ATCO NEWSLETTER

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CONTENTS LISTING

ATCO

HAM IN THE SPOTLIGHT

This time we visit Bob Harmon, KC8LOW. Bob is one of our newer members who's willing to jump right in there and show us what he can do. He's a regular participant to the Tuesday night nets and last Tuesday, he showed us his ATV signal on 439 MHz. Pretty good, Bob! I'll give it a P4 into the repeater.

ACTIVITIES ... from my “workbench”

Well, here we are at the fall season again. Where did the summer go? As I sit here, I wonder… "How to explain to my wife that not only did I *not* get the yard in shape as I promised, I failed to accomplish **most of my ham related items!** She's not going to buy the last part, but it's true. It seems that lately, it's been easier to put things off, **even the ham stuff.** Gosh, I've got to get a grip of what's really important.

OK, the ham stuff…let's see, what did we *really* do this summer? Well, we talked about the ATV repeater linking between cities. The Internet subject then came up and we promptly switched to how we could do this over the Internet. We did get started in the right direction for at this time, Bill, KA8MID has "streaming video" capability which uploads an ATV picture every few seconds and stuffs it on the internet so the guys in Dayton can see our video during the Tuesday night nets. Improvements can be made but at least it's a start. Bob, KF8QU, is also experimenting with streaming video programs. Since Bob maintains an online web site, he has the ability to do many more things than the rest of us so maybe next time Bob can report on progress in this area. Right now he is very busy with work related activities.

The repeater antenna is in serious need of repair because the Mylar radome has started to crack allowing moisture to enter (Do you realize that that antenna has been up for 5 years now?) The last time I was up there, part of the active slot area was exposed. I've ordered some special UV resistant Mylar to re-wrap it with but as of yet, it has not arrived. The vendor said that it should be available within the next week or so. I hope he is correct for I can now visualize myself working on the antenna in the middle of December…in the middle of a snowstorm! It won't take long to repair once we get the Mylar for it. It only requires dismounting the antenna, lowering it to the roof below and re-wrapping it there. The whole process should take a couple of hours…***IF*** the weather is warm. We can only hope.

Dale, WB8CJW, is busy re-designing the repeater controller. New video distribution amplifiers with level controls will make it easier to individually adjust each video line for optimum levels rather than a single compromise for all. As you may remember, we tried a special video AGC amplifier from FM systems last year. The amplifier works ok but has a serious drawback. It seems that if no video is received, the non-sync noise is interpreted as a higher than normal video level so the amplifier throttles back the video gain all the way. Then when actual video is received, it is really washed out until the amplifier recovers and corrects the video level. That process takes about 10-15 seconds, which in the meantime produces an extremely washed-out picture. It was removed because of this. After thinking about it, we can build a video squelch circuit where the signal is "shorted out" during times of no sync. This puts the amplifier at maximum gain, which recovers in a matter of milliseconds after video with sync is applied resulting in a much more pleasant transition. Now that we figured that out, on to circuit design. "Take it, Dale". Dale is also fooling around with a better sync detection circuit that operates well under weak signal conditions so the repeater will lock better. This also requires design talents, which, by nature, takes time. Patience please!

We have also noticed that the 147.45 MHz receiver seems to be low in sensitivity. I tried to come up with a small packaged RCA Tactec receiver that will fit in the 5" x 7" box the present receiver occupies. I added a GASFET preamp but was only able to achieve a 2 microvolt sensitivity. I feel that this is not good enough to be worthwhile so we're searching for a small 2 meter sensitive receiver that is selective enough to withstand the huge amount of adjacent band RF that it must accommodate. That's a pretty tall task for any receiver but maybe one of the Radio Shack scanner receivers would work. Any suggestions? Maybe if we could use a scanner type of receiver module, we could remotely retune it for other inputs. Hmmm…this could expand into something big.

Another topic that needs attention is our roofcam. As you know, the camera is operational but non-rotatable until we get the software in the controller debugged. Bob, KF8QU, is working on that one too but as I mentioned above, is pre-occupied with "work" work right now. Fortunately, the camera is in place and the controller work can be done where it's toasty and installed in a warm environment allowing it to be a winter project.

My personal ATV work also has been far from robust this year and I'm ashamed to say that little has been done to improve the hamshack recently. I'm not proud of it but facts are facts. Not that I've become disinterested in ATV but rather I've been busy doing non-ham projects. I'll leave it at that. My goal this winter is to improve the quality of my video, which is being outpaced by many of you newcomers. (How about lending me some of your energy?)

Well, that's about it for this time. I know that the work progress this year is not very exciting, but we'll try to promise more for next year. Don't forget about our Fall Event coming up on the 24th of this month. More details further in this newsletter.
…Art , WA8RMC

FCC LICENSE RENEWAL SYSTEM IS CHANGED

The FCC began phasing in the Universal Licensing System for the Amateur Service August 8 at 4 PM Eastern Time. That's when the FCC stopped accepting batch files that contain new or upgraded licensee data from Volunteer Examiner Coordinators under the current amateur licensing system.

Being phased out under ULS is the familiar paper FCC Form 610 series. A "universal" Form 605--primarily designed for electronic use but also available on paper--will take its place.

An FCC Public Notice July 23 says the Wireless Telecommunications Bureau will begin use of the ULS for the Amateur Service on August 16. The existing Amateur Radio licensing data will be transferred into the ULS database during a weeklong phase-in period. During the phase-in period, the FCC will not process new or upgraded licenses.

Electronic filing of Amateur Radio license renewals using FCC Form 900 ends August 9 at 9 AM Eastern Time. Electronic filing of vanity call sign application Form 610V terminates August 13 at 5:30 PM Eastern Time. Hams should not attempt to file renewal or vanity applications until the ULS comes up August 16.

Starting August 16, hams registered in the ULS may file the new FCC Form 605 electronically at any time of day, seven days a week. FCC Form 605 will be used for license renewals, modifications, cancellations, vanity call sign application, application withdrawals and amendments, as well as requests for duplicate licenses and administrative updates (i.e., a change of address or other clerical license modification). Applications for new or upgraded licenses will continue to be filed through a Volunteer Examiner Coordinator. Automated processing of electronically filed applications will occur nightly each business day, but five days a week instead of seven. There will be no weekend processing under the ULS.

The FCC has warned that applicants should anticipate processing delays during the first couple of weeks the ULS is in effect.

The FCC will stop accepting most Form 610 applications next February 16, but club station Form 610B will continue to be valid beyond the six-month transition window to allow time for the FCC to implement new handling procedures.

One feature of the new ULS is a renewal reminder sent 90 days prior to a license's expiration date. ULS also will simplify the fee submittal process to the FCC, and the FCC said it anticipates that the ULS will be capable of accepting credit card payments on-line in the near future.

Registration in the ULS is required. Applicants should use FCC Form 606 for both electronic or manual filing. To register online, visit http://www.fcc.gov/wtb/uls/ and click on "TIN/Call Sign Registration." A paper FCC Form 606 is available at http://www.fcc.gov/formpage.html or from the FCC's Forms Distribution Center, 800-418-3676.

The FCC will not process future license grants, upgrades, modifications or renewals for any applicant not registered in the ULS. Individuals eligible to hold a Social Security Number must provide this number to the FCC in order to be registered in the ULS.

A copy of the July 23, 1999 Public Notice is available at http://www.fcc.gov/wtb/uls.
…ARRL Wweb site

VIDEO RF INTERFERENCE…be careful with camera & transmitter side by side!

Some camcorders and cameras are more RF susceptible than others and do strange things when connected to an ATV transmitter or near the antenna - the color goes crazy, auto iris shuts down or sync buzz in the audio. Radiation from an antenna getting into a poorly (if at all) shielded camera can be reduced by moving either or both, or shielding the camera with foil. Keep the camera out of the main radiation lobes of the antenna as much as practical. It's easy to do at the home station where the antenna is on the tower or roof, but portable, mobile or R/C is where the problem usually shows up. Try to get the antenna as high as practical for both RFI and DX reasons and the camera placed at the null of the antenna pattern. Conducted RF interference through the video and audio lines from the transmitter can be reduced by putting a 33 to 100 pF cap with very short leads right at the video and audio chassis connectors and in the more severe cases, a 0.22 uH RF choke in series with the connecting wire to the respective connector. Ferrite beads should not used because they have no permeability left and no affect on frequencies above 200 MHz. The low value disc cap and 0.22 uH is sometimes necessary in repeater receivers and transmitters to solve tough desense problems when all shielding, band pass filtering and antenna separation don't clear it up completely. The video lines usually have a low pass filter and bypass caps on the connectors, but often the audio lines do not and are the source of conducted RF from the transmitter into the repeater receiver.
…Tom O'Hara W6ORG

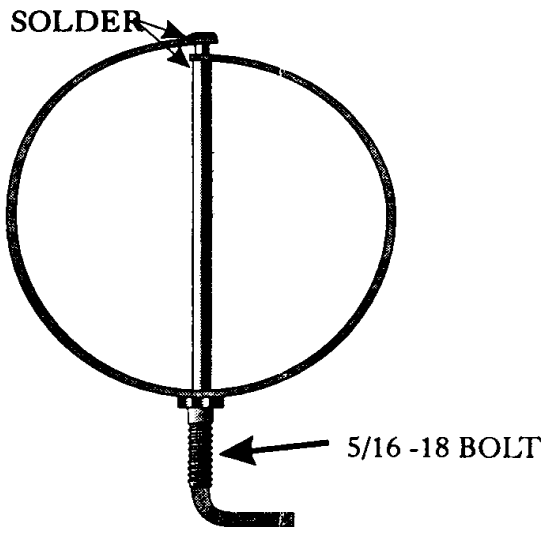
1280 MHz LOOP YAGI ANTENNA…Ted does it again!

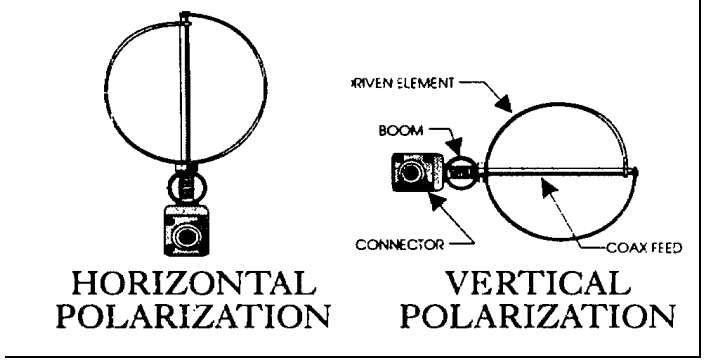
Ted N8KQN has been busy this summer whipping up yet another antenna for us to consider. Good job Ted. Let's see…I believe Ted's now created an antenna design for each of our ATV bands except 900MHz. The construction of this 1280 MHz one is detailed below.

Each loop can be made from 1/4 to 1/2" wide x .03 thick brass or aluminum. The driven element (DE) must be brass however, so it can be soldered to the bolt and coax as shown. Drill a hole .125 hole .125 from each end and form the piece into a loop. Fasten to the aluminum boom with 4-40 stainless screws. The gain is 8dB if only the first 15 elements are used and 15 dB if all 45 elements are used. The SWR should be less than 1.5:1 at 1280 MHz.

The figure below illustrates the position of the driven element for the desired polarization but should be set for vertical if the ATCO repeater is viewed. The coax used is 1/8" rigid line to connect to the driven element. It can then be adapted to an "N" fitting with a standard hood before connecting to the coax downfeed. Be sure to use the best coax available for the downfeed because of the high losses. 1/2" Heliax is ideal but the absolute minimum should be 9913 and only if a short run is used (50 ft or less).

Element	Space between elements	Element Total length (circumference)
REF#1	0	9 13/16
REF#2	3 1/8	9 13/16
DE	1 7/32	9 13/32
DIR01	1 9/64	8 3/8
DIR02	7/8	8 3/8
DIR03	1 13/16	8 3/8
DIR04	1 13/16	8 3/8
DIR05	1 13/16	8 3/8
DIR06	1 13/16	8 3/8
DIR07	3 27/32	8 3/8
DIR08	3 27/32	8 3/8
DIR09	3 27/32	8 3/8
DIR10	3 27/32	8 3/8
DIR11	3 27/32	8 3/8
DIR12	3 27/32	8 1/8
DIR13	3 27/32	8 1/8
DIR14	3 27/32	8 1/8
DIR15	3 27/32	8 1/8
DIR16	3 27/32	8 1/8
DIR17	3 27/32	8 1/8
DIR18	3 27/32	7 13/16
|	|	|
DIR45	3 27/32	7 13/16





SUPERCOM 2.4 GHZ REPORT…Are they "just as good as a Wavecom"?

I was sent a set of the Supercom 2.4 GHz FM ATV boards by W2WEM to check out and here are the results.

These are nice looking well made boards with modules made by FM Technologies intended to be sold to original equipment manufacturers for inclusion in various products. The final manufacturer is responsible to get the packaged transmitter FCC Type Accepted and packaged Receiver Compliance. However, the power output of the standard board I was sent is way too high (35mw) for license free part 15 (<1mw), and would more properly fall under part 90 of the FCC Rules for police, public safety, business, or TV broadcast links if the frequencies were limited to above 2450 MHz. For licensed ham use in the ham band, of course, there is no problem.

The Supercom 2400-TX board module is about 5.8" long but a full inch on the module end could be cut off to fit a smaller box if desired. I think they just made the transmitter board the same size as the receiver, which needs the full length. Width is 2.3", height .8" and weighs 3.5 oz. DC power input is specified at +15 to 18 Vdc, which is typical from a 12V 500 ma wall plug power supply. Current draw is 120 ma and needs at least 13.8 V if using the 7812 regulator on the board or you could just connect 12.0V on the output of the regulator for battery operation - nice for R/C and I found that it was insensitive to vibration. Power output was the advertised 35 mw and uses a SMA jack on the module. There are also RCA jacks for the video in, 6.0 and 6.5 MHz sound subcarrier line audio in and DC power soldered to the board.

The only drawbacks for ham use, and probably minor for the solder slinger, is the low power (been nice to have 100 mw) and there is no pre-emphasis built in or 75 ohm termination on the video input. In order to use this transmitter with the Wavecoms, HFT or any other ham FM ATV system on the band in the USA, pre-emphasis has to be added to the video input. The video input impedance is spec'd at 1.3K and it is cap coupled so an 82 Ohm resistor at the input connector is necessary. The standard PIC has 2400 MHz in ch 1 and 2427 MHz in channel 2. Channel 3 and 4 are out of the ham band above 2450 MHz and cannot be used legally by hams or unlicensed people. The frequencies are selected by a DIP switch on the board. WB7UBB has a PIC available for the Supercom tx and rx that has all 4 channels in the ham band.

The companion Supercom 2400-RX receiver drew 280 ma at 13.8 Vdc and can operate up to 24 Vdc input. One nice feature of this unit is the signal level output that varies from around 1 Vdc at noise to over 4 volts saturated - great for an S meter if buffered to drive a meter. The Signal level output is designed for only a 47K load. A drawback with the PIC that comes with it is that it does not come back on the last channel selected. However it will scan if the channel increment button is held down for 3 seconds. The ham band only PIC from WB7UBB for this receiver does not have scan, but does come back on the last channel selected and more practical for us hams. I did not find this receiver very sensitive, about -73 dBm for snow free and a Wavecom or COPs more like -85 dBm. This is not surprising given the spec'd noise figure of 8.5 dB so I suggest this receiver being used with a low noise preamp. De-emphasis would also have to be added to the video output in order to be used with any other ham ATV systems.

The receiver board is also 5.8x2.3x.8 plus a little heat sink on the 5 V regulator that gets quite hot. Might be better to take off the heat sink and bolt this 7805 directly to an aluminum chassis. Current draw was 280 mA at 13.8 Vdc but I was able to operate it OK down to below 12 Vdc. The limit is the highest frequency the varicap voltage needs to be and it is typically below 10 V.

The only thing left to check is to see if there is enough video gain in the TX and RX to make up for the loss through the pre-emphasis and de-emphasis networks when added - should have time next week and will report the findings to the atv remailer. I found with the COP's 23cm FM system that adding the networks gains you a good 6dB by lowering the receiver noise floor. This translates to doubling the distance possible at the threshold of a snow free pix - well worth it. Besides, in the USA, the networks are standard and need to be there to get decent looking video. In the recent ATVQ, there was an article that surmised that the reason is the camera and monitor. I don't believe this to be the case - I don't see their cameras and monitors spec'd that way and it would make them incompatible for other manufacturers cameras and monitors. My guess is that COP and FM Technologies don't put them in to allow for the different network frequency curves around the world and the user adds the right one for their video standards.

The boards are available from W2WEM - blau3@juno.com Ham band PIC's available from WB7UBB@home.com
…Tom O'Hara, W6ORG

ATV BAND INVADED AGAIN… MTV allegedly used Ham Radio frequencies

MTV, the popular music video cable television channel, reportedly made use of Amateur Radio frequencies during its recent 9 September 1999 MTV Video Music Awards presentation, telecast live from Lincoln Center in New York. According to reports received from several Amateur Radio operators, the MTV production crew allegedly used a total of 16 radio frequencies in the 438 to 441 MHz range. By FCC regulations, the Amateur frequencies may not be used for commercial purposes.

According to Thomas Tumino, N2YTF, a law student at Fordham University, next door to Lincoln Center, he noticed the MTV crew communications on his handheld radio. Curious, he used a frequency sniffer to look for production radio frequencies across a broad swath of spectrum, but found MTV crew communications, only within the Amateur frequencies, ruling out that intermodulation was creating phantom signals.

Another Amateur, Nelson Suarez, KC2CVW, who lives nearby, started hearing the production crew communications 4 days prior to the telecast during stage and equipment setup. According to Nelson, he went directly to the MTV production crew and asked to speak to the person in charge of radio communications. He was directed to someone who identified himself as "Chris". "Chris" insisted that they had a license to use these radio frequencies. When "Chris" was questioned about the use of Amateur frequencies for commercial operations, "Chris" then claimed to have a ham license.

The radios seen in use by the crew were Motorola HT-1000 handhelds, a 1 to 4 watt output HT operating on simplex frequencies. The UHF version of the HT-1000 is produced in a version that is programmable from 403 MHz to 470 MHz, which includes the Amateur 420 to 450 MHz band.

To rule out the possibility of intermodulation or other mixing scenarios, KC2CVW, and Peter Zizza, KC2CDC used commercial grade radio equipment and a scope to examine the radio signals, the continuous tone code squelch tone systems in use and other signal parameters.

Frequencies Allegedly Used by MTV	1- 438.000	9- 438.900
	2- 438.350	10- 439.100
	3- 438.450	11- 439.600
	4- 438.500	12- 439.700
	5- 438.600	13- 439.950
	6- 438.700	14- 440.100
	7- 438.800	15- 440.350
	8- 438.850	16- 440.600

Other Amateurs monitored these signals and attempts were made to contact the FCC and the ARRL Official Observer program, albeit, after hours or over the weekend. The alleged MTV incursion into the Amateur bands continued on after the awards ceremony on Saturday and Sunday, as the crew disassembled the equipment and the stage set.

Several Emails have been sent to contacts at MTV asking for MTV's side of the story; however, MTV has not responded to any of our inquiries.

The FCC parcels out the radio spectrum in pieces, to different kinds of uses. For example, there is spectrum allocated to broadcasters, to public safety agencies, to government agencies, to commercial uses, to cellular phones, and even to video producers. From time to time, some users intrude intentionally or unintentionally on frequencies allocated to another communications service. For this reason, many radio services monitor their spectrum allocations to locate improper use of their frequencies. For example, FM radio broadcasters monitor for and locate "pirate radio" stations that broadcast without a license. To a trained transmitter hunter, a transmitter is almost as easy to locate as a flashlight turned on inside a darkened room. The Amateur Radio Service maintains a team of volunteer radio monitors, known as Official Observers, as part of a program operated by the American Radio Relay League.
…Ed Mitchell, KF7VY, http://hamradio-online.com

ANOTHER GREAT 10 GHZ ATV EXPERIENCE…Who will be next?

Microwave Operations on 10 and 24 Ghz are something I have wanted to do for a long time now...and we are now doing it! Several of us in Central PA are active notably Bob Riese, K3DJC; Fred Lowe, W3MMV, and Joe Lockbaum, WA3PTV on 10m and 24 Ghz Wide Band FM (WFM). Joe and I are also active on 10 Ghz ATV.

My best personal DX record was 38 miles on 10 Ghz WFM and ATV and 6.8 miles on 24 Ghz WFM. Dave Rogers, K9RKH is an occasional luncheon member and an always EMAIL list member of our group so when he asked if we would like to join his group on Saturday 18 Sep 99, I jumped at the chance myself as the other gentlemen were busy.

There is a subset of AMRAD members who are microwavers and these gentlemen have arranged a "course" using the overlooks/pullovers on the Skyline Drive in central VA as the "holes" where the distance and direction to the "greens" have been predefined so antenna pointing has been made much easier. The course was designed/laid out/developed by Jim Tury, KA4CKI, also an ATVer and Jack O'Mara, now W4AD.

Thus after planning by EMAIL, I met Dave, K9RKH at the entrance to the National Park Service operated Park and we went to our first "hole" at Signal Knob, a 60 miles par 1 (OK, all are Par 1!!) shot to Reddish Knob. I had assumed...never do that.....we would start at a short distance and work progressively out to 60 miles. So we set up our gear and I parroted Dave's antenna angle. He was first to "tee off" and work Bernie Keiser, W4SW on 10 Ghz at Reddish Knob with Neil, AB4YK . Then it was my turn. Dave used a 10 mw Gunnplexor by MaCOM, a HB scalar feed and a 1 meter dish. My own equipment is a separate receiver and transmitter, as below, which meant a different mode from the usual duplex audio kind of QSO with Gunnplexors common to this group. But with persistence, we soon had a QSO with Bernie at 100 km (60 miles) and Q5 each way. A try on 24 Ghz gave nothing, not even with my new DB6NT LNB. We then went to different sites and worked Sandy WB5MMB at New Market Gap and Bernie .

I was delighted to hear Bernie Q5 full-quieting at 54 miles (90km)on 24 Ghz with my DB6NT LNB but neither Dave nor I could hear or work Bernie on our MaComs.

For Dave, K9RKH, and for me, the highlight of the day came in the final QSO of the day working Bernie on 24 Ghz at 79 km or 48 miles Q5 full-quieting. I just could not believe we had this good signal path with no noise and in full-duplex, all with 5 mw or 1/200 of one watt!. Yes, there was drift and this is so common with Gunnplexors so I adjusted my IF for slight improvements in the audio quality of the received signal.

The equipment I use is a bit different from that normally used on WFM and it should be mentioned that the 10 Ghz gear is also used for ATV where it is only necessary to plug in the camcorder then connect the satellite receiver to the LNB. I like to think it is the best state-of the-art equipment, which does follow more the European than the American method. Others may have different points of view. Here is a recap of my gear by bands:

10 Ghz WFM. Here we use a 24 inch satellite TV offset dish with a rotating turret inspired by a good friend, Michel, HB9AFO who holds the 10 Ghz ATV record at 610 miles!!! The turret is used to manually switch between transmit and receive heads. This saves the loss, and cost, in relays and cable.

The receive LNB is made in Europe with an oscillator on 11.475 Ghz. The LNB was converted for 10 Ghz ham use by my good friend, Denys Roussel, F6IWF per his article, which is again in print, in the Summer 1999 edition of ATVQ. I use his style of 10 dB feedhorn on receive. The LNB has 55-65 dB gain before mixer and a Noise Figure of about 1.3 dB whereas Gunnplexors have 0 dB gain and a Noise Figure above 10. The output is in the satellite TV receiver band about 1250 MHz and is dependent on the operating frequency.

The output goes to an Alinco X-10 all mode receiver covering .1-2000 MHz via a capacitor /choke feed. The 18 VDC for the LNB is obtained from a 12-24 VDC converter to a LM317 regulator.

The X-10 has digital readout so a frequency resolution at 10 Ghz of +- 1 MHz is quite handy in the field. On ATV, the output goes to a US style satellite TV then audio and video cables to a portable TV set. For ATV, we use the 2 m. NFM liaison channel for sound. What DX one has on 2 meters with a HT and short whip at high altitude.....60 miles! On transmit, there is a MaCOM Gunnplexer with 10 mw output using the SHF Micro PS/MOD board to a DB6NT linear with 270 mw out capable per Michael, DB6NT.

My real output power is about 125 mw due to the drive being less than 10 mw.

For transmit to receive switching, I physically shift the heads on the turret. On ATV receive, we use a Uniden satellite TV receiver powered by 117 VAC from an inverter fed by a 17 AH Gelcell.

We have a dual 10 and 24 Ghz receiver using on 10 Ghz a UK made LNB purchased from Bob Platts, G8OZP, in England. The local oscillator is on exactly 9 Ghz plus or minus 900 kHz so direct read out of frequency on the Uniden receiver dial is also possible at reasonable accuracy. This LNB uses a simple dielectric antenna which is a cone going from about 1 inch to a point being about 3" long. It has a gain of about 20 dB using no dish or lens. The NF is .8 dB and it is powered by 12 VDC via a simple choke and capacitor circuit. On 10 Ghz, we had a full-quieting signal at 100 km. It is advertised in VHF Communications of England at a most reasonable price...about $60 delivered in the USA. See below for the 24 Ghz LNB data.

24 Ghz WFM. Here my rig is most conventional with a SHF Micro 5 mw MaComm Gunnplexor using the SHF Micro PS/MOD board with a feed horn design from Paul Wade, W1GHZ. It is a 10 dB rectangular horn feeding a RCA DSS style 18 inch offset dish. This was used for the 79 km QSO with Bernie, W4SW. Another rig, my small MaCom Gunn rig with a 17 dBi horn was great on 24 Ghz at 2 km....but nothing at 79 km!

The 24 Ghz part of my dual 10 and 24 Ghz receiver, is a "just received" DB6NT LNB (which Michael, DB6NT terms a LNC) with measured 1.3 dB NF and 48 dB gain before the mixer. It is fed with a 17 dBi brass horn designed by Fred ,W3MMV and it and the 10 Ghz UK LNB are mounted on the same tripod and switched by a standard TV switch to the Alinco X-10 rcvr. As DRO oscillators are accurate to about + and - 1 MHz, the Alinco X-10 receiver gives direct frequency readout to about 1 MHz accuracy. That is why I told Bernie, W4SW that he was on 24,059 MHz. As the local oscillator is on 23,000 MHz the readout is almost direct so that 24.100 Ghz is 1100 MHz.

As if they were not happy with their 24 Ghz contact on Saturday at 48 miles, Dave and Bernie had to spoil it all and beat their one-day old record by doing 90 km (54 miles) on 24 Ghz on Sunday 19 Sep from Dave on Reddish Knob to Bernie at Hogback Mountain....and Dave had heard Bernie's tone, though weakly, at 60 miles before that ! Congratulations to Dave and to Bernie!.

I was delighted to participate with the gang, and I look forward to doing it again!!! Microwave operations are fun...and SSB on 10 Ghz is now possible for me with a DB6NT 200 mw transverter and IC-706 with 2 ft dish, so we will add that to our menu for future outings and contests.

I would also like to convince the VA group to try ATV with me next year.....hint to W4SW and KA4CKI both ATVers....but that's another story, HI!
… John Jaminet ,W3HMS, W3HMS@aol.com

LA COUNTY TRIES "EXPERIMENTAL" VIDEO… Yea, right!

ARLB079 From ARRL Headquarters Newington CT September 24, 1999. To all radio amateurs.
The ARRL has asked the FCC to deny an experimental license application by Los Angeles County, California, to develop a public safety video system on the 2.4 GHz band. The LA County proposal, filed August 9, seeks FCC authorization to develop an experimental system using four 10-MHz channels to transmit video images from helicopter-borne cameras to five remote receiving sites with active tracking antennas. The signals then would be retransmitted via terrestrial links to the public safety agencies involved.

In its objection, filed September 23 with the FCC, the League called the LA County proposal a "foot in the door" toward gaining a permanent berth in the 2.4 GHz band. "It is obvious from the experimental proposal that the County wishes to construct the entire system and then simply stay there," the League said. The ARRL said the FCC should authorize nothing more than a single 10-MHz video channel for a single transmitter aboard a single helicopter, to allow interference studies to be conducted.

LA County already is licensed for video operations on a single 2.4 GHz channel but says it encounters operational conflicts with broadcasters. The proposal targets the 2402-2448 MHz band, characterizing it as "underutilized" and asserting that current occupants--including Amateur Radio and industrial, scientific and medical instrumentation--would not suffer harmful interference. Amateurs have a primary domestic allocation at 2402-2417 MHz.

The League's objection said LA County's 2.4 GHz monitoring study was "significantly flawed" and "woefully insufficient," and that LA County would be unable to avoid causing "constant, harmful interference" to incumbent users. Citing ATV repeaters and video links as well as proposed amateur satellite operation, the League said, the 2.4 GHz band enjoys significant use by the LA area Amateur Radio community. The League said these systems, and those of other amateur users, would be "seriously degraded or displaced" by deployment of the proposed experimental system.

The decision to grant the proposed experimental license is up to the FCC Office of Engineering and Technology's Experimental Licensing Division. In making its decision, however, the OET is expected to consult with the Wireless Telecommunications Bureau, which oversees Amateur Radio and the other affected services on 2.4 GHz.

In a separate, but related, filing on September 1, Los Angeles County and the cities of Los Angeles, Long Beach and Burbank requested a declaratory ruling from the FCC to "clarify its rules to facilitate public safety operations on the 2450-2483 MHz band" and to explore other spectrum allocations "to accommodate the growing demand for public safety airborne operation."
…ARRL Members Only Web site.

And now some Hams speak out on the subject,

Just like Uncle Sam to give us a band to use, and then let his dirty cuzin try and take it away. Like the article said, Amateurs are always there for the public servants when they need some type of communications carried out... why don't they just ask the amateurs to ride along and shoot the video for them... takes care of the problem.... (Yea, right, never happen...) sorry if I sound pessimistic... I am just tired of amateurs always having to take it on the chin, when someone wants to find more band.
…Ken Locke, N8PJN

The Los Angeles County Sheriff's Office has been a thorn in the side of Amateur Radio since the 1960's.
They have repeatedly tried, sometimes successfully, to use our frequencies for public safety administrative traffic.
Here they go again.
…Don Milbury, W6YN

NEW MEMBER SECTION

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 so it's important that we actively recruit new faces aggressively. I forgot to include this section last time so the list below represents the new members since May 1999.
Doug Nicodemus, KB8SFD, Dublin, Ohio 43016
Dave Stepnowski, KC3AM, Claymont, De 19073
Bob Lewis, W8DXF, Blanchester, Ohio 45107
John Jaminet, W3HMS, Mechanicsburg, Pa 17055
Harry DeVerter Jr, N3KYR, Lancaster, Pa 17603
John Shaffer, W3SST, York, Pa 17404
James Reed, WA8UZP, Columbus, Ohio 43212
John Hays, K7VE, Sandy, Utah 84091
Jeff Skinner, N8ZTJ, New Holland, Ohio 43145

MOTOCROSS RACING ATV HELMETCAM… Now you try it!

I've found combining two hobbies can generate an incredible amount of new interest. Amateur Television (ATV) introduces an exciting new perspective that may not have been seen before. So ATV and Motocross racing is a perfect match! Several of my coworkers are Motocross racers. They ride motorcycles on closed loop dirt tracks with hairpin, sweeper, and jump turns. There's bumps, straight a ways to gain ridiculous amounts of speed, and jumps over 70' long! Certainly this hobby isn't for the faint of heart but with an ATV system mounted on a rider's helmet we can enjoy the action. *(Let's go guys… do something like this so we can show Cris how creative **we** can be. Ed)*

Some Technical Information: The small ATV transmitter package consists of an 100 mw 1.2 GHz FM transmitter (1300MT) with rubber duck from PC Electronics, bullet camera (GM-200K-STD) from Resources UN-LTD, and 12 volt 600 mAh Nickel-Metal Hydride pack (GP-600 AAH) from E.H. Yost & Company mounted onto a Motocross helmet visor (32-3397) from Dennis Kirk Inc. The receiver end consists of a Bensat satellite receiver from PC Electronics, 2414LY 14 element loop yagi from Directive Systems, and TV/VCR combo.

Hardware: PC Electronics 1300MT 100 mw 1.2 GHz transmitter and Bensat satellite receiver, Resources UN-LTD bullet b/w camera , Dennis Kirk Inc. helmet visor , 12 Volt NiMH battery pack from E.H. Yost & Company , Directive Systems loop yagi , VHS VCR and TV.

Hardware Sources: P.C. Electronics (626) 447-4565, Directive Systems (207) 658-7758, Resource UN-LTD (603) 668-2499, E.H. Yost & Company (608) 831-3443, Dennis Kirk Inc. (800) 328-9280.

Conclusion: This project was easy to put together and worked very well the first time. The ATVers and Motocross racers both had a blast. The video was a P5 picture a majority of the time. I love it when a plan comes together!
…Chris Oesterling, N8UDK

Team Screeemers at MX Farms in Anchorville Michigan

Helmet cam installed on the removable visor

Angel Woodruff wearing the helmet cam and standing next to his Yamaha 99YZ250"

Received transmission from Angel going over a 40' jump! (the other rider is also in mid air)

PORTABLE ATV… A PC Electronics Illustration

I just cranked out another application note in the Arcadia cave. This one is on packaging a 1.5 watt 70cm ATV transmitter for home or portable use. The die cast aluminum box used (same size as our downconverter) is 4.7x3.7x2.1 inches which is small and light enough for portable or mobile as well as home station. This makes a great little unit for public service events or ATV demos. The 3 page app note pdf file is available free to any licensed radio amateur who sends us an email requesting it. It also comes with any order for the TXA5-RC board along with the R/C, balloon and Rocket app notes. This app note has photos of the finished unit, inside view, drill templates, assembly procedures, wire list, parts list and sources. The packaged unit uses the P. C. Electronics (of course) TXA5-RC 1.5 watt transmitter board, FMA5 sound subcarrier board and TR-1b T/R relay board. You can power as well as switch the antenna to the downconverter (TVC-4G) directly from this one small box.

…Tom O'Hara, W6ORG P. C. Electronics http://www.hamtv.com

P. C. Electronics 2522 Paxson Lane Arcadia CA 91007-8537 USA ©1999
Tel: **1-626-447-4565** m-th 8am-5:30pm pst (UTC - 8) Tom (W6ORG) & Mary Ann (WB6YSS) O'Hara
24 hr FAX order line 1-626-447-0489 Email: tomsmb@aol.com
Web site: http://www.hamtv.com

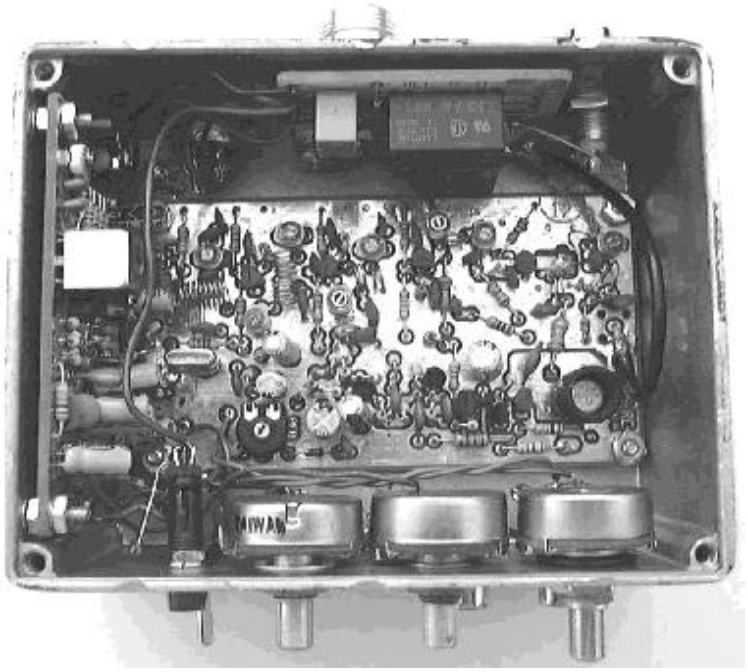
ELECTRONICS

Packaged TXA5-RC 1.5 Watt 70cm ATV Transmitter

The TXA5-RC 1.5 Watt 70cm ATV transmitter board, along with the FMA5 sound subcarrier generator and TR-1b T/R relay boards can be packaged in a small 4.7x3.7x2.1" CAB234 die cast aluminum box for base or portable use. At the home shack, it may be used with the TVC-4G downconverter with its 13.8 Vdc and antenna input switched by the TR-1b in this box. The small box also makes it perfect for public service events, field day, etc., it can easily be externally battery powered and clipped to a belt or backpack for portable operation.

Construction procedure:

Yes, it's tight but worth it. All the boards and parts listed will fit within the CAB234 die cast aluminum box if care is taken and the mounting sequence followed.



1. Drill out the box using the templates. Check that all parts fit properly in the holes. Clean box with isopropyl alcohol then paint and letter the outside surfaces.
2. Mount the lower row of front panel connectors, toggle switch, rear panel BNC and N jacks. Put in the board mounting screws (but use a single nut instead of two). A ground lug is used under each of two of the TXA5-RC nuts closest to the FMA5 instead of a lock washer.
3. Before mounting the DC power jack, prewire the leads:
   Sockets 1 and 3 1" #22 buss - solder to gnd lug
   Sockets 2 and 4 2" #22 red
4. Solder 1" buss wires (4) on the RCA jack center & ground lug.
5. Solder a 3" #22 green wire to the Mic jack center lug.
6. Solder a 1" buss wire from the bottom lug of the toggle switch to the adjacent ground lug. Also solder one side of a 100 ohm 1/4 watt resistor to this same ground lug -long ground lead
7. Solder 6" & 1.5" black #22 wires to toggle switch center lug Solder, other end of the 1.5" lead to the PTL jack center lug.

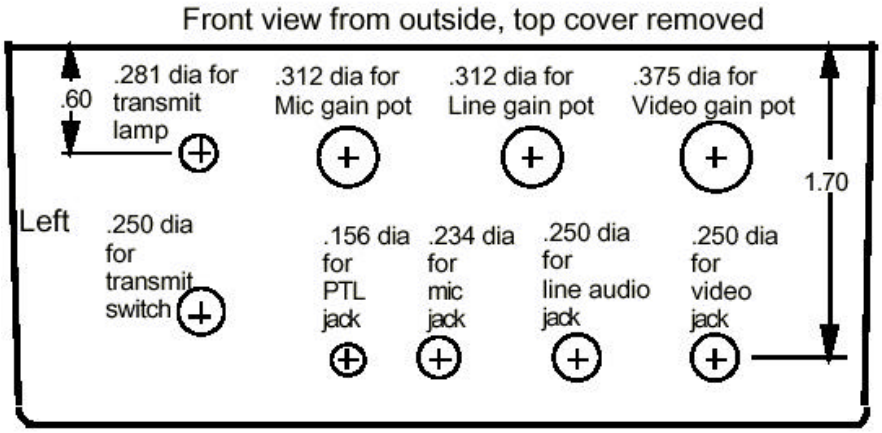
8. Remove 100 ohm video gain pot from TXA5-RC, 50K mic gain pot and 10K line audio gain pot on FMA5 board.
9. Solder the RG174 coax between the boards: 4" from TXA5RC A antenna output topside to TR-1b T pad. 5.5" from TXA5RC S sound input to FMA5 out bottom pads.
10. Solder twisted 4" long yellow and blue #22 wires from top of TXA5-RC center (blue) and CW (yellow) pads to the respective 100 ohm video gain panel pot terminals.
11. Solder 3.5" #22 green wire from 10K line audio panel pot center lug to respective solder pad on FMA5 board.
12. Solder 3" green twisted pair from 50K mic gain pot center and CCW lugs to respective solder pads on FMA5 board.
13. Solder on TR-1b board +TX pads: 3" #22 red to FMA5 +, 5" #22 red to TXA5-RC + and a 4" #22 red. Solder 1" buss to R pad. Solder the black lead from the toggle switch to the PTL pad. Solder the red lead from pin 4 of the DC power jack to the +R solder pad and then mount the board. Solder the N center pin to the board and the R buss wire to the BNC center - carefully angle the iron so as not to melt the relay cases.
14. Solder wire from the mic jack to the M pad on the FMA5 board.
15. Mount the TXA5-RC board then the FMA5 - no top nuts necessary on the bottom two FMA5 mounting screws, no room.
16. Mount the transmit lamp and connect the 4" red wire from the TR-1b board +TX to one side, 100 ohm resistor to the other.
17. Mount the panel pots. Solder the 4 buss wires from the RCA jacks to their respective CW and CCW (gnd) lugs.
18. Dress the wires and check everything for shorts.
19. Make DC power cable - use a fuse holder in + lead from pin 2.

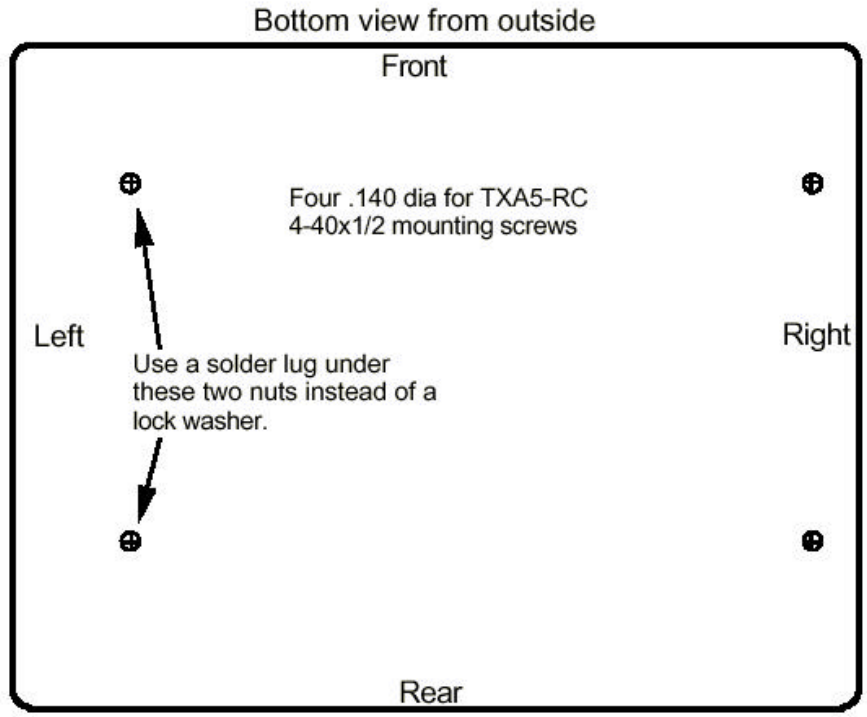
Chassis Layout

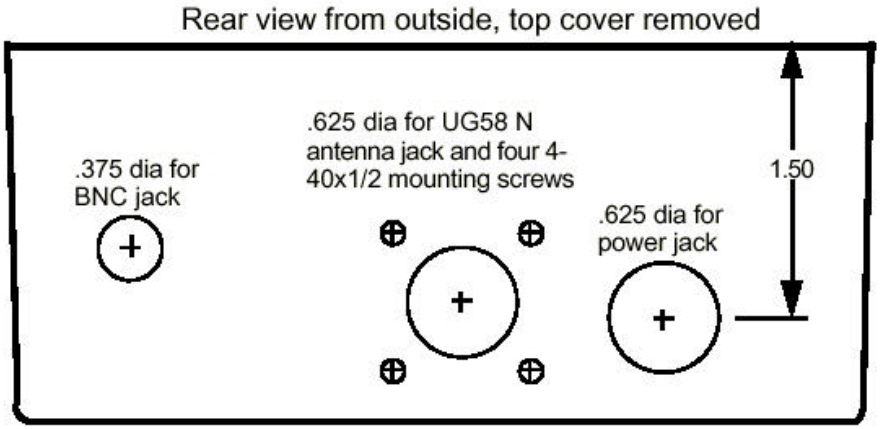
Cut out the drill templates here and on the next page, and place over the respective CAB234 aluminum box sides. Align with the edges and hold in place with tape or a rubber cement. Center punch through the paper, or poke a hole through the paper, then place on the box and mark with a pencil. Measure the distances to the alignment reference holes and correct if necessary before drilling.

Drill all holes with a .140 dia drill first, check alignment again, then finish with the larger drills. Debur all holes

Check all parts for fit, then clean the box with isopropyl alcohol prior to painting. Spray paint the outside surfaces of the box and cover. After drying, rub on letters can be applied and then a coat of clear paint. Again, after complete drying, assemble all the parts and wire per the sequential procedure on the previous page.

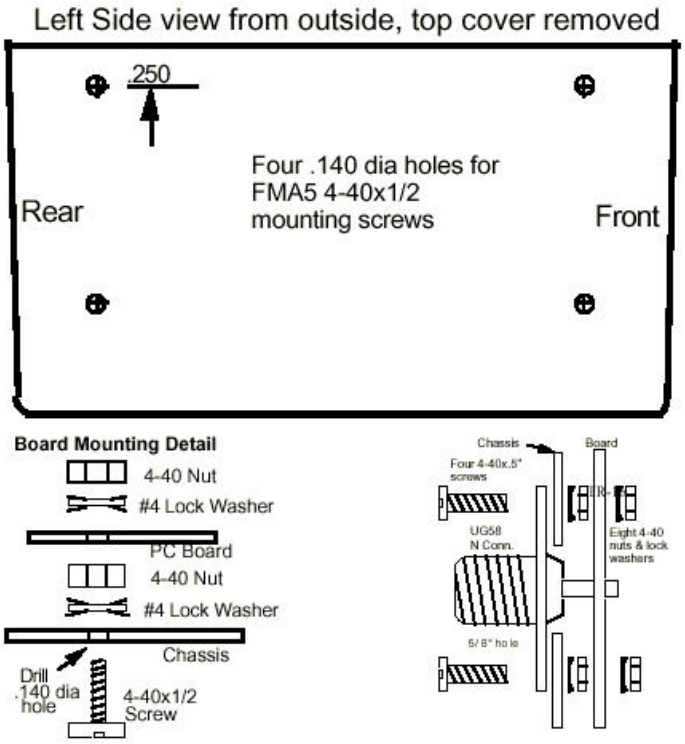




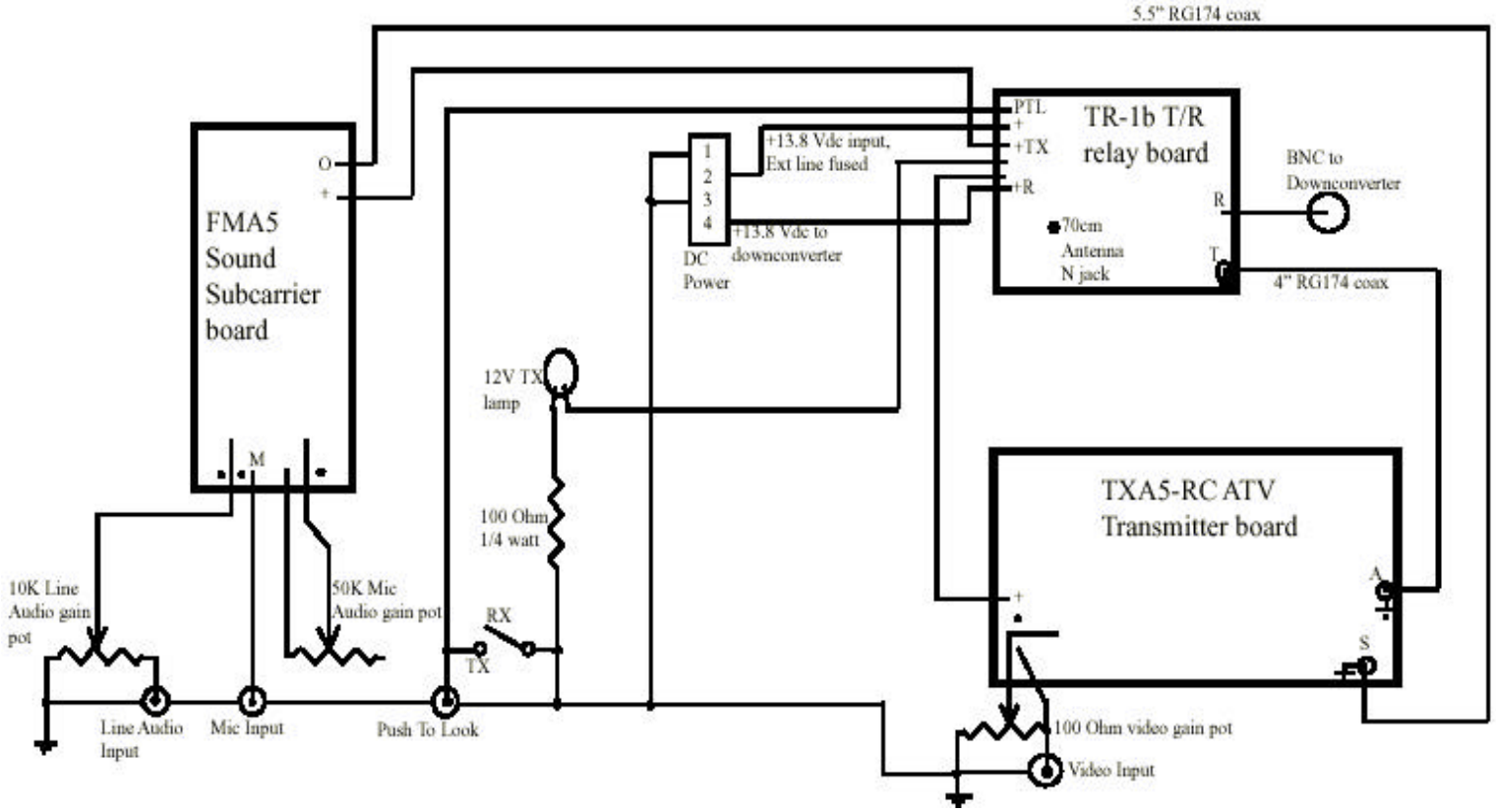


Parts list for packaging the ATV transmitter:
RS part numbers + Radio shack, the alternates after are from Mouser - call: 1-800-346-6873

1 TXA5-RC ATV transmitter board, P. C. Electronics
1 FMA5 sound subcarrier board, P. C. Electronics
1 TR-1b T/R relay board, P. C. Electronics
1 UG-58 N chassis jack, P. C. Electronics
1 100 Ohm carbon pot, P. C. Electronics
1 10K line audio pot, RS 271-1715, 31VA401
1 50K mic gain pot, RS 271-1716, 31VA405
1 UG1094 BNC chassis jack, RS 278-105
1 4 pin chassis power jack, RS 274-002
1 4 pin power plug, RS 274-001
1 Inline fuse holder, RS 270-1217
1 1 Amp 3AG fuse, RS 270-1005, 504-AGC-1
2 RCA phone jack, 161-1052
1 Mini mic jack, 16PJ012
1 Sub-mini PTL jack, 16PJ100
3 Knob, builders choice, ME 450-6015 - shown in pix
1 Toggle switch, RS 275-612, ME 108-MS550K
1 Lamp, RS 272-331
1 100 Ohm 1/4 watt resistor, RS 271-1311, 29SJ250-100
12 4-40x1/2" pan head screws, RS 64-3011, 5721-440-1/2
22 4-40 nuts, RS 64-3018, 5721-440
20 #4 internal tooth lock washers
2 #4 solder lug, 534-7311
4 Rubber bumpers, RS 64-2346, 517-SJ-5007BK
Misc #22 hookup and buss wire, #18 for DC power leads



Place screw through hole in chassis, drop on lock washer or solder lug, then finger tighten the nut. Then place the PC board on the nuts and check for fit. Push down on the board near the mounting hole while tightening with a screwdriver to lock in the alignment. Then put on the final lock washer and nut.

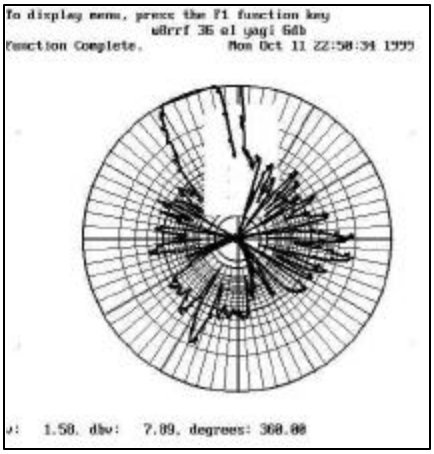


…Tom O'Hara, W6ORG

MID SUMMER ANTENNA PARTY…Thanks to Ted!

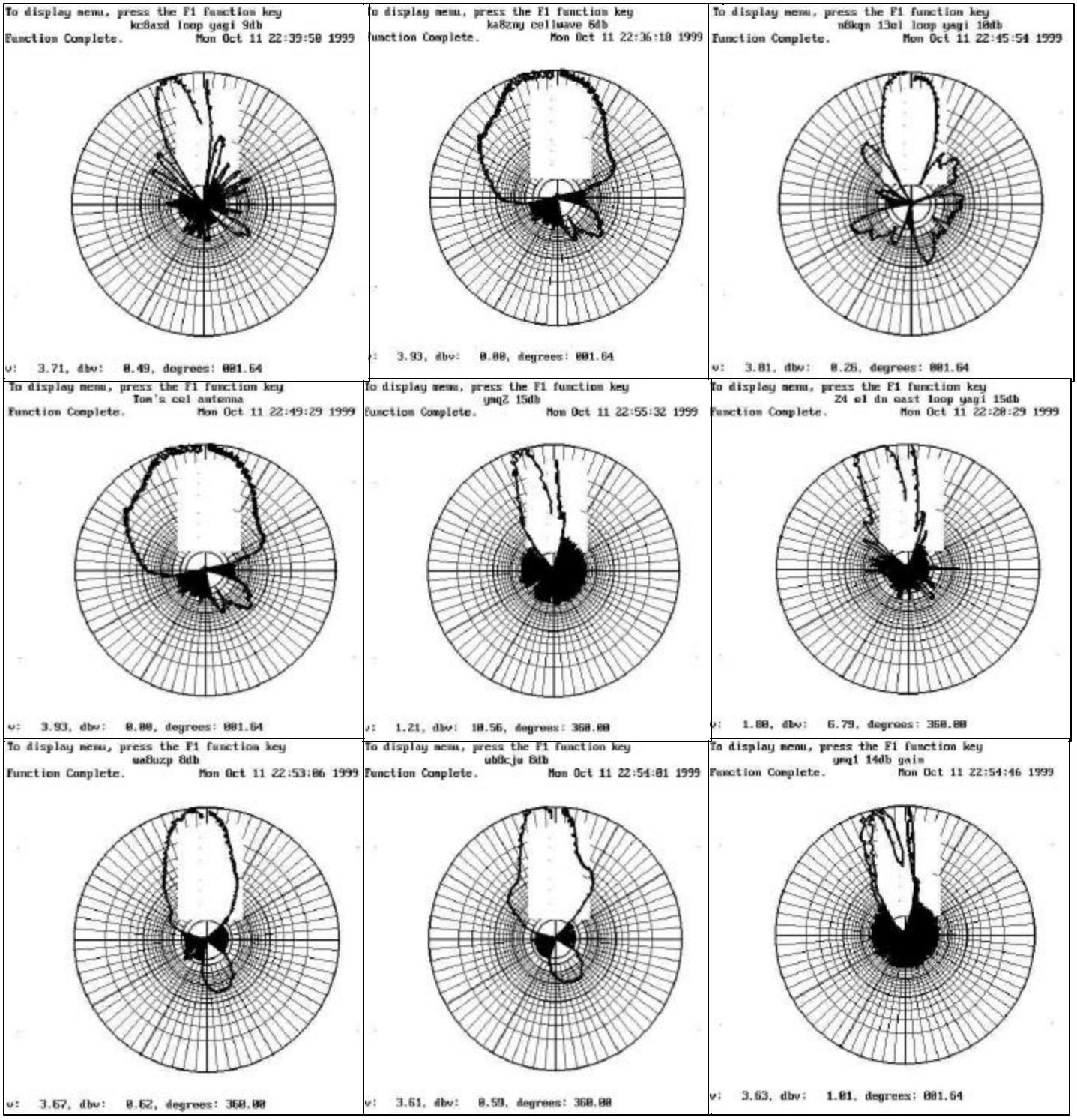
Another great time was had by all at our second annual antenna party on Sunday August 29th. It was held at Ted's place, N8KQN, where we again gathered for a day of fun measuring the gain and patterns of a number of 439, 1280 and 2400 MHz antennas. Oh, by the way, the food, drinks and good company helped too. The day was perfect - not too hot or cold which was a pleasant relief from the "scorcher" last year.

I didn't take attendance, but as I recall, there were about 15 of us, which successfully measured about 10 antennas. I believe the biggest surprise was to W8RRF. Paul's 20 element (or so) loop yagi that had special machining and a very professional looking appearance measured less than 6 dB gain with a rather poor pattern. I felt bad because it was obvious that he put a lot of time into the construction of this one. Later, I'm sure a re-check the dimensions and find a simple mistake. That's what it's all about, folks! The resultant pattern is shown at the right.



The equipment we used this year performed all right but could have been better. The bright sun prevented a good view of the CRT pattern plots and the antenna rotor mechanism didn't align to the antenna perfectly. There was some pattern overlap but we could still interpret it OK. Maybe between now and next year I can look into this and fix it. (It DID work OK last year). Also, I will investigate a way to get more dynamic range out of the measurement. We only have about 10 dB of range which is the range of my RF voltmeter and many antennas have gains in excess of this.

For the record and for those of you who didn't attend, we measure antennas in the following manner:
We set up an RF source with a fixed gain antenna at the far end of Ted's yard about 100 feet away from out receiving setup. At the receive site we have a tilt over short test tower with rotor which we mount the test antenna. The antenna coax is then fed through a bandpass filter and into a Boonton RF voltmeter with a DC output proportional to received signal strength. This DC signal is fed to an analog to digital converter and into the parallel port of a computer. The custom software in the computer signals the rotor to start turning and proceeds to take many data samples as the antenna turns plotting it in polar form on the screen. This produces a real time plot of the pattern, which can be saved for comparison later. There you have it…quite professional. So next year, bring your favorite antenna, let us measure it and store the results so when you improve upon it the following year, we can see if it was worthwhile! It's also fun and educational to see just how seemingly small changes can have large effects and vice versa! Check out some of the plots and pictures below for a glimpse of the data taken. Note: the date shown on the plots is the date printed and not date taken.
…Art, WA8RMC



The above plots are shown in random order. Also, the patterns don't totally match in all cases. That was caused by rotor positioning error where the rotor and computer were not exactly in sync. We hope to fix this bug by next year.
…Art, WA8RMC

TV CHANNEL 10 TOUR … A Giant Success!

Thanks to Jay, KB8YMQ, the tour through the TV channel 10 facilities last July 28th was very informative and educational. Jay pointed out the various parts of what it takes to run a commercial television station including the studio, news production facilities, editing, microwave, transmitter and high definition TV equipment. About 20 people attended. Although none of us believed we could emulate their capabilities, it was helpful to see how the professionals do it so I think we all learned something that we can apply to our own ATV "studio" to make it better. For those of you that missed the tour and would be interested in seeing it in the future, I'm sure that he could be persuaded to make a repeat performance next year. The following pictures are typical of the equipment we saw that day.

Above, Gary, KB8YMR, is at the controls making sure the right video goes out.

Above right is the Channel 10 news helicopter being "inspected" by the ATCO group to see if any ATV equipment could possibly be added to the already packed on board electronics.

The satellite dish on the right is one of many that support the channel 10 TV operations.

The group below participated in the tour.
…Jay, KB8YMQ

Y2K, Y2K, Y2K…OK, let's hear it one more time! (… good advice)

I saw this on the Internet. It sounded interesting so I followed the instructions and found that it was true. So I changed my settings.

Y2K - PLEASE TAKE NOTE! SOMETHING EVERYONE NEEDS TO DO TO UPDATE YOUR COMPUTER

For anyone who may not know this..... Double click on "My Computer."
Double click on "Control Panel."
Double click on "Regional Settings" icon.
Click on the "Date" tab at the top of the page.

Where it says, "Short Date Sample" look and see if it shows a "two digit" year. Of course it does. That's the default setting for Windows 95, Windows 98 and NT. This date RIGHT HERE is the date that feeds the application software and WILL NOT roll over in the year 2000. It will roll over to 00. HERE'S THE FIX....

Click on the button across from "Short Date Style" and select the option that shows, mm/dd/yyyy. (Be sure your selection has four Y's showing, not just two). Click apply... Then click on "Apply" and then click on "OK" at the bottom.

Easy enough to fix. However, every single installation (yy) of Windows worldwide is defaulted to fail Y2K rollover.

How many people know about this? How many people know to change that? What will be the effect? Who knows! But this is another example of the pervasiveness and systematic nature of the problem. You may wish to pass this on to as many people that you know who own home computers.
…Perry WB8OTH

10GHZ CREATIVE THOUGHTS…Is this possible?

Here is a brief article about something not normally seen by many hams as they will not have a subscription to the North Texas Microwave Society newsletter. Circular Waveguide Information and Test Results

The current August/September 1999 edition of FEEDPOINT of the North Texas Microwave Society arrived recently and I was delighted to see an article by Dick Knadle, K2RIW written 3 Jul 99 to NTMS.

He discusses his experiences with 3/4 inch copper tubing and fittings used by some on 10 Ghz for waveguide and draws some conclusions that it is a very good material for 10 Ghz being both low loss and low cost. It is also easy to apply vice rectangular waveguides with 4 or more bolts. He describes a dummy load made with a broom handle, copper tubing and a coupling. He says it is easy to slip on and test then remove. He also refers to the unions, end caps and angle couplings as microwave parts made to order saying that you can use size adapters as feeds and end caps as transitions from waveguide to SMA and coax. He cites two books which he describes as THE best, one for circular waveguide and one for waveguide components.

I was personally delighted to see this article as I have been making my own transitions, Penny Feeds, shepherds hook feeds and using 3/4 " copper pipe without much technical support in references. I have had good results but always with the nagging question..... could they have been better?
…John Jaminet, W3HMS

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.
…WA8RMC

Michael Kohlstadt, KD6UJS
has a limited supply of used but working Pacific Monolithics 2.4ghz downconverters and power supplies which will work fine for the repeater.
Phone: 408-926-0430.

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

PC Electronics
ATV Transmitters, Receivers
Manufacturer/Reseller
2522 Paxson Ln.
Arcadia, CA 91009-8537
Phone: 626-447-4565
Fax: 626-447-0489
tom@hamtv.com www.hamtv.com

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

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

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

Hamtronics Inc
Ham receivers, transmitters
Antennas, Preamps
http://www.hamtronics.com/

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

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

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

CCI Communications Concepts, Inc.
508 Millstone Drive
Beavercreek, OH 45434-5840
(937)426-8600 Voice
(937)429-3811 Fax
Email: cci.dayton@pobox.com
http:://www.communications-concepts.com ATV Equipment

GEKCO Inc
TV test signal circuit boards
PO Box 642
Issaquah, Wa 98027-0642
Phone: 425-392-0638
Email: sales@gekco.com
www.gekco.com

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
Email: atc@pionet.net

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

M²
Antennas
7560 N. Del Mar Ave.
Fresno, Ca 93711
Phone: 209-432-8873
http://www.m2inc.com/

E. H. Yost & Company
2211-D Parview Road
Middleton, WI 53562
(608)831-3443 Voice
(608)831-1082 Fax
Email: ehyost@midplains.net
Battries

Fair Radio Sales
1016 E. Eureka P.O. Box 1105
Lima, OH 45802
(419)227-6573 Voice
(419)227-1313 Fax
Email: fairadio@wcoil.com
http://alpha.wcoil/~fairradio
Electronic Surplus Equipment

Herbach and Rademan
16 Roland Avenue
Mount Laurel, NJ 08054-1012
(800)848-8001 Voice
(609)802-0465 Fax
Email: sales@herbach.com
http://www.herbach.com
Electronic & mechanical Surplus

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

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

Sauder Electronics
261 Mountain Drive
Fredericksburg, PA 17026
(717)865-5001 Voice
(717)865-9470 Fax
Email: sauder@leba.net
Surplus Electronics

Spectrum International
J-Beams, KVG, Micromodules,VSB
John Beanland
Phone:978-263-2145.
Email:
Spectrum@ma.ultranet.com
filters

Typetronics
P.O. Box 8873
Fort Lauderdale, FL 33310-8873
(954)583-1340 Voice
(954)583-0777 Fax
Vacuum Tubes

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

Jameco Electronic Components
1355 Shoreway Road
Belmont, CA 94002-4100
(800)831-4242 Voice
Email: infor@jameco.com
http://www.jameco.com
Electronic Parts

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

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

Surplus Sales of Nebraska
1502 Jones Street
Omaha, NE 68102
(800)244-4567 Voice
(402)346-2939 Fax
Email: grinnell@surplussales.com
http://www.surplusales.com
Electronic Parts

Techni-Tool
5 Apolio Road P.O. Box 368
Plymouth Meeting, PA 19462-0368
(800)832-4866 Voice
(610)828-5623 Fax
Email: sales@techni-tool.com
http://www.techni-tool.com
Tools

TE Systems
P.O. Box 25845
Los Angeles, CA 90025
(310)478-0591 Voice
(310)473-4038 Fax
RF Power Amplifiers

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

Mat Electronics
400 Pike Road
Huntingdon Valley, PA 19006-1610
(800)628-1118 Voice
(800)628-1005 Fax
Email: sales@matelectronics.com
http://www.matelectronics.com
Radio & TV Parts House

Nemail Electronics, Inc.
12240 N.E. 14th Avenue
North Miamo, FL 33161
(800)522-2253 Voice
(305)899-0900 Voice
(305)895-8178 Fax
Email: info@nemal.com
http://www.nemal.com
RF Connectors

Jensen Tools Inc.
7815 S. 46th Street
Phoenix, AZ 85044-5399
(800)426-1194 Voice
(800)366-9662 Fax
http://www.jensentools.com

Tech America
P.O. Box 1981
Fort Worth, TX 76101-1981
(800)877-0072 Voice
(800)813-0087 Fax
http://www.techam.com
Electronic Parts House

Tessco Electronics
34 Loveton Circle
P.O. Box 5100
Sparks, MD 21152-5100
(800)472-7373 Voice
(410)472-7575 Fax
http://www.tessco.com
Test Equipment-Antennas-Etc

Wyman Research Inc.
8339 S 850 W
Waldron, In 46182-9608
765-525-6452
http://www.svs.net/wyman
wyman@svs.net
ATV transmitters & transceivers
SSTV equipt.

INTERNET ATV HOME PAGES (list verified 7/10/99)

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).

Domestic homepages

http://psycho.psy.ohio-state.edu/atco	Ohio, Columbus, ATV home page (ATCO)
http://www.radio-amateurs.com	Ohio, Dayton ATV group (DARA)
http://users.erinet.com/38141/atv.htm	Ohio, Xenia KB8GRJ
http://www.hayden.edu/Guests/AATV	Arizona, Phoenix Amateurs (AATV) Carl Hayden High School
http://www.qsl.net/aatv/	Arizona, Pheonix Amateurs(AATV)
http://www.citynight.com/atv	California, San Francisco ATV
http://www.qsl.net/atn.	California, **A**mateur **T**elevision **N**etwork in Central / Southern
http://w6yx.stanford.edu/~stevem/atv	California, South Bay ATV Group Stanford University
http://www.qsl.net/wb6izg	California, southern ATV Sights and Sounds
http://home.tampabay.rr.com/k4lk/	Florida,Tampa Bay Amateur Television Society (TBATS)
http://www.nfds.net/~kb4oid/atv.html	Florida, Emerald Coast Amateur Television Society (ECATS)
http://www.qsl.net/scats/	Florida, Melborn Space Coast Amateur TV Society (SCATS)
http://www.bsrg.org/aatn/aatn1.html	Georgia, Atlanta ATV
http://ww2.netnitco.net/users/stealth/kens.htm	Indiana KB9I homepage
http://members.tripod.com/silatvg	Illinois, Southern, Amateur Television group
http://www.ussc.com/~uarc/utah_atv/id_atv1.html	Idaho ATV
http://www.premiernet.net/~hcantrl/	Kentucky, Bowling Green (CKATS)
http://ourworld.compuserve.com/homepages/wd0giv/ATVPAGE.html	Lousiana, New Orleans
http://www.smart.net/~brats	Maryland**,** Baltimore Radio Amateur Television Society (BRATS)
http://www.icircuits.com/dats	Michigan, Detroit Amateur Television Ststem (DATS)
http://www1.minn.net/~n0mnb/	Minnesota Fast Scan Amateur Television (MNFAT)
http://www.intecnet.net/vidking/	Missouri, St Louis Amateur Television
http://www.mt.net/~erhardt/atvrptr.htm	Montana, Helena Amateur Television
http://www.njin.net/~magliaco/atv.html	New Jersey, Brookdale ARC in Lincroft
http://www.qsl.net/~no3y	New Mexico, Farmingham
http://www.lloydio.com/oatva.html	Oregon, Portland ATV (OATVA)
http://www.webczar.com/atv	Oklahoma, Tulsa Amateur TV (TARC)
http://www.usaor.net/users/ka3fzf/	Pennsylvania, Pittsburg Amateur Television in Pittsburg
http://www.voicenet.com/~theojkat/w3phl.html	Pennsylvania, Phila. Area ATV
http://www.geocities.com/Hollywood/5842	Tennessee, East ATV
http://www.stevens.com/HATS/home.html	Texas, Houston ATV (HATS)
http://www.hamtv.org/	Texas, North Texas ATV
http://www.ussc.com/~uarc/utah_atv/utah_atv.html	Utah ATV
http://www.qsl.net/w7twu	Washington, Western Washington Television Society (WWATS)
http://www.shopstop.net/bats/	Wisconsin, Badgerland Amateur Television Society (BATS)

Foreign homepages

http://www.ecn.net.au/~sbloxham/index.html	Australia, ATV, VK4GY (large list of other ATV & ham radio sites)
http://www.batc.org.uk/index.htm	British ATV club (BATC)
http://www.sfn.saskatoon.sk.ca/recreation/hamburg/hamatv.html	Saskatoon, Canada ATV
http://www.gpfn.sk.ca/hobbies/rara/atv3.html	Regina, Canada ATV
http://www.inside.co.uk/scart.htm	UK,Great Britain ATV (SCART)
http://www.cmo.ch/swissatv	Swiss ATV
http://WWW.Regio.Rhein-Ruhr.De/hamradio/atv.orig/welcome.htm	German ATV in "Niederrhein" area
http://lea.hamradio.si/~s51kq/	Slovenia ATV
http://www.arcadeshop.demon.co.uk/atv/	UK, G8XEU ATV homepage
http://www.burnabyradio.com/ve7rtv/	British Columbia, Canada VE7RTV repeater
http://www.qsl.net/zl1qf/atvug/ATVusers.html	Auckland, New Zealand ATV

INTERNET MISCELLANOUS HAM RELATED HOME PAGES (list verified 7/10/99)

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

http://www.stevens.com/atvq	ATVQ Magazine home page. ATV equipment & article references.
http://www.hamtv.com	PC Electronics Inc. Lots of proven ATV equipment for sale.
http://downeastmicrowave.com	Down East Microwave Inc. Lots of uhf/microwave parts & modules.
http://www.yahoo.com/Entertainment/television/Amateur_television	Listing of some of the available ATV home pages.
http:/www.acs.ncsu.edu/HamRadio	General ham radio info- satellite track, call sign database etc.
http://www.arrl.org/hamfests.html	Current yearly hamfest directory.
http://amsat.org	AMSAT satellite directory/home page.
http://www.arrl.org	ARRL home page
http://www.arrl.org/fcc/fcclook.php3	ARRL/FCC revised CALLSIGN database. Search by call sign or name.
http://hamradio-online.com	Ham Radio Online "newsletter" Lot of Ham related information.
http://www.qsl.net/atna/	ATNA homepage
www.qth.net	ATNA members list server (click "select list" to subscribe to listserver)
http://www.ham-links.org	Ham Radio collection database
http://bro.net/explorer/part97.htm	FCC part 97 details. Look up the FCC regulations.
http://fly.hiwaay.net/~bbrown/index.htm	Tennessee Valley Balloon launch information (Bill Brown WB8ELK)
http://www.ipass.net/~teara/atv4.html	Arizona ATV 2.4Ghz Wavecom page (Wavecom mod. information)
http://www.ham.net/lisats.html	Space Shuttle Launch Info Service & Amateur TV System (LISATS**)**
http://www.svs.net/wyman/	Wyman Research Inc. W9NTP Don Miller ATV equipment
http://www.m2inc.com/	M^2 Antenna Systems Inc.
http://www.dci.ca/AMATEUR.htm	DCI Digital Communications Inc. Bandpass filters
http://scott-inc.com/wb9neq.htm	Kentucky, Airborn ATV from WB9NEQ in Bowling Green
http://www.icircuits.com/	Intuitive Circuits Inc
http://www.ipass.net/~teara/atv4.html	2.4 GHz Wavecom modification details
http://www.qsl.net/kd4dla/ATV.html	KD4DLA ATV web page index
http://www.severe-weather.org	Columbus, Ohio severe weather net at Columbus airport

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. This list will be amended as further information becomes available.

17 Oct Ashland Area ARC, Ashland, OH David Fike, N8UCA 979 Twp. Rd. 1654, RFD 6, Ashland, OH 44805 419-289-1082
31 Oct Marion ARC, Marion, OH Karen Eckard, N8KE 6583 South Street Meeker, Marion, OH 43302 740-499-3565
31 Oct Massillon ARC, Massillon, OH Don Wade, W8DEA 7300 Sunset Strip NW, Apt. 7, North Canton, OH 44720 330-497-7232
13-14 Nov Fort Wayne, In Allen County Amateur Radio Technical Society http://www.acarts.com Email: djones2233@aol.com
20 Nov Grant ARC, Georgetown, OH Gordon Neal, W8YGW 11401 State Route 774, Bethel, OH 45106 513-379-1659
8 Jan Michiana Valley Hamfest Assn. Bob Denniston, KA9WNR 21970 Kern Rd. South Bend, IN 46614 219-291-0252
30 Jan Tusco ARC Dover, Ohio Billy Harper, KB8CQG PO Box 80407 Canton, OH 44708 Email: bharper@neo.rr.com
13 Feb Intercity ARC Philip Ackerman, N8ICH 63 North Illinois Avenue Mansfield, OH 44905 419-589-7133
19 Mar Toledo Mobile Radio http://www.tmrahamradio.org Paul Hanslik, N8XDB 3241 Schneider Rd. Toledo, OH 43614 419-385-5056

ATCO REPEATER TECHNICAL DATA SUMMARY

This space of each publication includes the technical information of our repeater. Each time a new feature is brought on line it's added here. Use this as a quick reference for up/down access codes as well as some of the more important parameters of our system.

Main repeater: 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 transmitters
Transmitter Output Power - 40 watts average 80 watts sync tip (427.25)
50 watts continuous (1250)
8 watts continuous (2433)
Link transmitter - 1 watt NBFM 5 kHz audio (446.350 MHz)

Identification The 427, 1250 and 2433 transmitters identify simultaneously every 10 minutes with video showing ATCO and WA8RUT with four different screens. Audio identification is 4 sequences of Morse Code.

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 for F1 audio input control of touch tones
439.25 MHz for A5 video input with FM subcarrier audio (lower sideband)
915 MHz for F5 video link data from remote sites
1280 MHz for F5 video input
2411 MHz for F5 video input

Receive antennas: 147.45 MHz - Vert. polar. Hi Gain 12 dBd dual band (also for 446 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 bDd gain omni
2411 MHz - Comet vertically polarized 12 dBd gain omni

Input control: Major Touch tones:	UP	DOWN
beacon (1 min)	*439	#
regional weather radar	697	#
Local radar (5 min)	264	#
User repeat 1 minute	*45	*22
Touch tone pad tester	#0	#5
Manual mode (ID)	*77 pause 90	*22
(439 input)	*77 pause 91	*22
(910 input)	*77 pause 92	*22
(1280 input)	*77 pause 93	*22
(cabinet cam)	*77 pause 94	*22
(roof cam)	*77 pause 99	*22
5 second ID	#9	*22
Bulletin board	285 pause 92	286
Reset to scan mode	D37 or #437	

Remote sites: Local radar (from TV channel 4 - WCMH) (915 MHz link output 8 watts)
Aux link at WA8RUT QTH (915 MHz link output 1 watt)
Aux link at WB8CJW QTH (915 MHz link output 1 watt)

ATCO MEMBERS AS OF 10 October 1999

K8AEH	Wilbur Wollerman wilbur.w@juno.com	672 Rosehill Road	Reynoldsburg	Oh	43068	614-866-1399
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
WB4BBF	Randall Hash	212 Long Street	Bluefield	Va	24605	
W4/F5BJV	Marcel Pitzini f5bjv@mindspring.com	443 Eastland Drive	Decatur	Ga	30030	404-378-2772
KC8BNI	Fred Stutske kc8bni@amsat.org	8737 Ashford Lane	Pickerington	Oh	43147	
WB8CJW	Dale Elshoff dale.elshoff@usiny.mail.abb.com	8904 Winoak Pl	Powell	Oh	43065	766-5823
WA8DNI	John Busic wa8dni@juno.com	2700 Bixby Road	Groveport	Oh	43125	491-8198
K8DW	Dave Wagner	2045 Maginnis Rd	Oregon	Oh	42616	419-691-1625
WA4DFS	Ed Walker ebwalker@preferred.com	PO Box 150	Mountain City	Tn	37683	423-727-9611
WA3DTO	Rick White wa3dto@aol.com	5314 Grosbeak Glen	Orient	Oh	43146	877-0652
W8DXF	Bob Lewis	192 Northview Rd	Blanchester	Oh	45107-8770	937-783-2740 docwest@in-touch.net
WB8DZW	Roger McEldowney wb8dzw@aol.com	5420 Madison St	Hilliard	Oh	43026	876-6033
KB8EAA,KB8VBF	Rick, Judy Hesket rjheskett1@worldnet.att.net	6261 Maple Canyon Dr	Columbus	Oh	43229	891-3887
W8EHW	Foster Warren	P.O. Box #32	No. Hampton	Oh	45349	
KB8FF	Dave Tkach tkach@copper.net	2063 Torchwood Loop S	Columbus	Oh	43229	882-0771
KS4GL	John Barnes ks4gl@juno.com	216 Hillsboro Ave	Lexington	Ky	40511	606-253-1178
K8GCS	Harry Covault k8gcs@megsinet.net	4820 Archmore Dr	Kettering	Oh	45440	937-434-5412
W8GUC	Reuben Meeks rcmeeksjr@mics.net	428 Lewiston Road	Kettering	Oh	45429	937-294-0575
KA8HAK	Jim Reese	1106 Tonawanda Ave	Akron	Oh	44305	
WA8HFK,KC8HIP	Frank, Pat Amore	3630 Dayspring Dr	Hilliard	Oh	43026	777-4621
W3HMS	John Jaminet	912 Roberts St	Mechanicsburg	Pa	17055-3451	w3hms@aol.com
W8JND	Richard Knowles	573 Plaza Drive	Circleville	Oh	43113	477-8132
K8KDR	Matt Gilbert	5167 Drumcliff Ct.	Columbus	Oh	43221-5207	771-7259 mjgilbert@wcom.net
N8KQN	Ted Post n8kqn@juno.com	1267 Richter Rd	Columbus	Oh	43223	276-1820
WA8KQQ	Dale Waymire walkingcross@mail.bright.net	225 Riffle Ave	Greenville	Oh	45331	513-548-2492
N3KYR	Harry DeVerter Jr	303 Shultz Road	Lancaster	Pa	17603-9563	hdeverter@redrose.net
KC8LOW	Bob Harmon kc8low@netscape.net	831 McDonell Dr	Gahanna	Oh	43230	478-2193
N8LRG	Phillip Humphries phumphries@iwaynet.net	3226 Deerpath Drive	Grove City	Oh	43123	614-871-0751
KA8MID	Bill Dean ka8mid@qsl.net	2630 Green Ridge Rd	Peebles	Oh	45660	
KB8MDE	Shaun Miller kb8mde@bright.net	5061 County Rd 123	Mt Gilead	Oh	43338	419-768-2588
K8MZH	Leland Hubbell	7706 Green Mill Road	Johnstown	Oh	43031	967-8412
WD8OBT,KB8ESR, Tom	Camm & sons	1634 Dundee Court	Columbus	Oh	43227	860-9807
N8OCQ	Robert Hodge	3689 Hollowcrest	Columbus	Oh	43223	875-7067
N8OOA	Jeff Clark	9894 Fincastle-Winchester	Sardinia	Oh	45171	937-695-1229
N8OPB	Chris Huhn	146 South Hague Ave	Columbus	Oh	43204	279-7577
W6ORG,WB6YSS	Tom O'Hara & family tom@hamtv.com	2522 Paxton Lane	Arcadia	Ca	91007	626-427-4565
WB8OTH	Perry Yantis pyantis@compuserve.com	1850 Lisle Ave	Obetz	Oh	43207	491-1498
WA2PCH	Craig Stoll	PO Box 1117	Orchard Park	Ny	14127	
KE8PN	James Easley jeasly@freenet.columbus.oh.us	1507 Michigan Ave	Columbus	Oh	43201	421-1492
W8PGP,WD8BGG	Richard, Roger Burggraf	5701 Winchester So. Rd	Stoutsville	Oh	43154	474-3884

KF8QU	Bob Tournoux rtournou@columbus.rr.com	3569 Garlock Ct	Hilliard	Oh	43026	876-2127
WA8RMC	Art Towslee towslee@ee.net	180 Fairdale Ave	Westerville	Oh	43081	891-9273
W8RRF	Paul Zangmeister w8rrf@copper.net	10365 Salem Church Rd	Canal Winchester	Oh	43110	
WA8RUT,N8KCB	Ken & Chris Morris wa8rut@aol.com	3181 Gerbert Rd	Columbus	Oh	43224	261-8583
W8RVH	Richard Goode w8rvh@glasscity.net	9391 Ballentine Rd	New Carlisle	Oh	45334	937-964-1185
KB8RVI	David Jenkins comm21@coil.com	1941 Red Forest Lane	Galloway	Oh	43119	614-878-0575
WD8RXX	John Perone wd8rxx@juno.com	3477 Africa Road	Galena	Oh	43021	740-548-7707
WA8SAR	Gary Obee	3691 Chamberlain	Lambertville	Mi	48144	
N8SFC	Larry Campbell larry@psycho.psy.ohio-state.edu	316 Eastcreek Dr	Galloway	Oh	43119	851-0223
KB8SFD	Doug Nicodemus rimlight@aol.com	5837 Karric Sq Dr #185	Dublin	Oh	43016	
W8SJV	John Beal & family	2899 Castlebrook Ave	Columbus	Oh	43026	876-9412
W3SST	John Shaffer w3sst@juno.com	2596 Church Road	York	Pa	17404	
W8STB	John Hey & family heyjo@netzero.net	894 Cherry Blossom Dr	West Carrolton	Oh	45449	937-859-5295
K8STV	Jim Carpenter	823 Quailwood Dr	Mason	Oh	45040	
N8TBU	Ed Latham	8399 Fairbrook Ave	Galloway	Oh	43119	
KB8TRP,KB8TCF	Tom, Ed Flanagan ed.flanagan@ohcolu.ang.af.mil	1751 N. Eastfield Dr	Columbus	Oh	43223	272-5784
WA8TTE	Phil Morrison	154 Llewellyn Ave	Westerville	Oh	43081	
KB8UGH scaruso@freenet.columbus.oh.us	Steve Caruso	39 South Garfield Ave	Columbus	Oh	43205	461-5397
WB8URI	William Heiden	5898 Township Rd #103	Mount Gilead	Oh	43338	419-947-1121
KB8UU	Bill Rose	9250 Roberts Road	West Jefferson	Oh	43162	879-7482
WA8UZP	James R. Reed jrr@cscc.edu	818 Northwest Blvd	Columbus	Oh	43212	297-1327
K7VE	John Hays jhays@hays.org	P.O. Box 564	Sandy	Ut	84091	
WB8VJD	Rick Morris	203 Merton Street	Holland	Oh	43528	
KA8VUQ	Jack Wolff	2682 Hiawatha Ave	Columbus	Oh	43212	263-3092
N8WLT	James Neymeyer	2879 East Moreland Drive	Columbus	Oh	43209	237-2331
KB8WBK	David Hunter dhunter147@aol.com	45 Sheppard Dr	Pataskala	Oh	43062	740-927-3883
KB8YIO	Ric Wise rwise@columbus.rr.com	1465 25th Ave	Columbus	Oh	43211	291-6508
KB8YMN	Mark Griggs mmgriggs@aol.com	2160 Autumn Place	Columbus	Oh	43223	272-8266
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	Oh	43064	
KB8ZLB	Dave Kibler k154@bright.net	243 Dwyer Rd	Greenfield	Oh	45123	937-981-4007
KA8ZNY,N8OOY	Tom & Cheryl Taft ka8zny@copper.net	386 Cherry Street	Groveport	Oh	43125	836-3519
N8ZTJ	Jeff Skinner	25956 Locust Grove Rd	New Holland	Oh	43145	

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. Your support of ATCO is welcomed and encouraged.

ATCO CLUB OFFICERS

President: Art Towslee WA8RMC

Repeater trustees: Art Towslee WA8RMC

V.President: Ken Morris WA8RUT — Ken Morris WA8RUT
Treasurer: Bob Tournoux KF8QU — Dale Elshoff WB8CJW
Secretary: Rick White WA3DTO — Statutory agent: Rick White WA3DTO
Corporate trustees: Same as officers — Newsletter editor: Art Towslee WA8RMC

ATCO MEMBERSHIP APPLICATION

RENEWAL ○ NEW MEMBER ○ DATE _____ CALL _____
OK TO PUBLISH PHONE # IN NEWSLETTER YES ○ NO ○ HOME PHONE _____
NAME _____INTERNET Email ADDRESS_____
ADDRESS _____
CITY _____ STATE _____ ZIP _____-_____
FCC LICENSED OPERATORS IN THE IMMEDIATE FAMILY

_____
COMMENTS_____
_____
_____
ANNUAL DUES PAYMENT OF $10.00 ENCLOSED CHECK ○ MONEY ORDER ○
Make check payable to ATCO or Bob Tournoux & mail to: Bob Tournoux KF8QU 3569 Oarlock CT Hilliard, Ohio 43026

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 would like to 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 one hour so please join us if you can.

ATCO TREASURER'S REPORT - de KF8QU

OPENING BALANCE (7/12/99)..... $788.39
RECEIPTS (dues)..... $ 90.00
OTHER INCOME (bank interest)..... $ 6.49
(Wavecom purchase proceeds)..... $ 30.00
APRIL NEWSLETTER FILM..... $ 6.85
POSTAGE (75 newsletters @ .55 ea - April newsletter)..... $ 41.25
FLOWERS (Jake Fuller funeral)..... $ 49.63
JULY NEWSLETTER FILM..... $ 5.50
POSTAGE (84 newsletters @ .55ea -July newsletter)..... $ 46.20
CLOSING BALANCE (09/10/99)..... $765.45