ATCO NEWSLETTER

VOLUME 27 NUMBER 1 **January 2010**

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

Hamfests are the place to exchange equipment we'll never actually use but can't stand the chance to pass up a bargain. As a result, we end up "renting" each others junk for a while. Cartoon is courtesy of N0UJR.

"No, Jeff went to the Hamfest today to get rid of some old ATV equipment cluttering up the place…Oh, I think I hear him pulling in now…"

ACTIVITIES ... from my "workbench"

Well folks, do you realize that we're close to halfway through the winter season? Nah… I didn't think that would help either. There's one bright spot, however. As I look outside, I am seeing GRASS now for the first time this year since most of the time since Christmas the ground has been snow covered. OK, NOW I'm better so I'll continue.

There are a few repeater related items that need to be addressed so here goes…

Well, the ODOT issue has come to the surface again as ODOT has again contacted the FCC and they in turn let me know interference is still an issue. Initially, I said I didn't think we were at fault because we moved per the recommendations set forth previously. The FCC suggested that I turn the transmitter off to see if the interference goes away. I did and then asked ODOT if the interference was still there (I didn't tell them I turned it off). They then told me that the interference was less but still there so I believed that something else was causing it. Later ODOT said they felt it was gone. Rather than just turning our transmitter back on arbitrarily, I decided to research the Russian satellite signal details myself. I called the receiver manufacturer that ODOT was using to receive the Russian GPS signal and was able to talk to one of their designers. He gave me the web site location for the signal design data. NOW IT IS CLEAR THAT I WAS MISLED BEFORE. I was told the Russian GPS signal was operating on 1250MHz which is not so. They are operating on a cluster of narrow band frequencies starting at 1240MHZ and spaced every 7/16MHz up to 1252MHz. So it's now no wonder that our move from 1250 to 1245MHz didn't help but in fact actually made it worse. Why they didn't report it right away is not clear but the fact that their person I was working with at the time had retired from ODOT probably contributed to it. They had no contact other than the FCC and it took them 6 months to track me down.

OK, now that the problem is identified, how do I fix it? The frequency choices are now more limited since we can't use anything below about 1252MHz. We now have (3) ATV signals to fit between 1252 and 1300. The 1290 to 1300 is taken up with weak signal stuff. We have our 1280 input so we can't put a transmit signal on from about 1270 to 1290. Additionally there are voice repeaters on 1273 and 1274. That leaves 1252 to 1273 for our transmitters. Therefore I ended up with our 12MHZ wide analog transmitter on 1258, the 4MHz wide digital transmitter on 1268 and leaving our 1280 analog input as is. So far, so good. Did you get all of that?

OK, on to the next issue. Because the analog transmitter had to change from 1260 to 1258, I brought it and the associated filter home to re-tune. After I finished the re-tune, I realized that my re-designed analog transmitter was within a "few days" of completion so I delayed installing it realizing that I'd only have to remove it to put in the new analog transmitter a few days later. Well, not quite but you can read about what transpired further into this Newsletter. Nuf said!!!

That's about it for now. Everything else seems to be running ok for the time being. The next project is to re-install the digital ATV receiver so we're ready whenever any of us gets digital ATV transmitting equipment. After that, I'd like to repair the roof camera and re-mount it downtown. We had fun with it before and now that we have a clear shot into the Clippers baseball stadium, it could prove interesting!!!

…73 WA8RMC

ENGLAND D-ATV UPDATE

North West England amateurs have been busy recently, promoting D-ATV with a series of talks to local clubs in NW England and Northern Ireland. The next D-ATV talk and demonstration will be to the Bolton Wireless Club in the New Year.

To kick start local interest, an SR-Systems 23cm D-ATV Tx has been loaned to Brian, G3SMU, who lives 850 feet up Winter Hill (IO83SO). Initial results are very encouraging with many local stations able to receive D5 pictures with only 4W. John, G7LLQ, can receive D5 at around 35 miles with only 40mW of Tx and Dennis, G3UVR, can receive D5 D-ATV pictures, at more than 40 miles, with only 5mW of DVB-S video being transmitted by G3SMU. Other stations receiving D-ATV pictures from G3SMU include: 2E0LGZ, G3OTW, G4EWJ, G6NOI, G8GTI and M1EEV.

Unsurprisingly, in the NW of England there are many more stations with D-ATV Rx than Tx but several are saving and there are high hopes for a breakthrough with the real-time enhancements for the M0DTS/"Poor Man's D-ATV" project and the latest French developments: - http://www.m0dts.co.uk/datv_live.htm (M0DTS Live D-ATV) - http://tinyurl.com/yk9hb6k (F1FAU Live D-ATV - Translated into English)

Local D-ATV Tx hardware is based upon a mixture of SR-Systems (23cm), AGAF/DARC (70cm) and Dektec (23&13cm) systems.

- 70cm TX 437.250MHz, 2Ms, 7/8 (2.5 MHz wide)
- 23cm TX 1255/1285MHz, 4Ms, 7/8
- 13cm TX 2320MHz, 4Ms, 7/8
- Talkback on 144.750 MHz, 436.225 MHz and GB7NM-B (D-Star)

The use of AGAF/DARC boards on 70cm has only been possible after some "inside information" was kindly supplied by Ian, G3KKD, detailing a hardware hack to produce a low symbol rate/low bandwidth DVB-S transmission.

Finally, Albert, G4DHO, is very keen to update the Stoke-on-Trent repeater, GB3UD, with D-ATV in the near future.
…Darren G7LWT

NEW 2 GHZ BROADCAST NETWORK DEPLOYED IN PARIS

A portion of the following article is shown below. For the full article, Control click this link.

Paris, November 26, 2009 - Alcatel-Lucent (Euronext Paris and NYSE: ALU), Solaris Mobile and towerCast announced today the first satellite broadcast infrastructure to demonstrate the potential services of mobile TV, digital radio and data using digital video broadcasting satellite service to handhelds (DVB-SH) standard to be deployed in Paris and surrounding suburbs. This technology will help lower service provider CAPEX expenses to provide mobile TV services and give end-users wider service coverage with less gaps.

With the efficiency of DVB-SH in S-band, this four month trial offering a hybrid satellite/terrestrial system will benefit from the use of a satellite to attain coverage even for rural areas. In places where satellite reception is not possible, especially in indoor reception, service availability is secured by using terrestrial repeaters. This efficiency has been recently highlighted in a study presented at the Mobile TV Forum.

Alcatel-Lucent will provide the DVB-SH network integration and terrestrial repeaters that are installed on the four towerCast sites. Eutelsat will provide the channel multiplex platform to supply the terrestrial repeaters. The same channels will also be distributed directly by the W2A satellite to mobile devices. This is a truly hybrid network that delivers faster, more efficient and seamless mobile TV service, fully transparent to the customer.

Solaris Mobile has equipped vehicles using the industry players of the DVB-SH: the antennas are designed by the company Calearo, receptors are produced by the Quantum, and they incorporate a chip DVB-SH developed by the company Dibcom.

About the DVB-SH standard
The DVB-SH standard is a European standard and part of the DVB family. It is an evolution of DVB-T and DVB-H. As a hybrid system DVB-SH enables direct reception of multimedia content both via satellite and via complementary terrestrial repeaters.

FCC ASKS TV BROADCASTERS TO JUSTIFY SPECTRUM

A portion of the following article is shown below. For the full article, Control click on this link.

The FCC is looking for more spectrum for wireless broadband, and the spectrum currently used for TV broadcasting has emerged as a prime candidate. This week the commission gave broadcasters until Dec. 21 to justify the use of their existing spectrum.

In Public Notice (DA 09-2518): Data Sought on Uses of Spectrum [PDF] the FCC asked broadcasters to comment on "the impact to the economy if insufficient additional spectrum were made available for wireless broadband deployment, in terms of investments, jobs, consumer welfare, innovation and other indicators of global leadership."

Reducing coverage and repacking indicates the FCC may be considering reducing broadcast stations' coverage area to allow reuse of their channels at shorter distances. This could open up some additional channels, but from my experience, stations are already closely packed in some congested areas. In the northeast, for example, WCBS-TV in New York City and WFSB in Hartford share channel 33. WCAU in Philadelphia and WPXW-TV in the Washington D.C. suburb of Manassas, Va. share channel 34.

Under the heading "Potential Approaches to Increase Spectrum Availability and Efficiency" the Public Notice states, "There may be opportunities for broadcasters to share 6 MHz channels in a market without significantly disrupting the free over-the-air television service that consumers enjoy today."

Some stations are transmitting two HDTV programs in the 19.39 Mbps available in one 6 MHz channel, but quality will suffer if the channels are transmitting material that's noisy, has a lot of action or is otherwise difficult to compress. While this sharing may be attractive to some stations, especially if they aren't broadcasting high definition, I'd hate to see it reduce the number of HDTV slots available for the variety of ethnic multicast channels available in markets such as Los Angeles, or the interesting and educational multicast programs available on many public TV stations.

Other suggestions to free up bandwidth for broadband include "greater collocation of transmission facilities closer to the center of densely populated areas;" improvements in MPEG-2 technology which would allow more programs in one 6 MHz channel; and spectrum efficiency gained by "deployment of next generation technologies over that currently achieved under the ATSC standard."

The FCC asks what would be required for broadcasters and consumers to transition to more advanced technologies, and how difficult would it be for them to make the transition, and also poses the question, "What would be the costs to replace off-air delivery to MVPDs and consumers with other means (fiber, microwave)?"

Receiver and antenna limitations influence channel allocations and power levels. The FCC recognized this and asks, "To what extent would establishing antenna and receiver standards facilitate spectral efficiency and improved reception in broadcasting?"

The FCC also requested comments on "What innovations in applications, services, or business models will create synergies between broadband and broadcast services, or other new value from currently licensed spectrum?"

One of the obvious innovations is mobile DTV. Streaming video and audio over the Internet individually to each viewer and listener requires a lot of bandwidth. The iPhone has had a significant impact on AT&T's network. Mobile DTV broadcasting has the advantage of using the same amount of bandwidth to reach thousands of viewers as one viewer requires streaming over the Internet.

The Public Notice challenges TV broadcasters to justify their use of the spectrum with questions such as "How do broadcasters use the capabilities of digital television today?" It seeks specific answers, including "data rate allocations to HD, SD, multicast streams, bandwidth leasing arrangements, etc. and the business rationale behind these choices."

The Commission also wants to know how broadcasters plan to use licensed spectrum in the future and how they should "evaluate the future economic value of off-air digital television and new capabilities to offer mobile DTV broadcasting."

It has been reported that Blair Levin, the person leading the search for more broadband spectrum, is talking not only to broadcasters but to their investors as well. It isn't surprising that the Public Notice asks, "How does the financial community in general view that future value?"

My worst fear is the FCC might allocate all of the UHF TV spectrum to the cell phone companies, requiring TV broadcasters to squeeze into channels 2-13, and limit broadcast content available to viewers by putting multiple stations on one channel when they run out of space in major markets such as New York, Washington D.C. and Los Angeles. Rural viewers, of course, would be out of luck due to interference zones between television markets when such a small number of channels were used. In any event, it seems likely that some, and perhaps many, broadcasters would have to move to another channel.

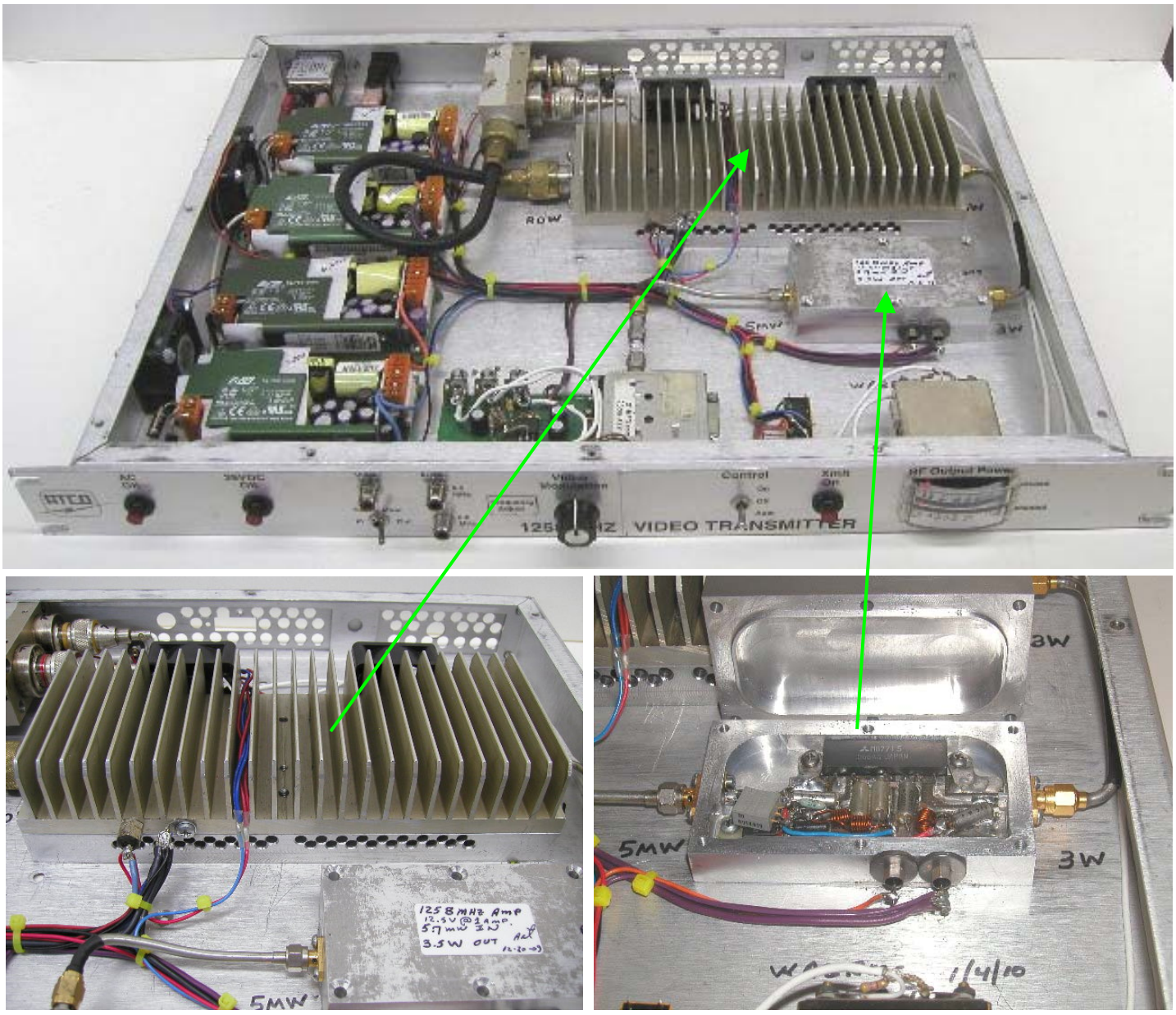
NEW 1258MHZ REPEATER TRANSMITTER NOW ON LINE

Well, it finally happened. After a few weeks delay, I finished the new 1258MHz repeater transmitter. As you may recall, our old Downeast 4 brick amplifier has been in service for over 10 years now and lately has experienced a number of breakdowns. The latest problem involved a failed brick (one of four) so I decided to not replace it but simply put the amplifier back in service outputting only about 15 watts. In the meantime I would research the design of a new amplifier.

As I worked on a new design, it became evident that a design using a single XRF286 transistor worked beyond my best hopes. Also, a new issue with ODOT required us to move the present 1260MHz output to 1258MHz. While I had the amp and interdigital filter back at home re-tuning it to 1258, the new design seemed to be within days of completion. Therefore I decided to not re-install the old amp but wait for the new one. After all, it would only take a few days, right? Well, electronic design seems to take the same time track as plumbing work and we all know there is no such thing as "**a simple plumbing job**". So, about 3 weeks later I finally installed the new amp.

It outputs about 80 watts now whereas the old one, when it was new, was less than 50. The repackaging effort produced an amp that now fits into a 1U rack frame (1.75" high) which saves some space. In addition, it has an internal power supply and does not rely on the external one that historically provided power for the 427, 1260 and digital transmitters. Now the only load on the external supply is the digital ATV amp, and that will change soon.

A picture of the new amp is shown below. It is fed with a Comtech board outputting about 60mw. That is attenuated to about 5mw and fed to a re-designed M67715 brick amp in a separate machined RF tight aluminum block that outputs about 3watts. The 3W feeds the new XRF286 LDMOS single transistor that outputs about 80 watts. The final signal feeding the antenna now is in excess of 40 watts.



INDIAN STARTUP TIPS SDR-BASED TV DEMODULATION

Courtesy of TechOnline India (11/11/2009 1:35 AM EST)

Saankhya Labs, a fabless chip startup based here, has announced its Universal TV demodulator IC based on Software Defined Radio (SDR) architecture, and targeted at World TV and PC-TV receiver markets.

Built on an ASSP (application specific signal processor) platform, the product named Pruthvi - is made up of programmable DSPs, and is the first demodulation IC to enable Global TV Chassis, the company claimed. The product prototype that supports all standards on a FPGA platform is ready and has been demonstrated to 6 major TV companies in Japan.

According to the company, the addressable market for universal TV demodulation is in excess of 500 million units in 2014, of which the DTV market is 82 million units, the hybrid set-top box is 83 MU, PC-TV is 20 MU, and mobile TV will move to 300 MU in 2013 from 20 MU this year.

"DTV broadcast standards vary across regions and with transmission medium. Terrestrial DTV in U.S. and Korea uses ATSC (8-VSB), Europe and India use DVB-T (COFDM), Japan and Brazil use ISDB-T (COFDM) and China uses DTMB (TDS-OFDM) standard. Europe recently released the next generation terrestrial standard DVB-T2. These are just the terrestrial variants," said Vishwa Kayargadde, CEO, Saankhya Labs Pvt. Ltd.

Then, cable TV uses J.83 A/B/C (QAM) standards, Satellite uses DVB-S, DVB-S2 (QPSK) and Mobile TV has its own variants: DVB-H, DMB, ATSC-M/H, CMMB and MediaFlo. In future, TVs will need to support WLAN (802.11a/b/g/n) for interfacing to home video servers/IPTV gateways and Bluetooth for photo-display,

Although most countries have announced switch-off dates for terrestrial analog TV transmission (NTSC/PAL/SECAM), it will not disappear overnight because there are many sources of analog TV such as cable-TV, camcorders, DVD players and VCRs which will continue to exist. The future TV designs need to support analog standards in addition to digital TV standards for some time to come," so you can well imagine the welter of standards TV manufacturers have to cope with," he said.

Pruthvi reduces the bill-of-materials (BoM) cost of TV chassis by supporting multiple standards on a single chip and manufacturers can achieve significant savings by reducing the number of designs to be manufactured. By using it, PC-TV dongle manufacturers can support seamless operation across different regions for nomadic users, Kayargadde said.

Most DTV/PC-TV manufacturers today cater to the world market through region- specific products, leading to additional design, manufacturing and inventory costs due to separate product lines for each region. DTV sets in each region have to support terrestrial, cable and sometime satellite reception, requiring two or three demodulator chips on the DTV chassis, leading to higher BoM costs.

"RF tuners and the Media Processors (MPEG decoder and A/V processor) - the other two major components of a TV - are moving towards universality. So the time for multi-mode demodulation has arrived and Saankhya aims to capitalize on this market opportunity."

Saankhya used the SDR approach to the cost-competitive consumer electronics market like DTV, saying that as semiconductor technology moves deeper into sub-micron geometries (65, 45 and 32-nm) the SDR architecture starts becoming cost-effective. The flexibility that SDR approach allows is extremely well-suited for the TV market due to the variety of standards and this approach allows field-upgradability of demodulation software, Kayargadde said.

Also, different standards involve different types of processing: 8-VSB/QAM use single-carrier modulation which contrasts with the OFDM based multi-carrier modulation methods. The innovation at Saankhya has been the definition of a common class of instruction set that addresses these differing standards. The platform has been designed to handle compute requirements for demodulation of high-definition TV," said Parag Naik, chief technology officer, Saankhya.

"The concentration on using CPUs in my opinion is high. Flexibility provided comes at the cost of silicon efficiency. With the current states of the standards, some of the flexibility is warranted but over time in a consumer market, most of the chip would have to become custom to get all the economies. The biggest problem with such a chip in this generation is likely to be the economies of manufacturing. With DSM, the initial cost of proving the design being high, the chip has to be capable of satisfying large number of applications."

"To my knowledge, Saankhya has developed the only programmable multi-standard TV demodulation solution available. This allows them to have a cost effective chip," said Robert Lensch, managing director, Boucher-Lensch Associates LLC, Sunnyvale, California.

VK3RTV DIGITAL AMATEUR TELEVISION UPDATE

The digitization of the Melbourne amateur television repeater **VK3RTV** is continuing to attract international attention with the latest being an article in the Techtalk Bulletin of the Orange County Radio Club near Los Angeles. That article also reports that there is only one amateur digital TV repeater in the United States. (*That's us guys! Ed)*

European and USA Ham TV enthusiasts have been keen to learn more about VK3RTV and that has kept the repeater custodian **Peter Cossins VK3BFG** busy responding to emails.

The concept of VK3RTV having both analogue and digital inputs is lauded by correspondents overseas as a way of migration to digital that does not exclude those with analogue transmitters. Peter VK3BFG has submitted an illustrated technical article for publication in the WIA journal, Amateur Radio magazine.

The arrival of Digital Amateur Television has stimulated interest in the Greater Melbourne and Geelong areas. There are 17 known stations with transmit capability and many more with digital set-top boxes and the like enabling them to tune.

While transmissions on 446.5 MHz can occur at any time they are more likely after 7pm. Transmission material varies from such programs as the popular 'Amateur Logic' series to home movies.

Jack Braham VK3WWW particularly has a range of tapes depicting amateur activities. Another program source is NASA tapes which cover much of the technicalities associated with various space missions that are interesting and educational.

The VK3RTV digital project is funded by Amateur Radio Victoria, plus a $1,000 contribution from the WIA Club Grants Program and volunteer support.
…Barry Robinson VK3PV http://www.southgatearc.org/news/december2009/vk3rtv_update.htm

AMATEUR RADIO BILL PASSES SENATE, MOVES TO HOUSE

From ARRL Headquarters ARRL Bulletin 37 ARLB037 Newington CT December 16, 2009

To all radio amateurs,
On Monday, December 14, 2009 S 1755 -- The Amateur Radio Emergency Communications Enhancement Act of 2009 -- passed the Senate by unanimous consent; the bill now goes to the House of Representatives for consideration. Sponsored by Senator Joe Lieberman (ID-CT), and Senator Susan Collins (R-ME), S 1755, if passed, would direct the Department of Homeland Security (DHS) to undertake a study on emergency communications.

S 1755 points out that "There is a strong Federal interest in the effective performance of Amateur Radio Service stations, and that performance must be given -- (A) support at all levels of government; and (B) protection against unreasonable regulation and impediments to the provision of the valuable communications provided by such stations."

Members of the Senate Homeland Security and Governmental Affairs Committee considered S 1755 on December 10. After it passed through Committee, it was placed on the Senate's calendar to be voted on. "We are grateful to Committee Chairman Lieberman and Ranking Member Collins for sponsoring the bill and arranging for its swift consideration and passage by the Senate," said ARRL Chief Executive Officer David Sumner, K1ZZ.

Similar in language to HR 2160 (also called The Amateur Radio Emergency Communications Enhancement Act of 2009 that was introduced this past April by Representative Sheila Jackson-Lee [D-TX-18]), S 1755 calls on DHS to undertake a study on the uses and capabilities of Amateur Radio Service communications in emergencies and disaster relief and then to submit a report to Congress no more than 180 days after the bill becomes law. The study shall:

Include a review of the importance of Amateur Radio emergency communications in furtherance of homeland security missions relating to disasters, severe weather and other threats to lives and property in the United States, as well as recommendations for enhancements in the voluntary deployment of Amateur Radio licensees in disaster and emergency communications and disaster relief efforts and improved integration of Amateur Radio operators in planning and furtherance of the Department of Homeland Security initiatives.

Identify impediments to enhanced Amateur Radio Service communications, such as the effects of unreasonable or unnecessary private land use regulations on residential antenna installations; and make recommendations regarding such impediments for consideration by other federal departments, agencies and Congress.

In conducting the study, S 1755 directs the Secretary of Homeland Security to "utilize the expertise of stakeholder entities and organizations, including the Amateur Radio, emergency response and disaster communications communities."

S 1755 makes note of the fact that Section 1 of the Joint Resolution entitled Joint Resolution to Recognize the Achievements of Radio Amateurs, and To Establish Support for Such Amateurs as National a finding that stated: "Reasonable accommodation should be made for the effective operation of Amateur Radio from residences, private vehicles and public areas, and the regulation at all levels of government should facilitate and encourage amateur radio operations as a public benefit."

The bill also pointed out that Section 1805(c) of the Homeland Security Act of 2002 (6 U.S.C. 757(c)) directs the Regional Emergency Communications Coordinating Working Group of the Department of Homeland Security to coordinate their activities with ham and Amateur Radio operators among the 11 other emergency organizations, such as ambulance services, law enforcement and others.

NEW VHF TV ALLOTMENTS FOR DELAWARE AND N.J.

The following is from TV Technology Magazine authored by Doug Lung. For the complete article control click here.

In 1982, before anyone was considering DTV channel allotments, Congress modified the Communications Act of 1934 to add a section (331(a)) stating that the FCC must allocate commercial VHF channels in such a manner so that would be not less than one VHF channel per state, "if technically feasible."

Even though VHF TV channels, especially low-band VHF channels have been found to be less desirable than UHF channels in most situations--witness the number of stations filing applications to move from VHF to UHF--the FCC is still required to make sure every state has at least one commercial VHF channel. Last week the FCC initiated rulemakings to make sure that the two states considered deficient in VHF channels--New Jersey and Delaware--had commercial VHF allotments.

UHF or VHF DTV channels are scarce in the northeast, so it isn't surprising that the two proposed allotments are in the least desirable low-band VHF spectrum. The FCC has proposed allocating Channel 4 to Atlantic City, N.J. [PDF] and assigning Channel 5 to Seaford, Del. [PDF].

The FCC noted that the station assigned to analog Channel 9, in Secaucus, N.J., is now operating only on its DTV frequency, Channel 38. The remaining VHF channel allocated to Newark, N.J.'s WNET (Channel 13) has been operated as part of the New York State education network since 1961 and the Court of Appeals has ruled that this allotment does not qualify as a VHF channel allotment for the purpose of Section 331(a). And as Channel 12, which is allocated to Wilmington, Del., is reserved for non-commercial educational use; it too does not qualify under Section 331(a).

A BNC CONNECTOR TOOL

Found this in the ARRL Newsletter January 7, 2010 and thought it neat. I've messed up BNC connectors installing them before so it caught my eye. Enjoy! Ed.

Scott McCann, W3MEO, of Queenstown, Maryland, made this tool by soldering a BNC connector to the shaft of an old screwdriver (see photo): "I cut off the blade and tinned the shaft with ordinary solder and flux. I then removed the center pin and Teflon from a BNC plug and soldered the plug onto the screwdriver shaft. While it was hot, I 'locked up' the nut and collar with solder. Now I have a BNC driver, very handy for installing and removing BNC jacks without marring them, which can happen using pliers or other 'make do' tools." Do you have an idea or a simple project that has improved your operating? Maybe you've taken something commonly found around the home and developed a ham radio use for it? Why not share your hints with fellow hams in "Hints and Kinks," a monthly column in *QST*. If we publish your hint in *QST*, you will receive $20. Send your hints via e-mail or to ARRL Headquarters, Attn: "Hints and Kinks," 225 Main Street, Newington, CT 06111. Please include your name, call sign, complete mailing address, daytime telephone number and e-mail address.

The completed tool aids in inserting or removing BNC jacks from a chassis without damaging the connector.

2009 SEES SURGE OF NEW AMATEUR RADIO LICENSEES

The following is from the ARRL Newsletter January 7, 2010. It's good to see our population is increasing. Now, we need some of those to go toward ATV! Ed.

This past year was a banner year for new Amateur Radio licensees. According to ARRL VEC Manager Maria Somma, AB1FM, the FCC issued more than 30,000 new ham radio licenses. "In 2009, the demand for Amateur Radio exam sessions remained elevated and is still running at a higher rate than before the FCC's restructuring of the license requirements in 2007," Somma said. "This high level of exam session activity has produced an elevated influx of new applications, far outpacing recent years." A total of 30,144 new licenses were granted in 2009 -- an increase of almost 7.5 percent from 2008. In 2005, 16,368 new hams joined Amateur Radio's ranks; just five years later, that number had increased by almost 14,000 -- a whopping 84 percent!

In 2009, the FCC issued more than 30,000 new Amateur Radio licenses -- an almost 3 percent increase in the number of new licenses issued in 2008. At the end of 2009, there were 17,084 Novices, 334,245 Technicians, 150,970 Generals and 119,403 Amateur Extra class licensees.

NEW FCC LICENSES ISSUED 2005 THROUGH 2009

Year	2005	2006	2007	2008	2009
Jan	876	1,274	1,647	1,755	1,960
Feb	1,357	1,605	2,435	2,998	2,263
Mar	1,705	2,531	3,478	2,816	3,463
Apr	1,486	1,728	2,673	3,090	3,430
May	1,651	2,283	2,607	2,562	2,717
Jun	1,493	1,967	2,281	2,402	3,011
Jul	906	1,401	1,786	2,077	2,220
Aug	1,500	1,623	2,183	2,084	2,102
Sep	1,139	1,357	1,462	1,763	2,116
Oct	1,385	1,781	2,109	2,303	2,404
Nov	1,540	1,993	2,132	2,197	2,344
Dec	1,330	1,569	1,935	2,019	2,114
Totals	**16,368**	**21,112**	**26,728**	**28,066**	**30,144**

CAPTION CONTEST

As most of you know, we had a caption contest last Fall with the winner selected at the Fall Event. The winner is Bob Hodge N8OCQ with the winning caption to the photo on the right of:
I'll bet I don't turn that screw again...

The other entries were:
"How do I get enough coupons for converter box's" Dale WA8KQQ
"Remember when we were kids, all we had was a transistor radio? Now we have video overload." 73, Chris, WG8I
"Now what did I do with that control code sheet..." N8OCQ
"Oh No! the weather channel again! N8OCQ
"Weather net must be up again..." N8OCQ
"Maybe we should tell him that we are intentionally transmitting this stuff !" Bill N9CX

If anyone knows of another cartoon that we can use for another contest, let me know.
…WA8RMC

MIND BENDER

Problem: Four people need to cross a rickety rope bridge to get back to their camp at night. Unfortunately, they only have one flashlight and it only has enough light left for seventeen minutes. The bridge is too dangerous to cross without a flashlight, and it's only strong enough to support two people at any given time.

Each of the campers walks at a different speed. One can cross the bridge in 1 minute, another in 2 minutes, the third in 5 minutes, and the slow poke takes 10 minutes to cross. How do the campers make it across in 17 minutes?

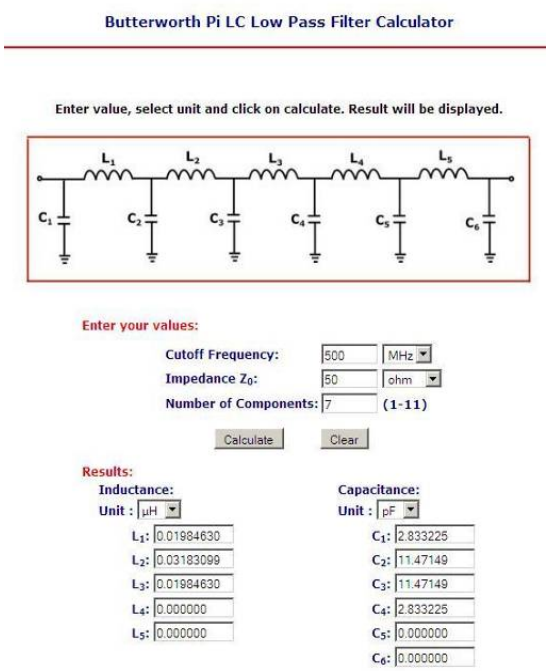
ATV LOW PASS FILTER

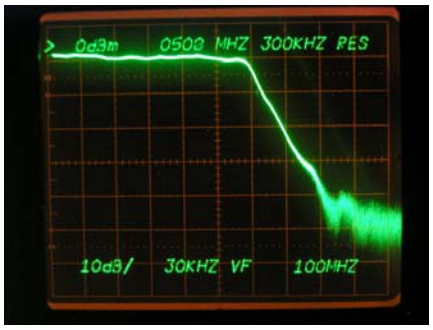
Here's a handy filter for ATV applications. In my case, I needed a filter to eliminate the 3rd harmonic energy from the repeater 427MHz output. Why? Well, when I do the math, 427.25MHz x 3 = 1281.75MHz which is within the passband of our 1280MHz repeater input. Since the 427 output is on when receiving 1280, a small amount of 1280 desense occurred. It was not bad but took a 1280 input of at least P2 to be received. Therefore a filter that passes 427 but blocks 1281 was needed. The filter below filled the requirements. It was placed between the 427 driver and final amplifier since the amplifier is a true class "A" device. (If we still used a Mirage amp, it would have been needed at the amp output because the Mirage generated a lot of intermodulation distortion).

The filter was created with the help of a web based program at www.calculatoredge.com/electronics/bw%20pi%20low%20pass.htm which contains a whole library of useful engineering type programs. Simply bring up the web page, select the filter of choice, enter the information and press ENTER. The program does the rest. I chose ~500MHz as the cutoff frequency because it was sufficiently above 427 but well below 1280 and 7 elements because I thought it would produce a steep enough attenuation slope to get to the noise floor before getting to 1280. It turned out ok with those assumptions. The only tricky thing is how to estimate the inductance values as they calculate to be below 1 microhenry. Here I guessed based upon inductors I have made in the past. (The filter side walls also affect it). The capacitors were easy because I used 1-15pf variable piston trimmers. That way I could fine tune it with the aid of a spectrum analyzer.

The pictures below illustrate the final design. The chart at the lower left is what the "CalculatorEdge" program displays. The analyzer picture below displays the signal attenuation as frequency increases. Housing material is printed circuit board stock. Tested results are as follows: loss through filter @ 427MHz = 0.1dB and >80dB @1280MHz.

I made a low pass filter but there are formulas for high pass and band pass also. In fact you can combine a low pass, band pass and high pass filter to create a 3 port band splitter if you like. Diamond and Comet both sell port splitters using formulas like this so now you can roll your own. If you need to verify the design, bring it over and I'll connect it to my spectrum analyzer!
…WA8RMC





W6HUY LOOKS IN ON ATCO NET

W6HUY from NAPA Valley, California is a frequent guest of the ATCO Tuesday night net via the internet on WWW.BATC.TV. Wayne sent the following pictures of his facility.
…WA8RMC

DATV DETAILS FROM CALIFORNIA

Below is an excerpt from the Orange County ARC Newsletter where Ken and Robbie are busy creating a DATV repeater system of their own. Their "Tech Talk 79" has some very interesting DATV considerations. Let's read on…

TechTalk79

Comparing DATV Repeater Designs

by Ken W6HHC & Robbie KB6CJZ

Orange County Amateur Radio Club

This latest TechTalk article on DATV (Digital-ATV) technology looks at the design of three different types of D-ATV repeaters. First, we will look at a very simple DATV repeater design that is proposed for the OCARC club in the future. Then we will look at the first operational DATV repeater in the US, WR8ATV in Columbus, Ohio. Finally, we will look at the design of the first DATV repeater in Australia to go 100% DATV transmissions, VK3RTV near Melbourne.

Proposed W6ZE DATV Repeater Design

If testing of cross-town DATV simplex portable session by W6HHC and KB6CJZ continues to go well, then there are future plans being proposed to add a DATV repeater for OCARC use. This repeater has a very simple design compared to later ones we will look at:

- DVB-S Uplink on 1.2 GHz
- DVB-S Downlink on 3.4 GHz
- Downlink RF Bandwidth is 3 MHz
- One Transport Stream Channel (1xTS)

The choice of the 3.4 GHz downlink frequency here is highly influenced by crowded band-plan condions here in Orange County, near the city of Los Angeles.

As shown in **Fig 1** below, there is a single DATV uplink receiver on 1.2 GHz feeding a single DATV transmitter on 3.4 GHz. The DVB-S receiver planned for the W6ZE repeater is a "satellite" SetTopBox. This type of STB is commonly called "Free-To-Air" (aka FTA) and can be easily found used on e-Bay.

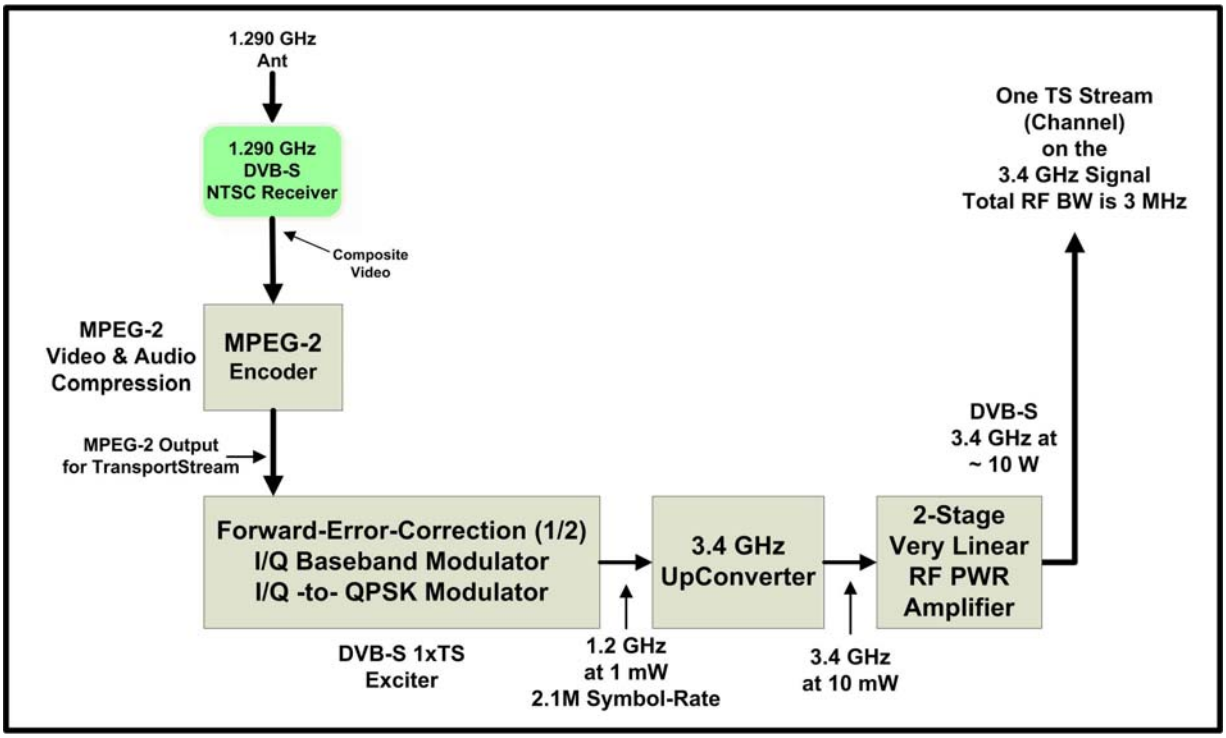
The choice of symbol-rate of 2.1 M Symbols/sec for NTSC and a Forward Error Correction setting of 1/2 provides a significant error correction redundancy factor of 1/2 while still obtaining a narrow DATV RF bandwidth of only 3 MHz.

WR8ATV DATV Repeater Design

A block diagram of the current WR8ATV DATV repeater in Columbus, Ohio is shown in **Fig 2** on the following page. The Amateur Television of Central Ohio (ATCO) runs the only currently active DATV repeater in the United States. The WR8ATV repeater design is more complex that the simple repeater design that we showed in Fig 1:

- DVB-S Uplink on 1.2 GHz
- Analog uplink on 439 MHz, 1.2, 2.4 & 10 GHz
- DVB-S Downlink on 1.2 GHz
- Downlink RF Bandwidth is 4 MHz
- Two Transport Stream Channels (2xTS)

Figure 1 – Block Diagram Showing Simple Planned DATV Repeater Design for W6ZE



In January of 2004 the ATCO Group in Columbus, Ohio installed a DVB-S digital output to their repeater which has been in service 24-7 since then.

The WR8ATV DATV repeater design allows two channels to be simultaneously interleaved on one DATV transmission signal. The choice of a symbol-rate of 3.125 M Symbols/sec and a Forward Error Correction setting of 3/4 allows packing two channels into a narrow DATV RF bandwidth of only 4 MHz. Each channel uses 1.5625 MS/sec symbol-rate that will support an MPEG-2 video output stream Net-Data-Bit-Rate of 2.16 mbps (when configured at FEC 3/4).

Figure 3 – DATV Test Pattern of WR8ATV

VK3RTV DATV Repeater Design

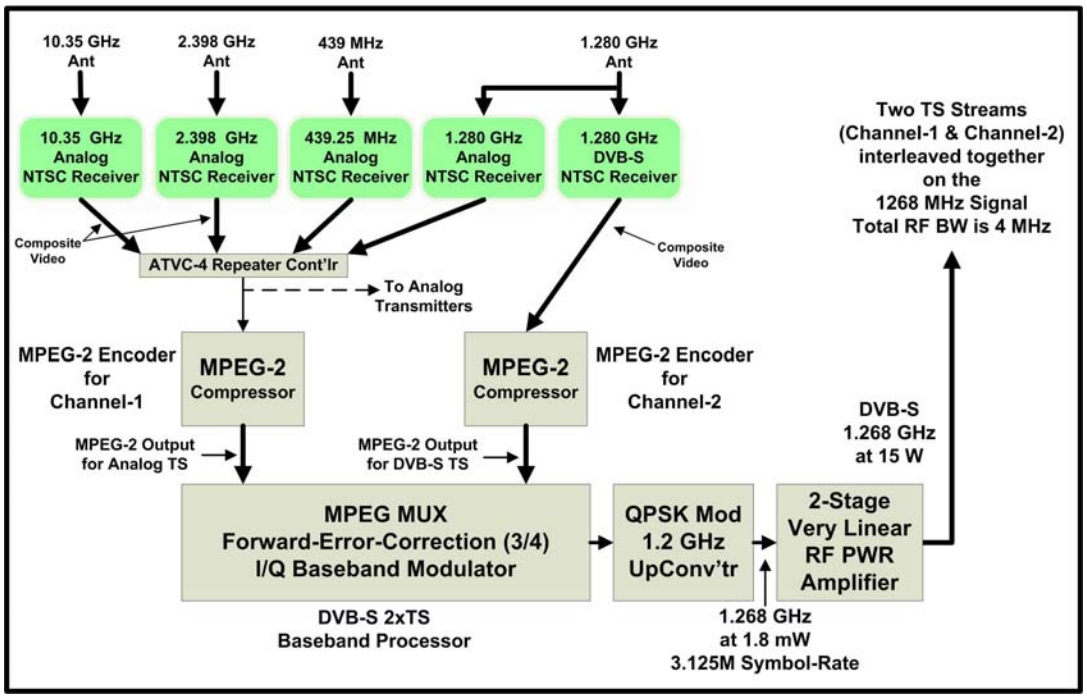
The VK3RTV Amateur TV repeater near Melbourne has been transmitting analogue ATV pictures for 30 years. In September 2009, VK3RTV began transmitting only Digital-ATV using the terrestrial standard, DVB-T. As Peter-VK3BFG, custodian for the VK3RTV repeater, told us "...The quality has taken a quantum leap over the old analogue to analogue system, although I felt a bit of a 'pang' when I de-commissioned [the analogue repeater output]....".

The block diagram for the VK3RTV DATV repeater design is shown in **Fig 4**, on the following page. The VK3RTV DATV repeater design is also very complicated (in our minds):

- DVB-S Uplinks on 1.250 GHz and 1.280 GHz
- Analogue uplinks on 1.2 GHz and 10 GHz
- DVB-T Downlink on 446.5 MHz
- Downlink RF Bandwidth is 7 MHz
- Two Transport Stream Channels (2xTS)

The VK3RTV designers chose the DVB-S standard for the digital uplinks as DVB-S transmitters are currently a lot cheaper than DVB-T transmitters. Because the Aussies have a lot bandspace in Australia, they are using a symbol-rate of 5 M Symbols/sec for the DVB-S uplink transmitters that produces an RF bandwidth of 7 MHz. Most Europeans seem to be using 2 M symbol-rate for PAL which pixelates on very fast camera-pan motion.

Figure 2 – Block Diagram Showing WR8ATV DATV Repeater Design



The DVB-T downlink transmitter technology is easily able to interleave two channels of video (VK3RTV1 and VK3RTV2) on the same 446.5 MHz signal within a total RF bandwidth of 7 MHz. Channel VK3RTV1 displays either the input from the analogue 1.250 GHz receiver or the input from the DVB-S STB tuned to 1.250 GHz. If no signal is present from either receiver, a microprocessor controlled input selector switch inserts a TEST PATTERN. Channel VK3RTV2 displays either the input from the analogue 10.41 GHz receiver or the input from the DVB-S STB tuned to 1.280 GHz. If neither receiver signal is present, the input selector switch inserts a TEST PATTERN. The microprocessor input switching has DTMF inputs for controls and can also switch in a camera or DVD.

One aspect that we think is very clever...is that the VK3RTV team decided to cut-off analogue repeater transmissions and go to 100% DATV output, but continued to allow the analogue uplinks. DATV SetTopBoxes are cheap. This move forced all members to buy low-cost Terrestrial STBs

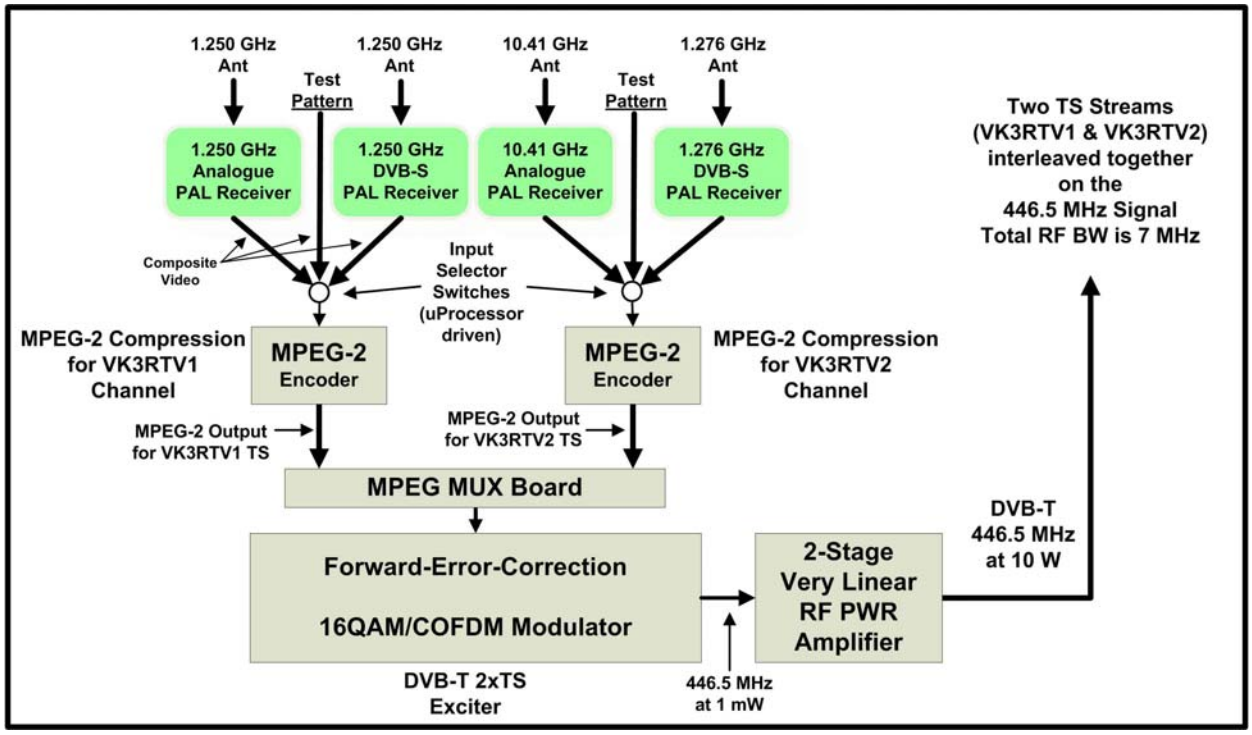
as STEP 1. But, at the same time this first move did not cut-off their home analogue ATV transmitters. It allows members to migrate to the more expensive DATV home transmitters at their convenience. A very neat migration plan for moving from analogue-ATV to Digital-ATV!!!

Figure 5 – VK3RTV Screen Shot from First Tests

Acknowledgements

We would like to give special thanks to Peter Cossins VK3BFG for sharing detailed information on the VK3RTV DATV repeater and for answering our many questions.... and also to Art Towslee WA8RMC for sharing detailed information on the WR8ATV DATV repeater and answering our many questions.

Figure 4 – Block Diagram Showing VK3RTV DATV Repeater Design



Useful DATV Links

- Melbourne DATV Station VK3RTV – see **www.VK3RTV.com/latest.html**
- British ATV Club - Digital Forum – see **www.BATC.org.UK/forum/**
- Amateur Television of Central Ohio WR8ATV – see **www.ATCO.TV**
- Orange County ARC newsletter series of DATV articles – see **www.W6ZE.org/DATV/**
- TAPR Digital Communications Conference free proceeding papers – see **www.TAPR.org/pub_dcc.html**
- Ultimate Resource for Digital Amateur Television – see **www.D-ATV.com**

FALL EVENT / ANTENNA PARTY

Well, another year, another GREAT Fall Event. Weather was great and gave us a good opportunity to do some antenna testing. (More on that below). We had about 30 people in attendance which also included some of the guys from Dayton. I first thought the door prize table was going to be a little sparse this year but the donations kept pouring in so I can assure you everyone went home with a prize.

We had lunch then a short business meeting and according to our charter, elected officers which remained the same as last year. After that the door prizes were distributed. If you missed it last fall, you missed some good food and prizes, not to mention the socializing too!

Here we are standing in the food line.

And now a glance at the food.

Looks like we're enjoying the food.

And more food enjoyment

Finally, it looks like we had enough food.

And now a shot of the prize table.

Now, the antenna party!

We haven't had an antenna contest for a few years now so we decided it's time to do it again. The equipment has not been operational and I have not had time to work on it (I know, no excuses because I'm retired but we'll talk about that another time!). Thanks to WB8LGA, we got the computer program working along with the signal processor but as we found out, bugs still need to be removed. For example, next time we'll stay away from buildings and an asphalt parking lot. It produced reflections that made the patterns questionable. We'll try again next year with higher antennas and more source power on 2.4GHz.

Here's a picture of the source antennas. The top one is a 42 element 2.4GHz loop yagi. Below that is the 439MHz yagi and on bottom is a small 1280MHz loop yagi.

Here's the receive site. Notice the professional sun screen to allow computer screen monitoring. We'll work on that next year!

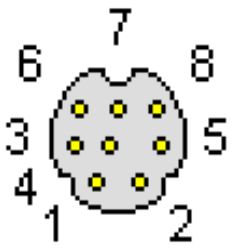
Finally a view of one of the test antennas. This one is a can antenna for 2.4GHz.

PICTURETEL CAMERA CABLE WIRING DIAGRAM

Hi Art,
I've been working on a cable for the Picturetel PTZ-2N pancake camera. Tom Taft loaned me a cable to trace out the wiring so I thought that the diagram I came up with might be something to put in the next issue.
…Bob N8OCQ

Pancake Camera to P.C. Cable

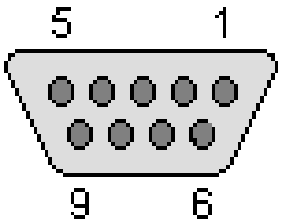
8 Pin Mini Din Male



Wiring

Din	DB9
N.C.	1
2	2
1	3
N.C.	4
3	5
N.C	6
N.C	7
N.C.	8
N.C	9

DB9 Female



MIND BENDER SOLUTION

To get everyone across in 17 minutes, we need get the two slowest people across together; otherwise we are wasting too much time. Once we get them across, how do we not make one of them walk back with the flashlight? Just have one of the faster people already there waiting to sprint the flashlight back across.

Person A: 1 minute
Person B: 2 minutes
Person C: 5 minutes
Person D: 10 minutes

***** Another valid solution is to have A bring the flashlight back in step 2.

The Race Against Time		
Step	**Action**	**Total Time**
1.	A & B cross with the flashlight	2 minutes
2.	B comes back with the flashlight *	4 minutes
3.	C & D cross with the flashlight	14 minutes
4.	A comes back with the flashlight	15 minutes
5.	A & B cross with the flashlight	17 minutes

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
Vol 26 IV	9	Remote Touch Tone Decoder For Your Shack

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 IV.
…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.

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

7 Feb 2010+Winter HamFest Northern Ohio Amateur Radio Society http://www.noars.net Talk-In: 146.70 - (open) Contact: Darlene Ohman, KA8VTS 4122 Bush Avenue Cleveland, OH 44109 Phone: 216-398-8858 Email: dfohman@att.net Lorain, OH Gargus Hall 1965 North Ridge Road

14 Feb 2010+ Mansfield Mid-Winter Hamfest & Computer Show InterCity Amateur Radio Club http://www.w8we.org/hamfest.htm Talk-In: 146.940 (PL 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

21 Mar 2010+ Hamfest and Computer Fair Toledo Mobile Radio Assocation (TMRA) http://tmrahamradio.org Talk-In: 147.27+ Contact: Brian J. Harrington, WD8MXR 4463 Holly Hill Drive Toledo, OH 43614 Phone: 419-385-5624 Email: brian.harrington@utoledo.edu Perrysburg, OH Owens Community College 30335 Oregon Road

10 Apr 2010+ Hamfest, Radio, Electronics & Computer Show Jackson County Amateur Radio Club http://www.jacksoncountyarc.org Talk-In: 146.79 (PL 167.9) Contact: Don Barnhart, KD8HHG 31 Anna Marie Drive Londonderry, OH 45647 Phone: 740-887-3533 Email: kd8hhg@yahoo.com Jackson, OH Jackson County YMCA 594 East Main Street

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

25 Apr 2010+ Athens County Amateur Radio Association http://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: dmcdaniel1@ohio.edu Athens, OH Athens Community Center 701 East State Street

14-16 May 2010+ Dayton Hamvention Dayton ARA http://www.hamvention.org/ Talk-In: 146.94(-) or 146.64(-) Contact: PO Box 964 Dayton, OH 45401-0964 Phone: 937-276-6930 Email: info@hamvention.org Trotwood, OH Hara Arena 1001 Shiloh Springs Road

19 Jun 2010+ Milford Amateur Radio Club http://www.w8mrc.com Talk-In: 147.345+ (no tone) Contact: Jim Linn, WB8RRR 5110 Romohr Road Cincinnati, OH 45244-1023 Phone: 513-831-6255 Fax: 513-528-7270 Email: wb8rrr@arrl.net Milford, OH Eastside Christian Church 5874 Montclair Blvd

25 Jul 2010+ Portage Hamfair '10 Portage Amateur Radio Club, Inc. http://Hamfair.com Talk-In: 145.390 MHz Contact: Joanne Solak, KJ3O 9971 Diagonal Road Mantua, OH 44255 Phone: 330-274-8240 Fax: 330-274-8527 Email: kj3o@arrl.net Randolph, OH Portage County Fairgrounds 4215 Fairgrounds Road

22 Aug 2010+ CARA Hamfest and Computer Show Cambridge Amateur Radio Association http://www.w8vp.org Talk-In: 146.850 (PL 91.5) Contact: Mary Rhodes-Ellis, KD8EIR 5855 Sherrard Road Cambridge, OH 43725 Phone: 740-439-6610 Email: Radicalrhodes@yahoo.com Cambridge, OH Pritchard Laughlin Civic Center 7033 Glenn Hwy

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.

N0OBG Jim Conley	Ballwin, Mo.
N8ZM Tom Holmes	Tipp City, Ohio
K8DMR Ron Fredricks	Jennison, Mich.

…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 (10/10/09)…….$1698.70
RECEIPTS(dues)……. $ 90.00
Repeater Donation……$ 90.00
Paypal expenses……$ (3.39)
CLOSING BALANCE (01/20/10)……..$1902.01

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, 1258 MHz FM mod, 1268 MHz QPSK digital, 2433 MHz FM mod, and 10.350 GHz FM mod. multipole filters in output line of all transmitters
Output Power - 427.25 MHz :50 watts average 100 watts sync tip
1258 MHz: 40 watts continuous (Analog ATV)
1268 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, 1258, 1268, 2433, 10.35 GHz transmitters video identify every 30 min. with ATCO & WR8ATV on 6 different screens
1268 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
1258 MHz - Diamond vertically polarized 12 dBd gain omni (Analog ATV)
1268 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 1268 MHz digital output channel 2)
2398 MHz - F5 video input
10.450 GHz - F5 video input (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 12 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 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#	C2* to disable digital transmitter, C1# to enable it.

ATCO MEMBERS AS OF January 20, 2010

Call	Name	Address	City	St	Zip	Phone	URL
KD8ACU	Robert Vieth	3180 North Star Rd	UpperArlington	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
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
K8DMR	Ron Fredricks	8900 Stonepoint Ct	Jennison	MI	49428-8641		ron_fredricks@comcast.net
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	4300WinchesterSouthern 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
N0OBG	Jim Conley	33 Meadowbrook C C Est	Ballwin	MO	63011		jim@commo.com
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
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	CanalWinchester	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	2895 Sunbury Rd	Galina	OH	43021		gkenmorris@gmail.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	6706 Gilette 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
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
WA8UZP	James R. Reed	818 Northwest Blvd	Columbus	OH	43212	614-297-1328	wa8uzp@yahoo.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

Call	Name	Address	City	St	Zip	Phone	URL
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
N8ZM	Tom Holmes	1055 Wilderness Bluff	Tipp City	OH	45371		tholmes@woh.rr.com
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.