bratsatv.org</a>	Maryland, Baltimore Radio Amateur Television Soc. (BRATS)
<a href="http://www.dxzone.com/cgi-bin/dir/jump2.cgi?ID=10991">http://www.dxzone.com/cgi-bin/dir/jump2.cgi?ID=10991</a>	Michigan, Detroit Amateur Television System (DATS)
<a href="http://www.qsl.net/kd2bd/atv.html">http://www.qsl.net/kd2bd/atv.html</a>	New Jersey, Brookdale ARC in Lincroft
<a href="http://www.ipass.net/~teara/menu3.html">http://www.ipass.net/~teara/menu3.html</a>	North Carolina, Triangle Radio Club (TEARA)
<a href="http://www.oregonatv.org">http://www.oregonatv.org</a>	Oregon, Portland OATVA Oregon Amateur TV Association
?	Pennsylvania, Pittsburg Amateur Television
<a href="http://members.bellatlantic.net/~theoikat/">http://members.bellatlantic.net/~theoikat/</a>	Pennsylvania, Phila. Area ATV
?	Texas, Houston ATV (HATS)
<a href="http://www.hotarc.org/atv.html">http://www.hotarc.org/atv.html</a>	Texas, WACO Amateur TV Society (WATS)
?	Utah ATV
<a href="http://www.qsl.net/w7twu">http://www.qsl.net/w7twu</a>	Washington, Western Washington Television Soc. (WWATS)
<a href="http://www.shopstop.net/bats/">http://www.shopstop.net/bats/</a>	Wisconsin, Badgerland Amateur Television Society (BATS)
<a href="http://mysite.verizon.net/vzev3ql6/id9.html">http://mysite.verizon.net/vzev3ql6/id9.html</a>	Chesapeake Amateur Television Society (CATS)

### Foreign homepages

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

### Misc other ATV related sites

<a href="http://www.atv-tv.org">http://www.atv-tv.org</a>	The Amateur Television Directory
<a href="http://www.atn-tv.org">http://www.atn-tv.org</a>	Amateur Television Network
<a href="http://www.hampubs.com">http://www.hampubs.com</a>	Amateur Television Quarterly Magazine
<a href="http://gb3lo.camstreams.com">http://gb3lo.camstreams.com</a>	"GB3LO" Repeater Camstream westoft, UK
<a href="http://www.ham-radio.com/sbms">http://www.ham-radio.com/sbms</a>	"SBMS" San Bernardino Microwave Society
<a href="http://www.qsl.net/kc6ccc/">http://www.qsl.net/kc6ccc/</a>	"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 (10/20/08).....	\$1465.67
RECEIPTS(dues).....	\$ 300.00
Paypal expenses.....	\$ (2.06)
Fall Event food.....	\$ (185.00)
CLOSING BALANCE (01/20/09).....	\$ 1568.61

# 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, 1260, 2433 and 10.35 transmitters  
Output Power - 427.25 MHz :40 watts average 80 watts sync tip  
1260 MHz: 50 watts continuous (Analog ATV)  
1245 MHz 2 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: 

<u>Touch Tone</u>	<u>Result (if third digit is * function turns ON, if it is # function turns OFF)</u>
00*	turn transmitters <b>on</b> (enter manual mode-keeps xmitters on till 00# sequence is pressed)
00#	turn transmitters <b>off</b> (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#	449.975 MHz link receiver enable / disable
C2* or C2#	2433 transmitter for on/off. (C2* enables transmitter and C2# disables it)

Auto scan mode functions: 001 2398 receiver (normal mode - returns to auto scan)  
002 Roof camera (select 001 when finished viewing camera so repeater will shut down)  
003 Equipment. room camera (select 001 when finished so repeater will shut down)

# ATCO MEMBERS AS OF January 15, 2009

Call	Name	Address	City	St	Zip	Phone	URL
KD8ACU	Robert Vieth	3180 North Star Rd	Upper Arlington	OH	43221	614-457-9511	<a href="mailto:rfvieth@yahoo.com">rfvieth@yahoo.com</a>
K8AEH	Wilbur Wollerman	1672 Rosehill Road	Reynoldsburg	OH	43068	614-866-1399	<a href="mailto:wilburapilot@yahoo.com">wilburapilot@yahoo.com</a>
KC3AM	Dave Stepnowski	735 W Birchtree Ln	Claymont	DE	19703		<a href="mailto:kc3am@verizon.net">kc3am@verizon.net</a>
N4AK	Glen Farr	10 Autumn View Ridge	Travelers Rest	SC	29690-8024		
KC8ASD	Bud Nichols	3200 Walker Rd	Hilliard	OH	43026	614-876-6135	<a href="mailto:kc8asd2@netzero.com">kc8asd2@netzero.com</a>
KC8ASF	Tom Pallone	3437 Dresden St.	Columbus	OH	43224	614-268-4873	<a href="mailto:kc8asf@sbcglobal.net">kc8asf@sbcglobal.net</a>
KC8BTX	Dudley Field	357 N. Ridge Heights Dr	Howard	OH	43028		<a href="mailto:kc8btx@37.com">kc8btx@37.com</a>
W6CDR	Wynn Rollert	1141 Pursell Ave	Dayton	OH	45420	937-256-1772	<a href="mailto:w6cdr@hotmail.com">w6cdr@hotmail.com</a>
WB8CJW	Dale & Sharon Elshoff	8904 Winoak Pl	Powell	OH	43065	614-210-0551	<a href="mailto:delshoff@columbus.rr.com">delshoff@columbus.rr.com</a>
N8COO	C Mark Cring	3941 Three Rivers Lane	Groveport	OH	43125	614-836-2521	<a href="mailto:n8coo@yahoo.com">n8coo@yahoo.com</a>
N8CXI	Garry Cotter	2367 Northglen Drive	Columbus	OH	43224		<a href="mailto:gicotter@aol.com">gicotter@aol.com</a>
WB8CXO	Mike Young	289 Asplen Drive	Munroe Falls	OH	44682		
WA2CZD	Jim Gilbert	1204 Aspen Pines Drive	Powell	KY	41071-0404		<a href="mailto:jgilbert@fox19.com">jgilbert@fox19.com</a>
N3DC	William Thompson	6327 Kilmer St	Cheverly	MD	20785		
N3DGE	Mike Trachtenberg	3777 Lankenau Avenue	Philadelphia,	PA	19131-2816		
WA8DNI	John Busic	2700 Bixby Road	Groveport	OH	43125	614-491-8198	<a href="mailto:jabusic@yahoo.com">jabusic@yahoo.com</a>
W8DMR	Bill Parker	2738 Florbunda Dr	Columbus	OH	43209		<a href="mailto:w8dmratv@copper.net">w8dmratv@copper.net</a>
K8DW	Dave Wagner	2045 Maginnis Rd	Oregon	OH	42616	419-691-1625	
WA3DTO	Rick White	2771Keystone Dr.	Painsville	Oh	44077-8830		<a href="mailto:wa3dto@aol.com">wa3dto@aol.com</a>
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	OH	43026	614-876-6033	<a href="mailto:MHZ52525@aol.com">MHZ52525@aol.com</a>
KC8EVR	Lester Broadie	108 N Burgess	Columbus	OH	43204		<a href="mailto:kc8evr@beol.net">kc8evr@beol.net</a>
WA8FLY	Rod Shaner	16012 London Rd.	Orient	OH	43146	740-279-3614	<a href="mailto:wa8fly@copper.net">wa8fly@copper.net</a>
W8FZ	Fred Stutske	8737 Ashford Lane	Pickerington	OH	43147		<a href="mailto:w8fz@arrl.net">w8fz@arrl.net</a>
KB8GHW	Mike Amirault	11354 Reussner Dr SW	Pataskala	OH	43062	740-927-5005	<a href="mailto:kb8ghw@ee.net">kb8ghw@ee.net</a>
W8GUC	Reuben Meeks	1345 Helke Rd	Vandalia	OH	45377	937-454-0968	<a href="mailto:rcmeeksjr@yahoo.com">rcmeeksjr@yahoo.com</a>
WA8HFK,KC8SHIP	Frank, Pat Amore	3630 Dayspring Dr	Hilliard	OH	43026	614-777-4621	<a href="mailto:famore@wowway.com">famore@wowway.com</a>
W4HTB	Henry Cantrell	905 Wrenwood Dr.	Bowling Green	KY	42103	270-781-9624	<a href="mailto:w4htb@insightbb.com">w4htb@insightbb.com</a>
WG8I	Chris Vojsak Sr,	3536 W Henderson Rd	Columbus	OH	43220-2232		<a href="mailto:wg8i.ham@gmail.com">wg8i.ham@gmail.com</a>
WB2IIR	Michael Anthony	370 Georgia Drive	Brick	NJ	08723		
N8IJ	Dick Knowles	1799 Homeward Ave	Lima	OH	45805		<a href="mailto:rgrant2001@yahoo.com">rgrant2001@yahoo.com</a>
KD8JLO	David Nulter	510 Millag Drive	Sunbury	OH	43074	614-579-6425	<a href="mailto:davnul@wideopennetworks.com">davnul@wideopennetworks.com</a>
K8KDR,KC8NKB	Matt & Nancy Gilbert	5167 Drumcliff Ct.	Columbus	OH	43221-5207	614-771-7259	<a href="mailto:k8kdr@arrl.net">k8kdr@arrl.net</a>
W8KHW	Kevin Walsh	2396 Anson St	Columbus	OH	43220	614-442-7748	<a href="mailto:kwalsh@datrux.com">kwalsh@datrux.com</a>
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	OH	45331	937-548-2492	<a href="mailto:walkingcross@bright.net">walkingcross@bright.net</a>
N8LRG	Phillip Humphries	3226 Deerpath Drive	Grove City	OH	43123	614-871-0751	<a href="mailto:phumphries@columbus.rr.com">phumphries@columbus.rr.com</a>
WB8LGA	Charles Beener	2540 State Route 61	Marengo	OH	43334		<a href="mailto:cbeener@columbus.rr.com">cbeener@columbus.rr.com</a>
KA8LWR	Mel Alberty	1645 Olentangy Road	Bucyrus	OH	44820	419-468-2971	<a href="mailto:malberty@columbus.rr.com">malberty@columbus.rr.com</a>
W8MA	Phil Morrison	154 Llewellyn Ave	Westerville	OH	43081		<a href="mailto:w8ma@arrl.net">w8ma@arrl.net</a>
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	OH	45660		<a href="mailto:ka8mid@qsl.net">ka8mid@qsl.net</a>
W0MNE	Mike Doty	4300 Winchester Southern Rd	Circleville	OH	43113	740-420-9060	<a href="mailto:mcubed2@hughes.net">mcubed2@hughes.net</a>
N8NT	Bob Tournoux	3569 Oarlock Ct	Hilliard	OH	43026	614-876-2127	<a href="mailto:n8nt@atco.tv">n8nt@atco.tv</a>
WD8OBT	Tom Camm	63 Goings Lane	Reynoldsburg	OH	43068	740-964-6881	<a href="mailto:mitchellb25@netzero.com">mitchellb25@netzero.com</a>
WU8O	Tom Walter	15704 St Rt 161 West	Plain City	OH	43064	614-733-0722	<a href="mailto:wu8o@emec.us">wu8o@emec.us</a>
N8OCQ	Bob Hodge Sr.	3750 Dort Place	Columbus	OH	43227-2022		<a href="mailto:hodgerob@yahoo.com">hodgerob@yahoo.com</a>
KB8OFF	Jess Nicely	742 Carlisle Ave	Dayton	OH	45410		<a href="mailto:kb8off@sbcglobal.net">kb8off@sbcglobal.net</a>
W6ORG,WB6YSS	Tom & Maryann O'Hara	2522 Paxson Lane	Arcadia	CA	91007-8537	626-447-4565	<a href="mailto:w6org@arrl.net">w6org@arrl.net</a>
KC8OZV	George Biundo	3675 Inverary Drive	Columbus	OH	43228	614-274-7261	<a href="mailto:kc8ozv@columbus.rr.com">kc8ozv@columbus.rr.com</a>
W8PU	Gary Poland	3347 State Route 28	Midland	OH	45148		
K2PMS	Paul Schmitter	57 East Main Street	Springville	NY	14141		<a href="mailto:pschmitter@roadrunner.com">pschmitter@roadrunner.com</a>
KE8PN	James Easley	1507 Michigan Ave	Columbus	OH	43201	614-421-1492	<a href="mailto:jeasley11@hotmail.com">jeasley11@hotmail.com</a>
W8PU	Gary Poland	3347 S.R. 28	Midland	OH	45148		<a href="mailto:gpoland1@cinci.rr.com">gpoland1@cinci.rr.com</a>
AE6QU	Ron Phillips	10858 W. Kaibab Dr.	Sun City	AZ	85373	602-369-4242	<a href="mailto:sunstellcom@juno.com">sunstellcom@juno.com</a>
KC8QJR	Adam Burley	1796 Queensbridge Drive	Columbus	OH	43235	614-886-2326	<a href="mailto:adam@digitalcave.org">adam@digitalcave.org</a>
W3RCJ	Thomas Farrell	1912 Burnwood Road	Baltimore	MD	21239		<a href="mailto:w3rcj@operamail.com">w3rcj@operamail.com</a>
WA8RMC	Art Towslee	180 Fairdale Ave	Westerville	OH	43081	614-891-9273	<a href="mailto:towslee1@ee.net">towslee1@ee.net</a>
W8RRF	Paul Zangmeister	10365 Salem Church Rd	Canal Winchester	OH	43110		<a href="mailto:w8rrf@copper.net">w8rrf@copper.net</a>
W8RRJ	John Hull	580 E. Walnut St.	Westerville	OH	43081	614-882-6527	<a href="mailto:jhull@wcmi.org">jhull@wcmi.org</a>
W8RUT,N8KCB	Ken & Chris Morris	3181 Gerbert Rd	Columbus	OH	43224	614-261-8583	<a href="mailto:w8rut@aol.com">w8rut@aol.com</a>
W8RVH	Richard Goode	9391 Ballentine Rd	New Carlisle	OH	45334	937-964-1185	<a href="mailto:w8rvh@ctcn.net">w8rvh@ctcn.net</a>
W8RQI	Ray Zeh	2263 Heysler Rd	Toledo	OH	43617		<a href="mailto:zehrw@glasscity.net">zehrw@glasscity.net</a>
KB8RVI	David Jenkins	1941 Red Forest Lane	Galloway	OH	43119	614-878-0575	<a href="mailto:kb8rvi@hotmail.com">kb8rvi@hotmail.com</a>
W8RWR	Bob Rector	135 S. Algonquin Ave	Columbus	OH	43204-1904	614-276-1689	<a href="mailto:w8rwr@sbcglobal.net">w8rwr@sbcglobal.net</a>
W8RXX,KA8IWB	John & Laura Perone	3477 Africa Road	Galena	OH	43021	740-548-7707	<a href="mailto:jper@insight.rr.com">jper@insight.rr.com</a>
W8SJQ	Rocky Eramo	795 Riverbend Ave	Powell	OH	43065	614-207-2740	<a href="mailto:rockyeramo@aol.com">rockyeramo@aol.com</a>
W8SJV,KA8LTG	John & Linda Beal	5001 State Rt. 37 East	Delaware	OH	43015	740-369-5856	<a href="mailto:w8sjv@nexgenaccess.com">w8sjv@nexgenaccess.com</a>
KB8SSH	Mike Cotts	3424 Homecroft Dr	Columbus	OH	43224	614-371-7380	<a href="mailto:mcotts@wideopenwest.com">mcotts@wideopenwest.com</a>
W3SST	John Shaffer	1635 Haft Dr.	Reynoldsburg	OH	43068	614-751-0029	<a href="mailto:w3sst@juno.com">w3sst@juno.com</a>
K8TPY, K8FRB	Jeff & Dianna Patton	3886 Agler Road	Columbus	OH	43219		<a href="mailto:cqcqk8tpy@yahoo.com">cqcqk8tpy@yahoo.com</a>
KB8TRP	Tom Flanagan	1751 N Eastfagan Dr.	Columbus	OH	43223		<a href="mailto:chuck78@wowway.com">chuck78@wowway.com</a>
NR8TV	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123	937-981-1392	<a href="mailto:s.crew@in-touch.net">s.crew@in-touch.net</a>
KB8UGH	Steve Caruso	6463 Blacks Rd. SW	Pataskala	OH	43062-7756		<a href="mailto:dael4@columbus.rr.com">dael4@columbus.rr.com</a>
WB8UGV	Bruce Jaquish	22375 Montanna Drive	Lawrenceburg	IN	47025-7447	812-637-3805	<a href="mailto:brucewb8ugv@comcast.net">brucewb8ugv@comcast.net</a>

Call	Name	Address	City	St	Zip	Phone	URL
W8URI	William Heiden	5898 Township Rd #103	Mount Gilead	OH	43338	419-947-1121	<a href="mailto:wb8uri@earthlink.net">wb8uri@earthlink.net</a>
KB8UWI	Milton McFarland	115 N. Walnut St.	New Castle	PA	16101		<a href="mailto:kb8uwi@yahoo.com">kb8uwi@yahoo.com</a>
WA8UZP	James R. Reed	818 Northwest Blvd	Columbus	OH	43212	614-297-1328	<a href="mailto:wa8uzp@yahoo.com">wa8uzp@yahoo.com</a>
K8VKA	Ed Schleppe	5900 Bowen Rd	Canal Winchester	OH	43110		<a href="mailto:ejs@comtech-ohio.com">ejs@comtech-ohio.com</a>
N8WAC	Tony Everhardt	6512 Emch Road	Walbridge	OH	43465	419-666-5178	<a href="mailto:natewac@aol.com">natewac@aol.com</a>
KB8WBK	David Hunter	45 Sheppard Dr	Pataskala	OH	43062	740-927-3883	<a href="http://hiram@hiramhunter.com">hiram@hiramhunter.com</a>
KC8WRI	Tom Bloomer	PO Box 595	Grove City	OH	43123		<a href="mailto:ohiomec@aol.com">ohiomec@aol.com</a>
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	OH	43224-3011		<a href="mailto:sdiggs4590@aol.com">sdiggs4590@aol.com</a>
N8XYJ	Dan Baughman	4269 Hanging Rock Ct.	Gahanna	OH	43230		<a href="mailto:danohio@wowway.com">danohio@wowway.com</a>
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	OH	43064		<a href="mailto:kb8ymq@aol.com">kb8ymq@aol.com</a>
KC8YPD	Joe Ebright	3497 Ontario St	Columbus	OH	43224		-----
N8YZ	Dave Tkach	2063 Torchwood Loop S	Columbus	OH	43229	614-882-0771	
AB5ZJ	Tom Phillips	6712 Hickory Pl. Ct.	N. Richland Hills	TX	76180		
K3ZKO	Ron Cohen	915 Rowland Ave	Cheltenham	PA	19012	215-828-1263	<a href="mailto:k3zko@verizon.net">k3zko@verizon.net</a>
KA8ZNY,N8OOY	Tom & Cheryl Taft	386 Cherry Street	Groveport	OH	43125	614-202-9042	<a href="mailto:taft@columbus.rr.com">taft@columbus.rr.com</a>

## 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 1<sup>ST</sup> to December 31<sup>ST</sup>. 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	Repeater trustees: Art Towslee WA8RMC
V. President: Ken Morris W8RUT	Ken Morris W8RUT
Treasurer: Bob Tournoux N8NT	Dale Elshoff WB8CJW
Secretary: Frank Amore WA8HFK	Statutory agent: Frank Amore WA8HFK
Corporate trustees: Same as officers	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/paydues](http://www.atco.tv/paydues) and fill out the form. 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

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**FIRST CLASS MAIL**

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**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.**

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