

# ATCO NEWSLETTER

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## ATCO HAM IN THE SPOTLIGHT

This time the spotlight is directed to Tom Walter, KC8LZC. Tom has been dabbling in ham radio for a number of years now and has collected a rather large amount of "goodies" as is the case with most hams. He presently owns a PC Electronics ATV transceiver with a Mirage power amp. However, at this time he is constructing a new ham shack so some of the equipment is not fully operational. As soon as the equipment is relocated, I'm sure we'll see Tom's picture again on a regular basis.

I mentioned to Tom that with his rural location west of Plain City, "why don't you have a 100+ foot tower out back with every conceivable antenna mounted on it?" His response was that the ground elevation is high enough that a 30 footer will do just as good. Besides he hates to climb towers! That'll do it every time.



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## ACTIVITIES ... from my “workbench”



Well, it's Newsletter time again. I am struggling with it this time, not because of insufficient material, just insufficient time. I'm trying desperately to finish painting the house, take a well-deserved vacation at the ocean and finish the Newsletter before the Fall Event. I'm going to make it...just barely as I see it now. Things are progressing though. Now if I could create the 40-hour day it would be easier.

The first activity that comes to mind is the redesign of the 427 ATV transmitter. As you may know, I obtained a commercial ultra linear low power solid state transmitter. When I tested it I found it was not very efficient at 427 MHz. From 475 to 800 MHz it worked great (per the design) but for 10 watts of drive at 427 it outputs only about 35 watts. It should output 100 watts for 10 watts of drive. After considerable transistor input and output matching network rework, I could achieve a full 100 watts output for only 8 watts of drive. Excellent, so I stopped there!

Next is to repackage the modulator/driver amplifier. That work is about 80% complete at this time (interrupted by Newsletter activity, house painting and vacation). All parts are in place but some wiring needs to be done yet. I hope to have the combination complete by Christmas time (famous last words...we'll see). When complete, I hope the resultant ATV 70 cm signal will be greatly improved in quality. The signal strength will increase also but it shouldn't be too noticeable for it will only go from about 60 watts now to 100 watts peak. That's less than 3db. We'll see!

The next item on the list is to create a 449.350 MHz input for the repeater. Its main purpose is to serve as a control input for the roof cam but a full-fledged inband repeater will result. Since touch-tones are required to control the camera's position, frequent tones on 147.45 could become annoying (no one has complained yet) so we'll use the 449.350 input for this function. Also, the ATV controller will utilize the 449.350 input for its command functions. I have found a new commercial receive strip that looks like it will fill the bill quite nicely. It is sensitive and contains the necessary filtering to make it immune to intermodulation signals. (It says that in the data sheet...kidding!)

In addition to the added 449.350 input, the 446.350 MHz output needs some attention. The existing audio level and quality, although adequate for now needs some help. Toward that end I will replace the old RCA Tactec transmit module with a GE Master II driver board donated by Dave Morris, WB8PJZ (new member) followed by a Motorola brick amplifier. That will boost the now 1 1/2 watts to about 5 - 10 watts depending upon the level of desense found. At this time Ted, N8KQN is ordering crystals and testing the combination. If all goes well, I'll package it into a manageable rack panel and install it later this year. There are a number of unknowns at this point so the road may not be entirely smooth. For example, the receiver and transmitter will be packaged together (with RF separations). Also, the frequency split is only 3 MHz so desense may be a problem. At this time, I feel it will work ok. The combination RF signal will pass through a Motorola commercial diplexer on its way to/from the single antenna so some additional filtering may be necessary which I'm prepared to do. Since the 446.350 output is depended upon heavily for good 147.45 reception, improving the strength and quality of this signal should be greatly appreciated. It's important to know that since the 446.350 output repeats the 147.45 input, many listen to this output during the Tuesday night net to be able to hear everyone participating. If you do not presently listen to the 147.45 signal on 446.350, I encourage you to try it.

The roof cam is (still) operational at this point so I guess we've worked the bugs out of it. During the original shakedown process, the aperture command would run continuously at times and therefore seems to have either worn out the clutch or burned out the control motor so aperture control is not operational at this time. Although viewable, the aperture is reduced so night viewing is not possible. Sometime between now and when real cold weather sets in, I'll retrieve it and fix the problem hoping to get it back up before snow and cold prevents access. (That's an ugly thought, isn't it?) In the meantime, if you have suggestions how to improve the performance, let me know.

The 910 MHz radar reception problems still exist but I must admit, have diminished quite a bit lately. The radar signal, although not completely devoid of interference, is acceptable at this time. The original plan was to change the repeater antenna from omni to a directional yagi and polarize it horizontal pointing at the channel 4 transmitter. That would probably solve the interference but would severely limit other 910 MHz accesses. Tom, KA8ZNY uses this input on a frequent basis. So, for now, we'll just wait and see. I've checked out the original 910 repeater receiver and found it down in sensitivity a little bit but overall not bad. The next time I'm up there, I'll switch it back from the spare to see how things look but I don't think the receiver was a problem in the first place. We just have to learn to deal with the increased level of interfering signals by making our stuff better!

Sometime this fall or winter we plan to switch back to the original controller so watch for it. The control codes will change again. Dale is working on some improvements but other priorities take precedence.

That's all for now folks. Remember the Fall Event is the 28<sup>th</sup> of this month. We are trying to have better flea market activity than last year so dig out all of your unwanted stuff, load it into your trunk and line up at the Fall Event so you can trade and go home with someone else's junk. How exciting!

...Art WA8RMC



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# THE WAVECOM EVESDROPPING THREAT

*The following article is directed toward covert operations but I'm sure you can see some ATV 2.4 GHz benefit also! WA8RMC*

Over the last 3.5 years the 2.4 GHz ISM band has become popular for covert eavesdropping, and hundreds of products are available (legally and illegally) to facilitate the usage of this band. By far the most popular products are the Wavecom transmitter modules, which is a consumer product designed to relay a video signal from one room of a house to another, and is limited to well under a few hundred feet (in reality under 75 ft). The largest amount (nearly all) of the 2.4 gig stuff sold starts as the same modules placed in a primitive concealment (such as a clock radio, lamps, or exit signs). Wavecom is short for "Wireless Audio Video Everywhere Communicator", and refers to a 2.4 GHz RF module made in China by the Chia-Heir Group and commonly sold in the United States under the RF-Link brand name.

The module is available in a host of consumer products, and is often found built into video products illegally available in SpyShops, via mail order, and over the Internet. The module is available in a variety of configurations including NTSC, PAL, and SECAM, as well as audio only, and both high and low speed data. The RF signal is FM Modulated with a center frequency between 2400-2483.5, however, special order versions are also available in the following bands: 900-928 (Not Common), 2150-2162, 2300-2500, 2400-2483.5 ( Most Common), 2500-2700 (MSDS)

Antennas are available as either left or right hand circular polarized (LHCP is the most popular). Power amplifiers and high gain antennas are also available that enables considerable (illegal) transmission range. A frequency expansion board (or PROM) is also available which allows the user to modify the operating parameters of the module to transmit between 2300 to 2700 MHz.

The most popular product is a four channel audio and video system, with the first channel being the most commonly used. Units will always default to channel A on power interruption. The primary A/V frequencies are listed in the next table and are followed by the first five harmonics in the appropriate column.

Ch.	Fund. Freq.	1st Harm.	2nd Harm.	3rd Harm.	4th Harm.	5th Harm.
A	2.411	4.822	7.233	9.644	12.055	14.466
B	2.434	4.868	7.302	9.736	12.170	14.604
C	2.453	4.906	7.359	9.812	12.265	14.718
D	2.473	4.946	7.419	9.892	12.365	14.838

(2.411 GHz is the most commonly found frequency.)

## Typical "Legal" Range:

Advertised as "up to 300 feet indoors", 50-75 ft is reasonable stock, out of the box, .25 mw (1/4 mile maximum range outdoors)

## Common Illegal Modifications:

Removal of the 9db internal pad, 2 mw power increase (1/2 mile range), MMIC Mod - increase output to 60mw, DEMI RF Amp - 2.2 W with 10mw input. Good feed and 18" dish, +30db, 1 W output (range is 3-5 miles)

## Transmitter Module:

Physical Size 2.0" x 2.2" x 0.5" (4.7 cubic inches), Operating Voltage 8 to 9 VDC, Current (typical) 150 ma (.25 mw output)

## Additional Components and Subsystems:

External "Small Patch" Antenna (8 dB Nominal), External "Medium Gain" Antenna (10 dB Nominal), External "Large Patch" Antenna (14 dB Nominal), External Omni Direction Antenna (0 gain), Power Booster Zero Lux Camera Module (Concealed inside antenna housing)

## Added Notes:

- Wavecom Products have channel 3 or 4 RF outputs and Base band A/V (also available with S-Video Y/C component outputs).
- Digital video version is rumored to be "in the works" in China, which is aimed at HDTV and/or Digital TV systems (with a possible bi-directional firewire/P-1394 version due out soon).
- QEM Transmitter Modules are available for under \$80.00, power amps for \$50.00. Often the entire system may be found on sale for \$80 - 100 or less.
- Output power levels of 100 mw is popular for video eavesdropping, however; the module can be operated as high as 500 mw by only adding a few components (but it presents a serious health hazard, and is violation of federal law to operate).
- Audio only modules are also popular for covert eavesdropping (and are of course illegal).
- With a clean feed line and a roof-mounted directional antenna, range in a dense urban area can easily be over 5-10 miles (line of site).
- The company also makes a number of other products, which are easily adapted for use as a covert eavesdropping device. While the products can not be legally sold or imported into the US they are available from various SpyShops at a premium (the audio eavesdropping modules are the most popular).
- Power may be obtained from native PBX system, alarm circuits, or telephone loop current (provided the power is kept low and a regulator is used).

... <http://www.tscm.com/TSCM101wavecom2.html>

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## 2300-2305 MHz SPECTRUM BATTLE

AeroAstro Square Off Over 2300-2305 MHz. In a spectrum battle pitting Amateur Radio against a commercial interest, the ARRL and AeroAstro this week filed comments with the FCC to bolster their respective--and competing--proposals for 2300 to 2305 MHz. ARRL has petitioned to elevate the Amateur Service from secondary to primary status on the band and requested that no commercial operations be introduced. AeroAstro seeks co-primary status with the Amateur Service to accommodate a Miscellaneous Wireless Communication Service satellite-based position-monitoring system.

The ARRL has characterized AeroAstro's petition as "a Trojan horse" and said there's no possibility that hams and an auctioned MWCS service could coordinate operations on the band.

AeroAstro claims that the 1 W spread-spectrum uplinks of its proposed Satellite Enabled Notification System (SENS) and Amateur Radio can share the 5 MHz of spectrum and still protect the nearby NASA Deep Space Network. While contending that it "does not seek to cut back current Amateur operations in the band," AeroAstro also called on the FCC to impose severe power and antenna limitations on hams at 2300-2305 MHz.

Under the AeroAstro proposal, Amateurs would be limited to 100 W output and antennas with a beamwidth no greater than 5 degrees for "narrowbeam" operation such as Earth-Moon-Earth communication. For other operation, AeroAstro wants the FCC to limit amateurs to 25 W EIRP.

"This is totally unacceptable," the ARRL retorted in its comments, adding that the restrictions would preclude most amateur operations in the band. A co-primary allocation such as AeroAstro proposes also would make no provision to mitigate interference.

The ARRL said the FCC already has made "adequate accommodation" for services such as the one AeroAstro has proposed "without compromising the 2300-2305 MHz Amateur allocation."

The ARRL concluded that technical limitations proposed for MWCS in the band "would not be sufficient to avoid interference to sensitive Amateur receivers and no coordinated operation between the two services are possible under the circumstances."  
...ARRL Bulletin 29 ARLB029 from ARRL Headquarters

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## FCC PUTS HAM ALLOCATION IN PERIL...2300-2305MHz up for grabs?

The FCC has included a primary Amateur Service allocation among bands it plans to examine to support the introduction of advanced wireless services, including third-generation (3G) mobile systems. Meeting August 9, the FCC said it will seek comments on reallocating some spectrum in the 2390 to 2400 MHz amateur segment as well as in the non-amateur 1.9 and 2.1 GHz bands for unspecified mobile and fixed services.

The FCC adopted a Memorandum Opinion and Order and Further Notice of Proposed Rulemaking that explores additional bands to support advanced wireless and 3G services. The FCC said the further proceeding supplements the record of its January 2000 advanced wireless spectrum proposals by providing "new allocation options," adding that it would "seek comment on the benefits and costs of each."

The Commission said it "intends to explore spectrum options that would complement, rather than substitute for" alternatives identified in the January 2000 NPRM. Besides 2390 to 2400 MHz, the additional bands are 1910-1930 MHz, 1990-2025 MHz, 2150-2160 MHz, and 2165-2200 MHz. The 2390-2400 MHz band is also available for certain unlicensed uses under FCC Part 15 rules.

ARRL General Counsel Chris Imlay, W3KD, and other observers believe the FCC is eyeing 2390 to 2400 MHz as one place to move other services displaced to make way for 3G. "We could have anything in there," he said. "It's totally up in the air." Unclear until the FCC finally acts in the matter is whether amateurs might continue to have access to the band on a shared basis.

Imlay cautioned the Amateur Radio community to hold off any comments to the FCC until the Commission actually issues its Further Notice of Proposed Rulemaking and requests comments.

The issue was presented to the FCC by the Wireless Telecommunications Bureau and the Office of Engineering and Technology. "The WTB presentation included reference to 2390-2400 MHz and said the Commission was particularly interested in the impact of the proposal on the Amateur Service," Imlay said. Gloria Tristani, the only commissioner to comment on the issue, expressed concern about how the FCC's action would affect the Amateur Service.

The FCC says it plans to seek comments on the potential for commercial use of the additional bands "for new advanced wireless services or for the relocation of other incumbent licensees or operators" displaced by any final allocation decision; the advantages and disadvantages of the options, including their potential use for advanced wireless services; the potential effect of the allocation proposals on existing and

prospective users of the bands and the services they provide; and the effect that allocating the additional bands or portions of them might have on global compatibility for advanced wireless services to the extent not identified by World Radiocommunication Conference 2000.

In addition to 2390 to 2400 MHz, the Amateur Service has primary allocations in this part of the spectrum at 2402 to 2417 MHz. The ARRL has asked the FCC to grant the Amateur Service primary status at 2400 to 2402 MHz, and Imlay said he's optimistic the petition will be granted. The AO-40 satellite has been successfully using that band for downlink telemetry and transponder operation and AMSAT plans a similar downlink for its next satellite project.

Earlier this year, the ARRL re-petitioned the FCC for primary status at 2300 to 2305 MHz. The League's petition faces competition from AeroAstro, which wants co-primary status with the Amateur Service for its commercial satellite-based location service.  
...ARRL newsletter volume 20 number 32 August 10, 2001

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## **SINGLE-CHIP TUNER FOR ALL BROADCAST TV STANDARDS**

MUNICH--Infineon Technologies AG today announced the first a triple-band tuner ICs for all global broadcast television standards, including analog and digital terrestrial systems, digital cable networks, and analog TV.

The Taifun TUA6034 makes possible a single-conversion approach to tuners compared to today's two-chip solutions used in up-down conversion designs, said the Munich chip supplier. The single-chip design also reduces the number of ICs in tuners and simplifies the design of radio-frequency front-end systems in televisions, Infineon said.

Infineon said the TUA6034 can be used for all broadcast applications, including DVB-T (Digital Video Broadcasting - Terrestrial); ISDB-T (Integrated Services Video Broadcasting Japan); ATSC (Advanced Television Systems Committee); DVB-C (Digital Video Broadcasting - Cable); DOCISIS (Data-Over-Cable Service Interface Specification) as well as analog PAL&NTSC (Phase Alternating Line & National TV-Standards Committee).

The TUA6034 will be available in two chip packages--P-TSSOP38, and a smaller P-VQFN-40 package for portable and small receiver designs. Samples of the device are available. Volume production of the P-TSSOP38 device is scheduled to begin in the first quarter of 2002. The P-VQFN-40 packaged device will be available next year. In high-volume quantities, both versions of the tuner chip will be priced below \$1.35 each (1.50 Euro).

... Semiconductor Business News (08/16/01, 2:37 p.m. EDT)

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## **ARRL TO FCC: STOP THE ENCROACHMENTS!...More 2300-2305 stuff.**

The ARRL has called on the FCC to put an end to commercial encroachment on amateur allocations at 2.3 and 2.4 GHz. The League included the request in its reply comments, filed August 16, on a petition by AeroAstro to share co-primary status with the Amateur Service at 2300 to 2305 MHz. The ARRL reiterated its stance that the company's petition represents "a Trojan Horse" and that there is no way that Amateur Radio and AeroAstro's position monitoring system could share the same spectrum.

"It is time for the Commission to stop those encroachments, because they have gone too far already," the ARRL said.

The League said AeroAstro's petition for a commercial Miscellaneous Wireless Communication Service allocation at 2300 to 2305 MHz not only would impose "preclusive operating conditions" on hams but represents "yet another in the continuing series of encroachments" into amateur allocations between 2300 and 2450 MHz. The ARRL asserted that AeroAstro has failed to back up its claim that hams and low-power commercial operations can share the band on aco-primary basis without interfering with each other. An interference study prepared by the ARRL Lab and attached to the League's comments predicts "intolerable" interference, especially to weak signals, if the AeroAstro petition were granted.

ARRL has petitioned to elevate the Amateur Service from secondary to primary status on the band and requested that no commercial operations be introduced. AeroAstro seeks co-primary status with the Amateur Service to accommodate its Satellite Enabled Notification System (SENS) position-monitoring system under MWCS rules. The FCC put both petitions on public notice last month, and both parties filed comments earlier this month. There is no primary occupant at 2300-2305 MHz.

The League asked the FCC to dismiss the AeroAstro petition as defective and to grant the League's petition for primary amateur status at 2300 to 2305 MHz.

A copy of ARRL's reply comments are available on the ARRL Web site <http://www.arrl.org/announce/regulatory/rm-10166/rm-10166-reply.html>

...From the ARRL newsletter 8/17/01

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## EUROPEAN DIGITAL INTERACTIVE TV...an interesting discussion.

BERLIN — Merging broadcast TV with the Web, Matsushita, Philips and Sony separately rolled out the first digital televisions and set-top boxes based on the Multimedia Home Platform here this week at Europe's largest consumer electronics show, the Internationale Funkausstellung. The systems arrive as Europe readies Internet and digital TV services that leverage the Java-based application programming interface.

The trio faces competition in the form of the TAK system from Thomson and Microsoft, which mingles Internet services with analog TV. The Multimedia Home Platform (MHP) was developed in Europe as an open, interactive broadcast standard. Its ambitious goal is to allow interoperability among digital receivers and all digital services. Philips is taking the lead by offering a complete MHP solution including a dual-processor chip set equipped with a MIPS CPU and the company's own TriMedia media processor; MHP middleware for consumer electronics OEMs; and an MHP-based software developer's kit, test kits and authoring tools for broadcasters and content developers.

Across Europe, MHP-based interactive DTV broadcasting will begin later this year. Finland will be the first nation to go live, followed by Germany within the next several months and then France, in September 2002. German free-to-air broadcasters such as ARD, ZDF and RTL will launch MHP-based interactive DTV broadcasts via satellite. Finland, Spain, France and Italy will use terrestrial digital TV.

Amid the industry-wide digital push, Thomson Multimedia is taking the road less traveled. Working with Microsoft Corp., its major investor, Thomson is the lone promoter of a proprietary interactive analog TV platform, called TAK.

The two have launched a joint-venture company of the same name, with Thomson Multimedia holding 70 percent and Microsoft 30 percent. TAK in February launched the French version of its interactive service, which integrates an advanced electronic program guide, e-mail, Internet and other online services. TAK plans to bring the service to Germany in the first quarter of 2002, supported by Thomson Multimedia's commitment to offer eight models of TAK-enabled analog TVs.

The TAK-compatible analog TV features Microsoft's Windows CE 2.12; QED's MIPS processor, which churns out 300 million instructions/second running at 250 MHz; a TV-scaler ASIC called Solo, originally designed by WebTV, with 32 Mbytes of RAM, 16 Mbytes of flash memory and a 56k modem.

Within a year of the German rollout, "25 percent of our TV sets sold in Germany will feature TAK," said Walter Struwe, managing director at Thomson Consumer Electronics Sales GmbH.

Given the digital push, TAK's window of opportunity could be short-lived, Markus Kannevischer, director of technology and operations at TAK Deutschland GmbH (Munich) acknowledged. "We know that the time is limited. And that's why we are actively looking for other TV set manufacturers to support TAK."

To date, no TV makers other than Thomson are pushing the analog service in the marketplace. With more partners, however, Kannevischer hopes that TAK will have a long enough life — possibly nine years — before every analog TV in Europe switches to digital.

### **Too big to ignore?**

Neither Thomson nor TAK is entirely ignoring MHP. If the Multimedia Home Platform market becomes big enough, "We have a road map to migrate TAK to an MHP-based digital solution," said Kannevischer.

Both MHP and TAK have a similar goal, promising to give European TV viewers interactive broadcasts combined with Internet connection. But their differences are significant, starting with the analog-digital divide.

TAK, for example, lets viewers execute Java applets on TV sets today. MHP, however, won't offer Internet connectivity until products based on the MHP1.1 spec become commercially available, possibly a year from now.

In principle, MHP1.1 is designed to let TV broadcasters integrate in their broadcast streams relevant signaling parameters and Web links directly synchronized to TV programs. In contrast, TAK's claim to fame is that, by supporting HTML 4.0 and JavaScript 1.1, it makes simple Internet connectivity a reality today. Consumers don't have to wait for digital TV broadcasts.

Unlike WebTV in the United States, however, TAK will offer a certain level of interactive programming on analog TV broadcasts, through special partnership deals TAK has arranged.

Similar API development efforts for interactive DTV broadcasting are taking place in the United States, but activities are fragmented. CableLabs is leading development of the OpenCable Application Platform, while the Advanced Television Systems Committee is working on a rival API, the Digital TV Application Software Environment. Plagued by years of intense political and technical arguments, neither industry appears ready to roll out interactive DTV broadcasting services on open APIs.

## Cost concerns

In Europe, the biggest concern for most consumer electronics OEMs about both MHP and TAK is the cost associated with adding interactivity to TV sets or set-tops, be they digital or analog.

Philips, however, is a firm believer that MHP can be executed "relatively cost-effectively," according to Christian Lake, senior marketing manager of new business at Philips Consumer Electronics (Amsterdam). To say that MHP implementation is too costly is "a myth" created by competing middleware companies, Lake said.

The Dutch giant's first MHP-compliant digital satellite set-top, scheduled for launch next spring for the German market, will be based on STMicroelectronics' ST5512 — a highly integrated chip equipped with ST's proprietary microprocessing core combined with MPEG-2 decoding functions — running at 60 MHz. The chip will also contain 16 Mbytes of SDRAM and 8 Mbytes of flash, Philips said.

Positioning the set-top built around the chip from STMicroelectronics as a baseline MHP box, Philips is planning to launch a TriMedia/MIPS-based Nexperia platform for high-end MHP sets elsewhere in Europe.

"Sixty-Mips [performance] won't be sufficient to handle the MHP1.1 spec," said Philips' Lake. "We think the Nexperia solution is ideally suited to such heavyweight interactive applications as Internet connectivity and personal video recording based on a hard-disk drive."

Typically, a basic satellite digital TV box, with no interactivity, costs around \$200 to \$250 in Germany. When MHP1.0 is added, the price for a basic MHP set-top should be around \$400 to \$450 — comparable to the price of other interactive digital satellite TV receivers using competing middleware such as that of OpenTV, Lake said.

Meanwhile, Struwe from Thomson estimated the price difference for an end user between a TAK-enabled analog TV and a non-TAK analog receiver will be about \$200 to \$250.

By Junko Yoshida EE Times (08/24/01, 3:07 p.m. EDT) Reproduced by permission.

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## FCC ULS TO CORES REGISTRATION...check your FCC status!

CORES/FRN "MASS CONVERSION" PLANNED FOR ULS REGISTRANTS.

Before the switchover to mandatory Commission Registration System (CORES) registration on December 3, 2001, the FCC plans to do a "mass conversion" from its Universal Licensing System (ULS) database.

Once CORES becomes mandatory in December, everyone doing business with the FCC-licensed or not-must obtain and use a 10-digit FCC Registration Number--or FRN. The FCC called the move is "a first step" toward streamlining fee collection and tracking. Many amateurs registered with the ULS were assigned an FRN by CORES in a mass conversion last year. Affected amateurs were notified by mail.

An FCC Wireless Telecommunications Bureau spokesperson told ARRL this week that another mass conversion will be done prior to December. As a result, anyone who has registered a Taxpayer Identification Number--typically an individual's Social Security Number--with the FCC will be assigned an FRN, which will appear in the FCC amateur database.

The requirement to obtain an FRN extends to applicants for an Amateur Radio license as well as to anyone required to pay a fee to the FCC, such as those applying for a vanity call sign. An FRN will not be needed to file comments in rulemaking proceedings, however.

Amateur Service licensees not already registered in the ULS are encouraged to register their TINs soon, to save the step of a second CORES registration after December 3. To register, visit the FCC's ULS Web site <<http://www.fcc.gov/wtb/uls>> and click on "Register TIN/Call Sign." (NOTE: The Universal Licensing System will be down for scheduled maintenance from 10 PM Eastern Time Friday, October 5, until 8 AM Eastern Time Monday, October 8.)

The FCC established CORES last year and has been in the process of implementing it. The FCC's Wireless Telecommunications Bureau concedes that a lot of issues remain undecided regarding how CORES/FRN will work for the Amateur Service. For more information on CORES/FRN, visit the FCC CORES Web site <<https://svartifoss2.fcc.gov/cores/CoresHome.html>>.



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## ATCO ATV DEMO TO ARES GROUP

On Saturday August 25, Ken W8RUT and myself gave an ATV demonstration to about 55 members of the ARES (Amateur Radio Emergency Service) during their quarterly meeting at the Red Cross building in downtown Columbus. Ken had a well-prepared talk describing all aspects of the ATCO group as well as the operation of our repeater and how it can be used for public service events and emergency procedures. I assisted and set up the receivers and TV monitor to view the repeater.

It was clear the audience was genuinely interested in the discussion as they could easily see how ATV could play a major role in emergency operations. They then asked if we could give similar talks to other groups. We agreed to do more talks on a limited schedule. It's fun to do this when we can see there is intense interest! In fact, at least one of the new members this time is directly linked to our presentation. Thanks, Ken for being an invaluable professional representative of ATCO and ATV.



...WA8RMC



At the left Ken addresses the group. Above, I'm shown adjusting the coffee can antenna so a good repeater picture can be seen.

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## COLOR ON A B/W TV-FACT OR FICTION?...you be the judge!

As an additional area of discussion I remember reading many years ago (between 1965 and 1969) that some experimentation had been done with black and white broadcasts that could give the illusion of color on a still picture. This whole discussion may have just been one of those April fool type articles, however it seemed very believable. The main gist was that by adding some type of herringbone modulation (or other magic) to parts of the picture some people could get what appeared as a subtle color tint. They described the use for this as a surprise effect for something like a commercial. The time this was described was before color TV had become so predominate. I had described this to some of the people where I had worked and they recounted a story of a previous co-worker coming to work and saying he had seen color on his b&w TV. They replied that he must have been watching TV through the bottom of a beer bottle. My main reason to bring this up is am I just a victim of an April fool story or is there a possibility of fact. If it is believed, can it be demonstrated?

...WA8HFK Frank Amore

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## NEW MEMBERS

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 the lifeblood of our group. It's important that we actively recruit new faces aggressively.

K4PRS	Pete Sinkowski	Gahanna, Ohio
WB8PJZ	Dave Morris	Lima, Ohio
KC8OZV	George Biundo	Columbus, Ohio
WD8ITF	Larry Fields	Barberton, Ohio
W8DLB	Denny Beardmore	Bethesda, Ohio
KC8FGH	Bob Rector	Columbus, Ohio

We had a great summer for recruitment. Welcome to all of you above. We hope your stay will be long and enjoyable!

...Art WA8RMC



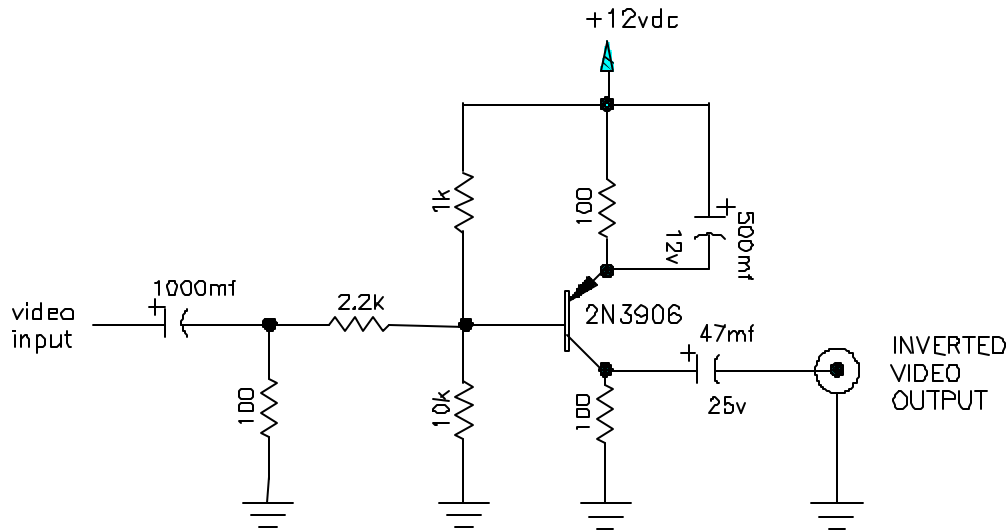
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## VIDEO INVERTER CIRCUIT

Try this video inversion circuit if you have one of those "LNB" 950 to 1450 MHz receivers without a video inversion switch. As many of you already know, the LNB receiver was intended to operate with an LNB preamp/converter mounted on the dish antenna when used for the standard C band commercial satellite operation. Therefore, the signal gets inverted in the conversion process. When you use it for 1250 MHz repeater operation, you receive the signal direct and therefore bypass the normal signal inversion. Most receivers have a video invert switch for this purpose but for those that do not, instead of throwing the receiver away, use this circuit to invert the video and restore normal 1250 MHz repeater operation.

The circuit is installed right at the video output and if it is put inside the receiver, the +12vdc (normally) receiver voltage source can be used. Be sure to check for the correct voltage and polarity. If installed externally, a separate 12vdc voltage source is necessary.

Although I did not check the video response of this circuit it is well above the required 4 or 5 MHz bandpass needed.



...WA8RMC

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## GREAT VIDEO INFORMATION WEB SITE

Frank Amore, WA8HFK, found this web site that has a lot of good video information. It was compiled by an individual at Digital Equipment Corp. and is well organized. I recommend it as a video refresher.

<http://hometown.aol.com/ajaynejr/vidres.htm>

...WA8RMC

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## SUMMER ANTENNA PARTY

The summer has come and gone and a quick stock of past events revealed that I didn't report the great antenna party we had on Sunday, June 24<sup>th</sup> at Ted's place (N8KQN). Well, actually, the antenna measurement part didn't fair so well because the computer control failed to respond properly. In true ham fashion, we improvised and measured antenna gains manually. One successful antenna gain measurement was the dish brought by Dick W8RVH. We compared a Connifer dish to a true 3 foot one and also to a coffee can antenna at 2.4 GHz. Obviously the 3 foot dish was better but not by much, over the Connifer. It makes one wonder if the extra effort was worth it. I think Dick will go back to the drawing board and next time the full dish will do much better.

Besides the antennas, we had the best time eye balling and consuming the pizzas we ordered. It was a great day so no one seemed to mind the lack of antenna work. To be quite honest, I feel most of us weren't planning that much antenna activity anyhow. We will do it again next year if Ted will allow it and maybe the computer program will actually work. In addition, Jay, KB8YMQ, brought his RC helicopter, complete with an ATV camera and 2.4 GHz transmitter, and flew it around the yard. Neat, Jay!

So, work on your antenna design and show us what you can do next year. The date hasn't been set yet but we'll plan for mid June. Is that OK, Ted?

The pictures below give a glimpse of the activity. The lower right picture is Jay and his helicopter.



...WA8RMC

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## HDTV DEMO BY WBNS CHANNEL 10

The pictures below are taken during the Delaware Radio Club meeting last August. Channel 10 TV brought in all of their high definition television equipment and presented a talk to about 35 people about HDTV. Marvin Born, K8XU, the Vice President of Engineering Corporate for the Dispatch Group at Channel 10 is pictured at the upper left giving a thorough and most interesting description of how HDTV works. At the end of his presentation, he answered questions about the Channel 10 operation in general and fielded other relevant subject matter questions.

The photos below do not give a good indication of just how clear and detailed the pictures on the monitors actually were. The monitors (there were two) are Panasonic plasma units that cost about \$20,000 each, far above the reach of most of us, but they demonstrated the capability very well. In just a short time the price will fall to more respectable levels, I'm sure!

Perhaps we can convince Marvin to give a talk to the ATCO group and maybe another tour of their facilities. Is anyone interested? Let us know at the Fall Event!



...WA8RMC

# ATCO

## 2001 FALL EVENT

1:00 PM - SUNDAY

OCTOBER 28, 2001

ABB PROCESS AUTOMATION  
(ACCURAY)

\*\*\* SHELTERHOUSE \*\*\*

650 ACKERMAN ROAD  
FOR MORE DETAILS, CONTACT  
ART - WA8RMC 891-9273

LUNCH PROVIDED - DOOR PRIZES - MEETING  
BRING A FRIEND AND SEE OLD BUDDYS  
MINI HAMFEST - SHOW AND TELL

### DIRECTIONS TO THE ATCO EVENT

#### From I-70 either EAST or WEST Bound:

Take I-70 to SR-315 near downtown Columbus. Exit onto SR-315 north about 4 miles to Ackerman Road. Turn east on Ackerman about 200 yards to first driveway on left.

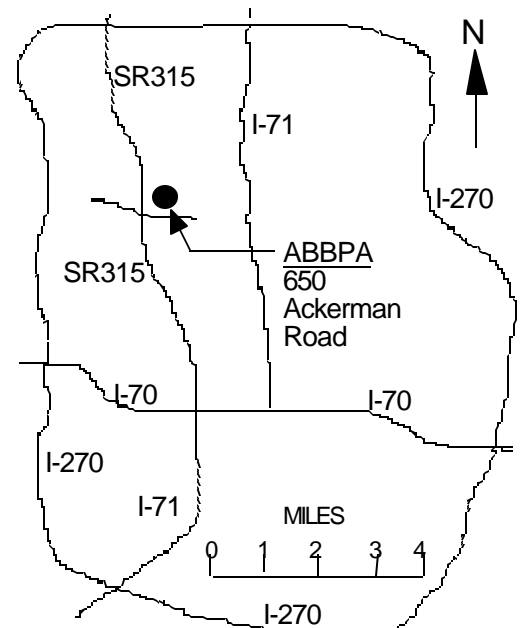
#### From I-71 traveling NORTH bound toward Columbus:

While traveling north on I-71, continue past I-70 and onto SR-315 north. Travel on SR 315 north about 4 miles to Ackerman Road. Turn east on Ackerman about 200 yards to first driveway on left.

#### From I-71 traveling SOUTH bound toward Columbus:

(DIRECTIONS IF YOU'RE "NORTH" OF I-270).

Take I-71 SOUTH to I-270 Bypass Loop & head WEST on I-270 to SR 315. Take SR 315 south about 5 miles to Ackerman Road. Turn east on Ackerman (under SR 315) about 200 yards to first driveway on left.





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## DARA ATV REPEATER UPDATE

It seems that the 421.25 MHz ATV channel is in high demand these days. Because of desense problems, the Dayton repeater is moving from 426.25 to 421.25 MHz. That frequency was previously held by KB8GRJ in Xenia but has not been on the air for the last few years. Also, KA8MID near Chillicothe is building an ATV repeater on that frequency also. We'll have to sit back to see how it plays out. Recently the previously inactive KB8GRJ repeater has now mysteriously been restored to operational status. I wonder why?

...WA8RMC

Yes the Dayton repeater is being rebuilt and planned to go on 421.25 right along with KB8GRJ and maybe KA8MID also. The reason Dayton will be changed is that there is not enough dB rejection with the present receive-transmit filters to prevent bad de-sense. Right now Dayton is only operating in beacon mode as the receiver has been returned to Tom O'Hara for refurbishment. This may only be temporary for Dayton until additional filters are located. Also the interference may only be minimal anyway, since the inputs are not all on the same freq.

...Dick, W8RVH

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## ATV REPEATER OPERATION...A lengthy discussion

*Ken Brockel, N2SMT, from the Brookdale group started out by asking a simple question about repeater operation and brought in a storm of responses. Myself, being somewhat moderate and usually take a common sense approach to most issues, view some of the responses as "strictly by the books" without regard to the well being of our hobby! However, we're all entitled to our opinion. One of the main issues that evolved from the discussion is that automatic identification of a repeater without being remotely keyed constitutes "beacon" operation and is illegal according to the FCC part 97 rules. Our repeater does this as it identifies with the bulletin board every 30 minutes. However, I feel we are serving the ATV community by providing a signal to check conditions, allow tune-up of receive converters, and announce upcoming events. This activity is not causing interference to others and the frequency is not shared with other nearby signals. If we caused interference or if someone had a just cause to ask us to stop, I'd be the first to oblige. How do you feel? Please let me know. With that lead-up, read on to see how others interpret the situation. ...WA8RMC*

Hello,

I wanted to find other ATV repeater operators to ask about basic repeater identification. A user within the coverage area of our machine has asked about repeater identification. I thought, "who better to ask than other repeater owners and/or operators via these list servers". The question relates to a repeater and when to identify. Per FCC Rule Part 97, a repeater station must identify while the machine is transmitting. Our system does conform to this rule and also identifies itself while not in use every 9 minutes. I've examined FCC rules on this topic and can't find any rules that offer an explanation for identification while a repeater station is not in use by others. What I am asking for is input from others as to what is done now and has been done in the past. As with most 2M and 70CM FM repeaters, they identify station information, club announcements, along with any other ARES or RACES data when requested. Our club's position is that to identify our repeater station and to communicate the necessary information to current or potential users of our machine was a correct decision when it first went on the air over five years ago. If anyone has documentation on this topic, or has comments, I would love to hear about them.

Kenneth M. Brockel kbrockel@monmouth.com

...N2SMT Trustee of Brookdale ATV/R

*The responses follow:*

Doesn't it seem that your system is violating 97.111 and 97.203 every 9 minutes? If true, your potential fine is adding up rapidly. Five years? Your original question included the information that your system is transmitting one way transmissions every 9 minutes. The expressed intention is to send the station call sign or what could be defined as a beacon. One way transmissions are illegal except in certain cases (97.111) your case is NOT one of the exceptions. A beacon may transmit one way communications (97.203) your transmitter is NOT in a beacon band. As your transmitter activates automatically every 9 minutes, it could interfere with another operator that could be using the frequency (97.101).

...Don W6YN Don Milbury <w6yn@juno.com>

I don't know the US rules about this but, personally, I think that the best and the most useful identification would be to have, when no user is present, the transmitter permanently running ON with an identification picture (call-sign, responsibilities, list of DTMF commands, etc...) With this, everybody can use the repeater as ATV beacon for tests, very useful especially for SWL and as publicity for our hobby. This tells also to other users of our radio spectrum, that this frequency is occupied. In this time when the radio amateur traffic is decreasing, this also gives an indication to our authorities that ATV is present.

...Michel Vonlanthen HB9AFO

The Repeater and the user of the repeater must ID every 10 minutes during a continuous transmission and at the end of a transmission - 97.119(a). It sounds like you also have the repeater transmitter come on and ID every 9 minutes when not in use by others. You can have automatic control like this if used as a beacon. However, this cannot be done outputting in the 70cm band on ATV. You can have a beacon on any frequency above 902 MHz though. On the 70cm band, the beacon must be between 432.300 and 432.400 per 97.203(d), which is obviously, too narrow of a band segment for ATV and would interfere with weak signal work. So in my opinion, ATV repeaters with

outputs on 70cm cannot automatically transmit periodically the ID and other information. There must be a control operator present to do it. Any user can be designated as a control operator.  
...Tom O'Hara W6ORG

It seems to me if the ID is a part of a bulletin, or other specified one way transmission, it would be OK.  
...TOM BLACKWELL <radio@airmail.net> .

It is not OK under automatic control in the 70cm band, but would be if under the control of a control operator present.  
...Tom W6ORG

It would be more than OK. It would be required (97.119). Sorry, but a station ID "IS" OK and must be part of any amateur transmissions (97.119). Do you really expect anyone to have a control operator at the control point every 9 minute increment of each 24 hour day? I know you mean well, but the introduction of a "control operator" to the mix does little more than muddy the water and does nothing to address the original question.  
...Don W6YN

Why don't we do something radical like asking the FCC for an interpretation?  
...Max KI6NJ

Because, when you do, you bring attention to the particular repeater operation with the FCC and could turn them on to changing the priorities of their enforcement. Is this really a serious problem that affects amateur operation or just some legal nitpickers with nothing better to do? There are many voice as well as ATV repeaters that are in the "auto-jam" mode or beacon on frequencies below 450 MHz that are not really interfering with anyone though may be in violation. How many have primary control below 222 MHz too? Does your repeater key up with the ID, site camera, weather radar, Space Shuttle, etc., when ever any one tones it up on a two meter freq.? Do you really want to bring attention to your local repeater for a look by the FCC? I suggest asking the legal experts at the ARRL first before going to the FCC.  
...Tom W6ORG

I've watched this thread with interest but in silence for the last few days. HATS runs an ATV repeater in the Houston area and has for a number of years. Max mentions doing "something radical" like asking the FCC for an interpretation. That is exactly what we DO NOT want to do. We can all read Part 97. We can all interpret the rules as we read them. We can all implement systems that behave in manners that we have determined to be within the operation of systems as specified by the rules. AND, we can all live with those operations since it's OUR licenses on the line if rules are broken and the FCC calls our operations to task. We NEVER benefit by pressing an issue like this to the Commission and asking them for a narrow ruling. What is common practice for years in the amateur community and never questioned or opposed by the FCC ends when someone demands that the Commission WRITE DOWN an opinion that must necessarily be narrow and legalistic. Please, read the rules for yourself, decide how you want to operate your system, and ask a close friend or someone whose experience you respect for an opinion if you wish. But, please don't air these kinds of discussions in a forum like this where eventually someone feels that their interpretation needs to be "proved" by going to the FCC. We have done a pretty good job of self-policing our service in the past. Let's continue that tradition.  
...Ed Manuel N5EM

So you are saying it is illegal to change video screens with 2 meter tones? Even though "real" control is on a much higher frequency? I don't think so, i.e. DTMF dialed phone calls on your local 2 meter machine. Lets spend time getting our ATV repeaters working better and membership up than bothering with this garbage.  
...Lee AB5IG

C'mon Lee. These topics may be passé for old-timers, but have a little mercy on the newer hams who can still learn a lot by some friendly discussions on a mail list. Part of any discussion process is bound to introduce a little "misinformation" every now and then--not all bad if it gets folks thinking, and eventually gets corrected. BTW, regarding auxiliary operation and the FCC, we have a very recent case where the FCC did rule against Kenwood's Sky Command system for these very issues: auxiliary operation below 220.15 MHz. See article: <http://www.arrl.org/news/stories/2000/07/28/3/>  
...AC5CV John Chamberlain (AC5CV@arrl.net) Waco, TX EM11jm

I agree with Tom and Lee. The FCC has a hands-off attitude as far as Amateur Radio goes. They look to us to regulate ourselves. The FCC sees it this way, if they are busy with us trying to settle our debates, then they don't have time for the rest of the mountains of business they have to deal with. They also feel like that if they put to much "strictness" and regulation on us, that it could stifle or impede progress of new developments in the radio arts(i.e. PSK31, radio technology like the DSP-10 radio being kitted by TAPR) Which would you like to have, rules that are somewhat open to interpretation?? or ones that strictly, tightly control Ham radio?? The FCC wants to encourage amateurs to get along and work out our problems without bothering them. The ARRL is an excellent source of info.  
...John kd5inm

It is illegal to have primary control below 222 MHz. But you can have secondary control below 222 MHz which means that once the repeater is keyed on normally on its input you can use tones for autopatch, to change ATV screens, etc., on another frequency but you



cannot come on two meters to initially turn on the ATV repeater and then tune up other repeater functions unless you are also repeating your below 222 MHz audio on the sound subcarrier of the ATV repeater in which case it would be operating as a crossband repeater. In other words there is a primary control function and a repeater operation, which are two different things in the FCC Rules.

...Tom W6ORG

Ken, N2SMT, asked a question about repeater identification. List members have contributed to providing the information that Ken requested. I don't think that should be classified as garbage. We should all be here to help one another and work together to find the correct answers to the questions posed. The amateur FCC rules are rather simple and easy to understand but sometimes the subject of interest is difficult to find. That is why I always cite the rule number when discussing a particular requirement of those rules.

...Don

I also have read these with interest. I see nothing wrong with asking the FCC for an "informal" answer to your questions. In the Television Broadcast business, we often ask "informally" for help with meeting the rules. I don't recall the FCC person that befriends the amateur community, but he spoke at the 2001 NAB Convention Amateur Radio Reception and said "if you have any questions on anything - - feel free to ask." Perhaps someone know the person's name? It has been several years since I have had an ATV repeater on the air, and would have to read and re-read the current rules and perhaps "ask" for an "informal" answer to a question.

...Jerry Fuehrer, 1923 West 40th Street, Kearney, NE 68845.

I would like to take this time to thank everyone for his or her comments on this issue. It seems by the volume of emails I have received on this topic, it is an indication that a large amount of people have some interest. In my original email, my question was mainly directed at what are other repeater owners and/or operators doing with their respective ATV repeaters around the country. Most of the emails I had received quoted various segments of Part 97 that governs the amateur community and to discuss basic amateur operation. First, I would like to state that I am all for "self-policing" of our bands if at all possible. Most hams today are technically inclined enough to understand what is involved with amateur operation. Why bother the FCC with these types of questions if we don't have to. There is one thing that I determined from all of the replies is that is that we all have different interpretations of Part 97. An example, 97.111(b)(2), "Brief transmissions necessary to establishing two way communications with other stations;" That, in my mind, defines what we are doing with our ID in that to encourage other stations to use the system for communications. Comments? Second, I'm sure that all of us have operated on the local 70cm or 2M FM repeater system at one time or another. I have heard on many occasions, these systems periodically ID the station, club information, PL frequency, etc while not in use. Does this mean that all these stations are "technically" in violation of FCC rules? If so, I would love to see the enforcement on that!

In closing, let me say that we all are going to have various interpretations of the rules as they are currently written. I think we all as licensed operators are able to read and understand Part 97 and make sound decisions on how to operate within them. Let's all make those decisions and then get back to the task of advancing the art of radio and TV!

...Ken, N2SMT

*And so we end! It's good to see the people speak out. Perhaps we can discuss this matter informally at the Fall Event. The above discussion was from those participating in the Tallahassee listserv on the Internet. For those of you that don't know about the Internet ATV listserv, here are the latest details about what's going on there!*

*The Tallahassee listserv is an Internet site where ATV news from individuals from around the world may post questions and comments about ATV. Answers to questions may be either addressed to the entire group that monitors it or directly to the individual asking the question. It is open to all but please keep it to subject matter relating to ATV. It's great for those just starting in ATV or if you have something to sell or want to buy, ask here. It's fun and quite informative.*

*To subscribe to the listserv, send an Email message to [majordomo@www.kd4moj.org](mailto:majordomo@www.kd4moj.org) and in the body of the Email type: **subscribe atv**  
To unsubscribe, send a message as above but in the body of the Email, type: **unsubscribe atv**  
To send an Email message to the group, address it to [atv@kd4moj.org](mailto:atv@kd4moj.org) and type your comments in the body. Please fill in the subject also.  
If you have problems, send a message to [kd4moj@kd4moj.org](mailto:kd4moj@kd4moj.org) and they will respond with help.*

...WA8RMC

## ATV EQUIPMENT SUPPLIERS... Find your ATV stuff here!

Below is a list of manufacturers of ATV equipment that I have found. There is no endorsement of any of the manufacturers listed below so buyers beware. If I or anyone else that I know of has had any trouble with a manufacturer, it won't be listed. As I get more info, I'll add manufacturers. Likewise, if I hear of any trouble, it'll be removed. Good luck and keep me advised. List verified 6/1/00.

...Art WA8RMC

### Downeast Microwave

Antennas, Power Amplifiers, Deluxe  
Downconverters, microwave parts.  
954 Rt. 519 Frenchtown, NJ 08825  
Phone: 908-996-3584  
Fax: 908-996-3702

### Hamtronics Inc

Ham receivers, transmitters  
Antennas, Preamps  
<http://www.hamtronics.com>

### M<sup>2</sup>

Antennas  
7560 N. Del Mar Ave.  
Fresno, Ca 93711  
Phone: 209-432-8873  
<http://www.m2inc.com>

### CCI Communications Concepts, Inc.

508 Millstone Drive  
Beavercreek, OH 45434-5840  
(937)426-8600 Voice  
(937)429-3811 Fax  
Email: [cci.dayton@pobox.com](mailto:cci.dayton@pobox.com)  
<http://www.communications-concepts.com> ATV Equipment

### ATV Quarterly (ATVQ)

ATV magazine publisher  
5931 Alma Drive  
Rockford, Il. 61108  
Phone 815-398-2683  
FAX 815-398-2688  
Email: [atvq@hampubs.com](mailto:atvq@hampubs.com)

### PC Electronics

ATV Transmitters, Receivers  
Manufacturer/Reseller  
2522 Paxson Ln.  
Arcadia, CA 91007-8537  
Phone: 626-447-4565  
Fax: 626-447-0489  
[tom@hamtv.com](mailto:tom@hamtv.com)  
[www.hamtv.com](http://www.hamtv.com)

### Black Box

1000 Park Drive  
Lawrence, PA 15055-1018  
(800)552-6816 Voice  
(800)321-0746 Fax  
Email: [info@blackbox.com](mailto:info@blackbox.com)  
<http://www.blackbox.com>  
Electronic Connections

### SHF Microwave Parts Company

10GHz Gunn oscillators and Antennas  
7102 W. 500 S.  
LA PORTE, INDIANA, 46350  
Fax: 219-785-4552

### Allied Electronics

7410 Pebble Drive  
Fort Worth, TX 76118  
(800)433-5700  
<http://www.allied.avnet.com>  
Electronic Parts House

### GEKCO Inc

TV test signal circuit boards  
PO Box 642  
Issaquah, Wa 98027-0642  
Phone: 425-392-0638  
Email: [sales@gekco.com](mailto:sales@gekco.com)  
[www.gekco.com](http://www.gekco.com)

### Cable X-Perts

416 Diens Drive  
Wheeling, IL 60090  
800-828-3340 Voice 847-520-3444 Fax  
<http://www.cablexperts.com>  
Wire and Cable

### DCI Communications

Interdigital filters and cavities  
Box 293, 29 Hummingbird Bay  
White City, SK, Canada S0G5B0  
Phone: 306-781-4451  
<http://www.dci.ca/>

### ATV Research Inc.

TV cameras & related parts  
1301 Broadway PO Box 620  
Dakota City, NE 68731-0620  
Phone: 402-987-3771  
Homepage: [www.atvresearch.com](http://www.atvresearch.com)  
Email: [atc@pionet.net](mailto:atc@pionet.net)

### E. H. Yost & Company

2211-D Parview Road  
Middleton, WI 53562  
(608)831-3443 Voice  
(608)831-1082 Fax  
Email: [ehyost@midplains.net](mailto:ehyost@midplains.net)  
Batteries

### Phillips-Tech Electronics MMDS,

ITFS downconverters and antenna  
systems  
P.O. Box 8533  
Scottsdale, AZ 85252  
Phone: 602-947-7700  
Fax: 602-947-7799

### MCM Electronics

650 Congress Park Drive  
Centerville, OH 45459  
(800)543-4330 Voice  
(800)765-6960 Fax  
<http://www.mcmelectronics.com>

### Jameco Electronic Components

1355 Shoreway Road  
Belmont, CA 94002-4100  
(800)831-4242 Voice  
Email: [infor@jameco.com](mailto:infor@jameco.com)  
<http://www.jameco.com>  
Electronic Parts

### Fair Radio Sales

1016 E. Eureka P.O. Box 1105  
Lima, OH 45802  
(419)227-6573 Voice  
(419)227-1313 Fax  
Email: [fairradio@wcoil.com](mailto:fairradio@wcoil.com)  
<http://www.fairradio.com>  
Electronic Surplus Equipment

### Directive Systems

RR#1 Box 282 Dixon Road  
Lebanon, ME 04027  
(207)658-7758 Voice  
(207)658-4337 Fax  
Antennas  
<http://www.directivesystems.com/>

### Mouser Electronics

958 North Main Street  
Mansfield, TX 76063-4827  
(800)346-6873 Voice  
(817)483-0931 Fax  
Email: [sales@mouser.com](mailto:sales@mouser.com)  
<http://www.mouser.com>  
Electronics Parts House

### Hosfelt Electronics Inc.

2700 Sunset Boulevard  
Steubenville, OH 43952-1158  
(800)524-6464 Voice  
(800)524-5414 Fax

### Pauldon Associates

210 Utica Street  
Tonawanda, NY 14150  
(716)692-5451 Voice  
ATV Receivers and Transmitters

### Universal Radio Inc

6830 Americana Parkway  
Reynoldsburg, Ohio 43068  
614-866-4267  
<http://www.universal-radio.com>

### Spectrum International

J-Beams, KVG, Micromodules, VSB  
John Beanland  
Phone: 978-263-2145.  
Email: [Spectrum@ma.ultranet.com](mailto:Spectrum@ma.ultranet.com)  
filters

### The Wireman, Inc.

261 Pittman Road  
Landrum, SC 29356  
(800)727-9473  
(864)895-4195  
Wire and Cable

### Webster Communications, Inc.

115 Bellarmine  
Rochester, MI 48309  
(800)521-2333 Voice  
(810)375-0121 Fax  
Electronic Parts

## INTERNET ATV HOME PAGES (list verified 01/15/01)

If you have access to the INTERNET, you may be interested to know of some of the HAM related information that is available. Most addresses listed below are case sensitive, so type exactly as shown. (For comments or additional listings contact me at [towslee@ee.net](mailto:towslee@ee.net)).

**Note: The listings below without URL's have disappeared! If any of you know otherwise, let me know.**

### Domestic homepages

<a href="http://psycho.psy.ohio-state.edu/atco">http://psycho.psy.ohio-state.edu/atco</a>	Ohio, Columbus, homepage (ATCO)
<a href="http://www.radio-amateurs.com">http://www.radio-amateurs.com</a>	Ohio, Dayton ATV group (DARA)
<a href="http://users.erinet.com/38141/atv.htm">http://users.erinet.com/38141/atv.htm</a>	Ohio, Xenia KB8GRJ
<a href="http://www.angelfire.com/al/gcats/">http://www.angelfire.com/al/gcats/</a>	Alabama - Gulf Coast Amateur Television Society
<a href="http://www.hayden.edu/Guests/AATV">http://www.hayden.edu/Guests/AATV</a>	Arizona, Phoenix Amateurs (AATV) Carl Hayden High School
<a href="http://www.qsl.net/aatv/">http://www.qsl.net/aatv/</a>	Arizona, Phoenix Amateurs(AATV)
<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://home.tampabay.rr.com/k4lk/">http://home.tampabay.rr.com/k4lk/</a>	Florida, Tampa Bay Amateur Television Society (TBATS)
?	Florida, Emerald Coast Amateur Television Society (ECATS)
<a href="http://www.qsl.net/scats/">http://www.qsl.net/scats/</a>	Florida, Melborn Space Coast Amateur TV Society (SCATS)
<a href="http://www.bsrq.org/aatn/aatn1.html">http://www.bsrq.org/aatn/aatn1.html</a>	Georgia, Atlanta ATV
<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.qsl.net/k4kjq/atv/BATS.htm">http://www.qsl.net/k4kjq/atv/BATS.htm</a>	Kentucky, Lexington Bluegrass ATV Society (BATS)
<a href="http://www.kcatv.org/">http://www.kcatv.org/</a>	Kansas, Kansas City Amateur TV Group (KCATVG)
<a href="http://www.bratsatv.org">http://www.bratsatv.org</a>	Maryland, Baltimore Radio Amateur Television Soc. (BRATS)
<a href="http://www.icircuits.com/dats">http://www.icircuits.com/dats</a>	Michigan, Detroit Amateur Television System (DATS)
<a href="http://come.to/amateurtv.mn">http://come.to/amateurtv.mn</a>	Minnesota Fast Scan Amateur Television (MNFAT)
<a href="http://www.intecnet.net/vidking/">http://www.intecnet.net/vidking/</a>	Missouri, St Louis Amateur Television
<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://no3y.com/">http://no3y.com/</a>	New Mexico, Farmingham
<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.lloydio.com/oatva.html">http://www.lloydio.com/oatva.html</a>	Oregon, Portland ATV (OATVA)
<a href="http://www.jones-clan.com/amateur_radio/klamath_amateur_television.htm">http://www.jones-clan.com/amateur_radio/klamath_amateur_television.htm</a>	Oregon, Southern Oregon ATV
<a href="http://www.nettekservices.com/ATV/">http://www.nettekservices.com/ATV/</a>	Pennsylvania, Pittsburg Amateur Television
<a href="http://members.bellatlantic.net/~theoikat">http://members.bellatlantic.net/~theoikat</a>	Pennsylvania, Phila. Area ATV
<a href="http://www.geocities.com/Hollywood/5842">http://www.geocities.com/Hollywood/5842</a>	Tennessee, East ATV
<a href="http://www.hats.stevens.com">http://www.hats.stevens.com</a>	Texas, Houston ATV (HATS)
<a href="http://www.wacoatv.org">http://www.wacoatv.org</a>	Texas, WACO Amateur TV Society (WATS)
<a href="http://www.hamtv.org/">http://www.hamtv.org/</a>	Texas, North Texas ATV
<a href="http://www.ussc.com/~uarc/utah_atv/utah_atv.html">http://www.ussc.com/~uarc/utah_atv/utah_atv.html</a>	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)

### Foreign homepages

<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.sfn.saskatoon.sk.ca/recreation/hamburg/hamatv.html">http://www.sfn.saskatoon.sk.ca/recreation/hamburg/hamatv.html</a>	Saskatoon, Canada ATV
<a href="http://www.gpfn.sk.ca/hobbies/rara/atv3.html">http://www.gpfn.sk.ca/hobbies/rara/atv3.html</a>	Regina, Canada ATV
<a href="http://www.inside.co.uk/scart.htm">http://www.inside.co.uk/scart.htm</a>	UK, Great Britain ATV (SCART)
<a href="http://www.cmo.ch/swissatv">http://www.cmo.ch/swissatv</a>	Swiss ATV
<a href="http://www.rhein-land.com/atv">http://www.rhein-land.com/atv</a>	German ATV in "Niederrhein" area
<a href="http://www.arcadeshop.demon.co.uk/atv/">http://www.arcadeshop.demon.co.uk/atv/</a>	UK, G8XEU ATV homepage
<a href="http://lea.hamradio.si/~s51kq/">http://lea.hamradio.si/~s51kq/</a>	Slovenia ATV
<a href="http://www.burnabyradio.com/ve7rtv/">http://www.burnabyradio.com/ve7rtv/</a>	British Columbia, Canada VE7RTV repeater
<a href="http://www.qsl.net/z11qf/atvug/ATVusers.html">http://www.qsl.net/z11qf/atvug/ATVusers.html</a>	Auckland, New Zealand ATV
<a href="http://www.cq-tv.com">http://www.cq-tv.com</a>	British ATV Club and CQ-TV Magazine

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## INTERNET MISCELLANEOUS HAM RELATED HOME PAGES

(list verified 01/15/01)

The following addresses are helpful in searching for many different Ham Radio items on the INTERNET.

<a href="http://www.hampubs.com/">http://www.hampubs.com/</a>	ATVQ Magazine home page. ATV equipment & article references.
<a href="http://www.hamtv.com">http://www.hamtv.com</a>	PC Electronics Inc. Lots of proven ATV equipment for sale.
<a href="http://downeastmicrowave.com">http://downeastmicrowave.com</a>	Down East Microwave Inc. Lots of uhf/microwave parts & modules.
<a href="http://www.arrl.org/hamfests.html">http://www.arrl.org/hamfests.html</a>	Current yearly hamfest directory.
<a href="http://amsat.org">http://amsat.org</a>	AMSAT satellite directory/home page.
<a href="http://www.arrl.org">http://www.arrl.org</a>	ARRL home page
<a href="http://www.arrl.org/fcc/fcclook.php3">http://www.arrl.org/fcc/fcclook.php3</a>	ARRL/FCC revised CALLSIGN database. Search call sign or name.
<a href="http://hamradio-online.com">http://hamradio-online.com</a>	Ham Radio Online "newsletter" Lot of Ham related info.
<a href="http://www.qsl.net/atna/">http://www.qsl.net/atna/</a>	ATNA homepage
<a href="http://www.ham-links.org">http://www.ham-links.org</a>	Ham Radio collection database
<a href="http://fly.hiwaay.net/~bbrown/index.htm">http://fly.hiwaay.net/~bbrown/index.htm</a>	Tennessee Valley Balloon launch info (Bill Brown WB8ELK)
<a href="http://www.ipass.net/~teara/atv4.html">http://www.ipass.net/~teara/atv4.html</a>	Arizona ATV 2.4Ghz Wavecom page (Wavecom mod. info)
	Space Shuttle Launch Info Service & Ham TV System (LISATS)
<a href="http://www.svs.net/wyman/">http://www.svs.net/wyman/</a>	Wyman Research Inc. W9NTP Don Miller ATV equipment
<a href="http://www.m2inc.com/">http://www.m2inc.com/</a>	M2 Antenna Systems Inc.
<a href="http://www.dci.ca/amateur_radio.htm">http://www.dci.ca/amateur_radio.htm</a>	DCI Digital Communications Inc. Bandpass filters
<a href="http://scott-inc.com/wb9neq.htm">http://scott-inc.com/wb9neq.htm</a>	Kentucky, Airborn ATV from WB9NEQ in Bowling Green
<a href="http://www.icircuits.com/">http://www.icircuits.com/</a>	Intuitive Circuits Inc
<a href="http://www.qsl.net/kd4dla/ATV.html">http://www.qsl.net/kd4dla/ATV.html</a>	KD4DLA ATV web page index
<a href="http://www.severe-weather.org">http://www.severe-weather.org</a>	Columbus, Ohio severe weather net at Columbus airport
<a href="http://www.mods.dk">http://www.mods.dk</a>	Ham radio modification lists.
<a href="http://gullfoss.fcc.gov:8080/cgi-bin/ws.exe/beta/genmen/frequency.hts">http://gullfoss.fcc.gov:8080/cgi-bin/ws.exe/beta/genmen/frequency.hts</a>	look up any frequency on the FCC data base.
<a href="http://www.fcc.gov/wtb/">http://www.fcc.gov/wtb/</a>	Starting point from which all radio license holders can be found
<a href="http://www.geocities.com/richcam1/Museum008.htm">http://www.geocities.com/richcam1/Museum008.htm</a>	Lab Guy Antique TV camera listing

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## HAMFEST CALENDAR

This section is reserved for upcoming hamfests for as far in advance as we know about them. 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. I maintain some fliers that compile this list so for additional info Email me at [towslee@ee.net](mailto:towslee@ee.net). This list will be amended, as further information becomes available.

**14 Oct 2001** + Ashland Area ARC Contact: John McMurray, KC8AAR 1126 Union Street Ashland, OH 44805 Phone: 419-281-3117

Email: [johnnamcmurray@myexcel.com](mailto:johnnamcmurray@myexcel.com) Ashland, OH

**28 Oct 2001** + Massillon ARC <http://www.qsl.net/w8np> Contact: Terry Russ, N8ATZ 3420 Briardale Circle NW Massillon, OH 44646

Phone: 330-837-3091 Email: [marc.hamclub@juno.com](mailto:marc.hamclub@juno.com) Canton, OH

**10 Nov 2001** Garfield Heights Contact: Laura Lonczak 5417 Turney Road Garfield Heights, OH 44125 Phone: 216-663-3258 Email:

[ln4js@visn.net](mailto:ln4js@visn.net) Garfield Heights, OH

**10 Nov 2001**+Grant ARC Contact: Dot Silman, KB8TQU Phone: 937-446-2234 Email: [Huggee@Bright.net](mailto:Huggee@Bright.net) Georgetown, OH

**17-18 Nov 2001**\*Indiana State Convention Allen County Amateur Radio Technical Society <http://www.acarts.com> Contact:

ACARTS/Fort Wayne Hamfest PO Box 10342 Fort Wayne, IN 46851 Phone: 219-484-1314 Email: [KB9IH@arrl.net](mailto:KB9IH@arrl.net) Fort Wayne, IN

**12 Jan 2002**+DIAL Radio Club <http://www.swohdigi.org/> Contact: Hank Greeb, N8XX 6580 Dry Ridge Road Cincinnati, OH 45252-1750

Phone: 513-385-8363 Email: [n8xx@arrl.net](mailto:n8xx@arrl.net) Middletown, OH

**27 Jan 2002**+Tusco ARC Contact: Gary Green, KB8WFN 32210 Norris Road Tippecanoe, OH 44699 Phone: 740-922-4454 Email:











[kb8wfn@tusco.net](mailto:kb8wfn@tusco.net) Dover, OH

**10 Feb 2002**+InterCity ARC & MASER <http://www.maser.org> Contact: Scott Yonally, N8SY 179 Malone Road Mansfield, OH 44907-

2117 Phone: 419-522-9893 Email: [n8sy@arrl.net](mailto:n8sy@arrl.net) Mansfield, OH

# 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)  
 Transmitters: 427.25 MHz AM modulation, 1250 MHz FM modulation and 2433 MHz FM modulation.  
 Interdigital filters in output line of 427.25, 1250 & 2433 transmitters  
 Output Power - 427.25 MHz:40 watts average 80 watts sync tip  
 1250 MHz:50 watts continuous  
 2433 MHz:15 watts continuous  
 Link transmitter - 446.350 MHz 1 watt NBFM 5 kHz audio  
 Identification: 427, 1250 & 2433 xmtrs. Video identify every 30 minutes showing ATCO & W8RUT on four different screens  
 Transmit antennas: 427.25 MHz - Dual slot horizontally polarized 7 dBd gain major lobe west  
 1250 MHz - Diamond vertically polarized 12 dBd gain omni  
 2433 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni  
 Receivers: 147.45 MHz - F1 audio input control of touch tones  
 439.25 MHz - A5 video input with FM subcarrier audio (**lower sideband**)  
 915 MHz - F5 video link data from remote sites  
 1280 MHz - F5 video input  
 2398 MHz - F5 video input  
 Receive antennas: 147.45 MHz - Vert. polar. Hi Gain 12 dBd dual band (also used for 446.350 MHz output)  
 439.25 MHz - Horiz. polar. dual slot 8 dBd gain major lobe west  
 915 MHz - DB Products vertically polarized 10 dBd gain omni  
 1280 MHz - Diamond vertically polarized 12 dBd gain omni  
 2398 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni  
 Input control: Touch Tone Result (if third digit is \* function turns ON, if it is # function turns OFF)  
 00# turn transmitters **off** (exit manual mode and return to auto scan mode)  
 00\* turn transmitters **on** (enter manual mode -keeps transmitters on till 00# sequence is pressed)  
 Manual mode functions: 00\* then 1 Ch. 1 Select 439.25 receiver - manual mode (hit 00\* then 1 to view 439.25 signal only)  
 00\* then 2 Ch. 2 Select 915 receiver - manual mode  
 00\* then 3 Ch. 3 Select 1280 receiver - manual mode  
 00\* then 4 Ch. 4 Select 2411 receiver - manual mode  
 00\* then 5 Ch. 5 Select video ID - manual mode (the 4 identification screens)  
 01\* or 01# Channel 1 439.25 MHz scan enable (hit 01\* to scan this receive channel & 01# to disable it)  
 02\* or 01# Channel 2 915 MHz scan enable  
 03\* or 01# Channel 3 1280 MHz scan enable  
 04\* or 01# Channel 4 2411 MHz & camera video scan enable  
 A1\* or A1# Manual mode select of 439.25 receiver audio  
 A2\* or A2# Manual mode select of 915 receiver audio  
 A3\* or A3# Manual mode select of 1280 receiver audio  
 A4\* or A4# Manual mode select of 2411 receiver audio  
 C0\* or C0# Beacon mode – transmit ID for twenty seconds every ten minutes  
 C1\* or C1# 427.25 transmitter power output select (C1\* = 40W output power or C1# = 1.5W output)  
 C2\* or C2# 2433 transmitter for on/off. (C2\* enables transmitter and C2# disables it)  
 Auto scan mode functions: 001 2411 receiver (normal mode - returns to auto scan)  
 002 Roof camera (select 001 when finished viewing camera so repeater will shut down)  
 003 Equipt. room camera (select 001 when finished viewing camera so repeater will shut down)

<b>FOCUS</b>  1	<b>ZOOM</b>  2	<b>APERATURE</b>  3	<b>DISABLE</b> A A A <b>A</b>
<b>FILTER</b> 4 steps  4	<b>TILT</b>  5	<b>PAN</b>  6	<b>ENABLE</b> B B B <b>B</b>
<b>IN/RT/DN</b>  7	8	<b>INC SPEED</b>  <b>Pan/Tilt</b>	<b>C</b>
<b>OUT/LT/UP</b>  *	0	<b>DEC SPEED</b>  <b>Pan/Tilt</b>	<b>D</b>

## CAMERA CONTROLLER KEYPAD FUNCTIONS

**002 = ENABLE CAMERA**  
**001 = RETURN TO NORMAL**

**Note: sometimes enter 003 for room cam then 002 for roof cam is better.**

OK, that's it folks. Play with it to your heart's content. Oh, one more thing. Use the camera in the repeater automatic mode only. If you access it in repeater manual mode, the first time you hit a function button, the controller thinks you want another input and shuts it down. In auto mode hit "002" to enable the roof camera and "001" when finished to return the controller to the 2400 MHz input. Since there will be no 2400 MHz signal, the repeater will shut down. Use the keypad diagram at left as a function reference. Cut it out and paste it beside your keypad if you prefer. Thanks to Dale, WB8CJW, for the handy work.

## ATCO MEMBERS AS OF 10 October 2001

Call	Name	Address	City	St	Zip	Phone	URL
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	Oh	43224-3011		sdiggs4590@aol.com
K8AEH	Wilbur Wollerman	672 Rosehill Road	Reynoldsburg	Oh	43068	614-866-1399	wilbur.w@juno.com
KC3AM	David Stepnowski	735 Birchtree Lane	Claymont	De	19703-1604		kc3am@aol.com
KC8ASD	Bud Nichols	3200 Walker Rd	Hilliard	Oh	43026	614-876-6135	
WB8CJW	Dale Elshoff	8904 Winoak Pl	Powell	Oh	43065	614-210-0551	delshoff@columbus.rr.com
WA8DNI	John Busic	2700 Bixby Road	Groveport	Oh	43125	614-491-8198	jbusic@copper.net
W8DLB	Denny Beardmore	PO Box 313	Bethesda	Oh	43719-0313	740-484-4822	denny@1st.net
K8DW	Dave Wagner	2045 Maginnis Rd	Oregon	Oh	42616	419-691-1625	
WA3DTO	Rick White	5314 Grosbeak Glen	Orient	Oh	43146	614-877-0652	wa3dto@aol.com
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	Oh	43026	614-876-6033	wb8dzw@aol.com
W8EHW	Foster Warren	PO Box #32	No. Hampton	Oh	45349		
W8FZ	Fred Stutske	8737 Ashford Lane	Pickerington	Oh	43147		kc8bni@amsat.org
KC8FGH	Bob Rector	135 S. Algonquin Ave	Columbus	Oh	43204-1904		
KS4GL	John Barnes	216 Hillsboro Ave	Lexington	Ky	40511	606-253-1178	jrbarnes@iglou.com
KB8GUE	Ron Piatt	PO Box 200	Leesburg	Oh	45135		yonkb8gue@webtv.net
KA8HAK	Jim Reese	1106 Tonawanda Ave	Akron	Oh	44305		
WA8HFK,KC8HIP	Frank, Pat Amore	3630 Dayspring Dr	Hilliard	Oh	43026	614-777-4621	
W3HMS	John Jaminet	912 Roberts St	Mechanicsburg	Pa	17055-3451		w3hms@aol.com
N8IJ (ex w8jnd)	Richard Knowles	2318 Britt Ave	Lima	Oh	45806		
WD8ITF	Larry Fields	953 W. Hopocan Ave	Barberton	Oh	44203-7007	330-825-7148	lfields@neo.rr.com
K8KDR,KC8NKB	Matt & Nancy Gilbert	5167 Drumcliff Ct.	Columbus	Oh	43221-5207	614-771-7259	mjgilbert@wcom.net
K4KLT, KD4ODQ	Bob & JoAnnSchmauss	P.O. Box 1547	Land O' Lakes	Fl	34639-1547	813-996-2744	schmauss@att.net
N8KQN	Ted Post	1267 Richter Rd	Columbus	Oh	43223	614-276-1820	n8kqn@juno.com
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	Oh	45331	513-548-2492	walkingcross@mail.bright.net
N3KYR	Harry DeVerter Jr	303 Shultz Road	Lancaster	Pa	17603-9563		deverterhf@dejazzco.com
KC8LOW	Bob Harmon	831 McDonell Dr	Gahanna	Oh	43230	614-478-2193	kc8low@netscape.net
N8LRG	Phillip Humphries	3226 Deerpath Drive	Grove City	Oh	43123	614-871-0751	phumphries@iwaynet.net
WB2LTS	Manny Diaz	8 Pearl Ave	Holtsville	Ny	11742-1711		wb2lts@worldnet.att.net
KC8LZC	Tom Walter	15704 St Rt 161 West	Plain City	Oh	43064	614-733-0722	kc8lzc@go.com
W8MA(ex wa8tte)	Phil Morrison	154 Llewellyn Ave	Westerville	Oh	43081		
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	Oh	45660		ka8mid@qsl.net
N8NT	Bob Tournoux	3569 Oarlock Ct	Hilliard	Oh	43026	614-876-2127	rtournou@columbus.rr.com
WD8OBT,KB8ESR	Tom Camm & sons	1634 Dundee Court	Columbus	Oh	43227	614-860-9807	
N8OCQ	Robert Hodge	PO Box 23473	Columbus	Oh	43223	614-875-7067	
N8OPB	Chris Huhn	146 South Hague Ave	Columbus	Oh	43204	614-279-7577	
W6ORG,WB6YSS	Tom & Maryann O'Hara	2522 Paxson Lane	Arcadia	Ca	91007-8537	626-447-4565	tom@hamtv.com
W2OTA,WA2DTZ	Michael Chirillo	942 Bruce Drive	Wantagh	Ny	11793	516-785-8045	
KC8OZV	George Biundo	3675 Inverary Drive	Columbus	Oh	43228	614-274-7261	kilowatt@biundo.org
WB8PJZ	Dave Morris	2323 Allentown Road	Lima	Oh	45805	419-226-6997	dave@towercommnic.com
KE8PN	James Easley	1507 Michigan Ave	Columbus	Oh	43201	614-421-1492	jeasley11@hotmail.com
W8PGP,WD8BGG	Richard, Roger Burggraf	5701 Winchester So. Rd	Stoutsville	Oh	43154	614-474-3884	rgburggraf@juno.com
K4PRS	Peter R. Sinkowski		Gahanna	Oh	43230		prs@columbus.rr.com
WA8RMC	Art Towslee	180 Fairdale Ave	Westerville	Oh	43081	614-891-9273	towslee1@ee.net
W8RRF	Paul Zangmeister	10365 Salem Church Rd	Canal Winchester	Oh	43110		w8rrf@copper.net
W8RRJ	John Hull	580 E. Walnut St.	Westerville	Oh	43081	614-882-6527	
W8RUT,N8KCB	Ken & Chris Morris	3181 Gerbert Rd	Columbus	Oh	43224	614-261-8583	wa8rut@aol.com
W8RVH	Richard Goode	9391 Ballentine Rd	New Carlisle	Oh	45334	937-964-1185	w8rvh@glasscity.net
W8RQI	Ray Zeh	2263 Heysler Rd	Toledo	Oh	43617		zehrwh@glasscity.net
KB8RVI	David Jenkins	1941 Red Forest Lane	Galloway	Oh	43119	614-878-0575	kb8rvi@hotmail.com
W8RXX	John Perone	3477 Africa Road	Galena	Oh	43021	740-548-7707	
WA8SAR	Gary Obee	3691 Chamberlain	Lambertville	Mi	48144		
N8SFC	Larry Campbell		Galloway	Oh	43119		
W8SJV	John Beal & family	2899 Castlebrook Ave	Columbus	Oh	43026	614-876-9412	johnbeal@columbus.rr.com
W3SST	John Shaffer	2596 Church Road	York	Pa	17404		w3sst@juno.com
K8STV	Jim Carpenter	823 Quailwood Dr	Mason	Oh	45040		
N8TCB	Bill Smith	657 Redford Ave	Columbus	Oh	43207	614-491-0709	n8tcb@columbus.rr.com
KB8TRP,KB8TCF	Tom, Ed Flanagan	1751 N. Eastfield Dr	Columbus	Oh	43223	614-272-5784	ed@fastpc1.com
W8TZ	Ross Hatfield	47 Wildflower Lane	Chillicothe	Oh	45601	740-774-2777	w8tz@qsl.net
KB8UGH	Steve Caruso	6463Blacks Rd SW	Pataskala	Oh	43062-7756	740-927-1196	mixter.1@osu.edu
WB8URI	William Heiden	5898 Township Rd #103	Mount Gilead	Oh	43338	419-947-1121	
KB8UU	Bill Rose	9250 Roberts Road	West Jefferson	Oh	43162	614-879-7482	
WA8UZP	James R. Reed	818 Northwest Blvd	Columbus	Oh	43212	614-297-1328	wa8uzp@qsl.net
K7VE	John Hays	P.O. Box 95473	South Jordan	Ut	84095-0473		jhays@hays.org
WB8VJD	Rick Morris	203 Merton Street	Holland	Oh	43528		wb8vjd@glasscity.net
KB8VUQ	Jack Wolff	2682 Hiawatha Ave	Columbus	Oh	43212	614-263-4816	kb8vuq@arrl.net
W2WIA,KA2EVC	Ed & John Kuligowski	63 Connecticut Ave	Massapequa	Ny	11758	516-541-3172	w2wia@netscape.net
N8WLT	James Neymeyer	2879 East Moreland Dr	Columbus	Oh	43209	614-237-2331	
KB8WBK	David Hunter	45 Sheppard Dr	Pataskala	Oh	43062	740-927-3883	hiramhunter@aol.com
KB8YMN	Mark Griggs	2160 Autumn Place	Columbus	Oh	43223	614-272-8266	mmgriggs@aol.com
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	Oh	43064		
N8YZ	Dave Tkach	2063 Torchwood Loop S	Columbus	Oh	43229	614-882-0771	
KB8ZLB	Dave Kibler	243 Dwyer Rd	Greenfield	Oh	45123	937-981-4007	k154@bright.net
KA8ZNY,N8OOY	Tom & Cheryl Taft	386 Cherry Street	Groveport	Oh	43125	614-836-3519	ka8zny@copper.net
N8ZTJ	Jeff Skinner	25956 Locust Grove Rd	New Holland	Oh	43145		



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## 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. Your support of ATCO is welcomed and encouraged.

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## ATCO CLUB OFFICERS

President: Art Towslee WA8RMC                      Repeater trustees: Art Towslee WA8RMC  
V. President: Ken Morris W8RUT                      Ken Morris W8RUT  
Treasurer: Bob Tournoux KF8QU                      Dale Elshoff WB8CJW  
Secretary: (open)                      Statutory agent: (open)  
Corporate trustees: Same as officers                      Newsletter editor: Art Towslee WA8RMC

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## 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, you may pay dues via the Internet with your credit card. Go to [www.tournoux.com/~atco](http://www.tournoux.com/~atco) 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.

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## TUESDAY NITE NET ON 147.45 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.

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## ATCO TREASURER'S REPORT - de N8NT

OPENING BALANCE (07/15/01).....	\$1034.03
RECEIPTS (dues).....	\$ 175.00
OTHER INCOME (bank interest).....	\$ 8.72
July Newsletter postage.....	\$ (45.60)
Web payment charges .....	\$ (1.63)
CLOSING BALANCE (10/15/01).....	\$ 1170.52

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

**FIRST CLASS MAIL**

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**REMEMBER...CLUB DUES ARE NEEDED.  
CHECK MAILING LABEL FOR THE EXPIRATION DATE AND SEND N8NT A CHECK IF EXPIRED.**

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