# Lake County Ham Radio Journal

January / February 2009

AA9IL shows off a 900 MHz transverter during his presentation at the Jan 23 meeting

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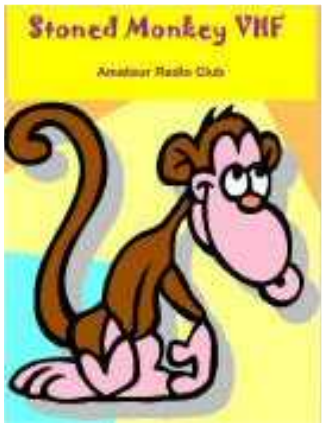
**The Official Newsletter Of**

WeLCARS

**W9WLC**

**www.welcars.org**




**N9UHF**

**www.stonedmonkey.org**

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# Upcoming Events

## WeLCARS Meetings and Events

**VE Session**
Friday February 13 - 7PM
Fox Lake Community Center
23 South St., Fox Lake

**Project Meeting**
**TechFest Prep**
Friday February 20 - 7PM
Fox Lake Community Center

## Other Events

**McHenry Co RACES Meeting**
February 24 - 7PM
McHenry County EOC

**Lake Co RACES Meeting**
March 2 - 7PM
Lake County EOC

**MCWA Meeting**
March 3 - 7:30PM
Nunda Township Hall

## Hamfests

**WeLCARS TechFest IV:**
**Son of TechFest**
February 21 - Fox Lake, IL
www.welcars.org

**AES Superfest 2009**
April 3 & 4 - Milwaukee, WI
www.aesham.com

**Spring Swapfest**
May 2 - Cedarburg, WI
www.ozaukeeradioclub.org

## Contest Calendar

**Northern NY QSO Party**
Feb 13 6PM - Feb 14 6PM
3.5-432 MHz CW, Phone, Dig
www.nnyara.org

**New Hampshire QSO Pty**
Feb 13 6PM - Feb 14 6PM
1.8-1296 MHz Phone, CW, Dig
www.w1fz.org

**North American Sprint**
Feb 14 6PM - Feb 14 10PM
3.5-14 MHz Phone
www.ncjweb.com

**ARRL DX Contest**
Feb 20 6PM - Feb 21 6PM
1.8-28 MHz CW
www.arrl.org/contests

**North American QSO Party**
Feb 28 12PM - 12AM
3.5-28 MHz Digital
www.ncjweb.com

**North Carolina QSO Party**
Mar 1 11AM - 9PM
3.5-28 MHz Phone, CW
www.w4nc.com

**ARRL International DX**
Mar 6 6PM - Mar 8 6PM
1.8-28 MHz Phone
www.arrl.org/contests

**Heavy Metal Rally**
Mar 13 7PM - Mar 15 7PM
3.5-28 MHz Phone, CW
www.xe1rcq.org

**Idaho QSO Party**
Mar 14 2PM - Mar 15 2PM
1.8-440 MHz Phone, CW
www.nx7tt.com

# FCC License Activity on the Rise

from the ARRL

According to ARRL VEC Manager Maria Somma, AB1FM, there continues to be a heightened interest in Amateur Radio following the FCC's elimination of the Morse code exam requirement in February 2007: "The number of new license applicants remains strong under the new Amateur Radio Service rules. In 2008, the total number of US amateurs rose 1.2 percent, from 655,800 in 2007, to 663,500 in 2008 (sidebar).

Somma said that the number of General and Extra class upgrades is also on the rise. "When looking at 2006 totals," she said, "we see that upgrade applications for 2007 were up 286 percent; in 2008, they were up 146 percent over 2006. Requests for new club licenses also remain strong. In 2008, we had 671 applications for club licenses come in, while in 2007, there were 506 applications. That's an increase of 133 percent."

Calling it a "ripple effect," Somma said that the number of amateurs who want to be volunteer examiners and who want to teach Amateur Radio classes is also going up.

Somma further broke down the numbers to show the approximate number of licensees per FCC license class:

| | |
|---|---|
| Novice: | 18,500 |
| Technician: | 322,500 |
| General: | 145,000 |
| Advanced: | 62,000 |
| Extra: | 115,500 |
| Total US Amateurs: | 663,500 |

**New Amateur Totals**
**2006 through November 2008**

| Month | 2006 | 2007 | 2008 |
|---|---|---|---|
| Jan | 1274 | 1647 | 1755 |
| Feb | 1605 | 2435 | 2998 |
| Mar | 2531 | 3478 | 2816 |
| Apr | 1728 | 2673 | 3090 |
| May | 2283 | 2607 | 2562 |
| Jun | 1967 | 2281 | 2402 |
| Jul | 1401 | 1786 | 2077 |
| Aug | 1623 | 2183 | 2084 |
| Sep | 1357 | 1462 | 1763 |
| Oct | 1781 | 2109 | 2303 |
| Nov | 1993 | 2132 | 2197 |
| Dec | 1569 | 1935 | 2019 |
| Totals: | 21,112 | 26,728 | 28,066 |

"I can think back to the mid 1980s when there were approximately 450,000 US Amateurs," Somma recalled. "These are the highest numbers of General and Extra class licensees I have ever seen." As of April 15, 2000, the FCC no longer issues Novice or Advanced class licenses. "As expected, the number of Novice and Advanced class licensees has decreased," she said. "As I look toward 2009, I see Amateur Radio growing in a positive direction." -- Some information provided by Joe Speroni, AH0A

## First ARRL Triple Play Award

On Thursday, January 15, ARRL officials confirmed that David J. Strout Sr, W2YC, of Williamstown, New Jersey, is the recipient of the very first Triple Play Award. "Strout received the final needed confirmation -- Hawaii on phone -- just at 2004 UTC on January 15," said ARRL Information Technology Manager Jon Bloom, KE3Z. "He applied for the award at 2007 UTC, and it was issued by the Awards Branch at about 2130 UTC." The Triple Play Award is available to all amateurs who confirm contacts with each of the 50 states using three modes for each state: CW, phone and RTTY/digital. All 150 contacts must be made on or after January 1, 2009 and must be confirmed via Logbook of the World (LoTW). All bands -- with the exception of 60 meters -- may be used in pursuit of the Triple Play Award.

# Frozen QSOs Anyone?

Tom Staley - K9TMS
President, Stoned Monkey VHF ARC
Photos by Joe Brault - KC9LFP

Riddle me this Batman, what do a Troop of Stoned Monkeys in Fox Lake during January and Ralphie Parker's buddy Flick have in common? Give up? They both need to remember not to lick the aluminum or steel.

With temperatures at 10 degrees the Troop of Stoned Monkeys got together at a new venue and tried to create a warmer place by pumping a bunch of VHF & UHF RF into the atmosphere. Due to the extremely pleasant temperatures it was decided that this would be a minimal setup as freezing fingers trying to setup things was most likely not a good idea, as well as keeping me from pursuing a few grids as a rover. With a bit of thought we adapted our normal methods of construction and found new ways of doing things. Example – coax at below freezing temperatures is not exactly fun to deal with basically you wind up with a large coil of 2 conductor wire that has no intention of connecting in a straight path to an antenna. Solution: When you have a huge, room use it!

In discussions earlier in the week with the drafted coordinator of the event, KC9LFP, it was decided that we would need to cut back on what we setup in the way of antennas.

KC9NJZ lays out the coax before we freeze it


"Does this hat make my head look big?"

Radios were easy to setup in a nice warm environment. Dealing with cold aluminum and steel just didn't have that much appeal. As a result we elected to stack antennas onto two towers and learn to "Share" the rotor box. The 2 meter and 432 arrays were on Hula 1 and 222 and 6 meters wound up on Hula 2. Along with that we also managed to get verticals up on 2/440 and 223 by simply bungee cording fiberglass mast sections to the balcony railing out back of the building, a trick we will re-visit come Field Day. The single 1296 contact was with a rubber duckie into the back of the transverter.

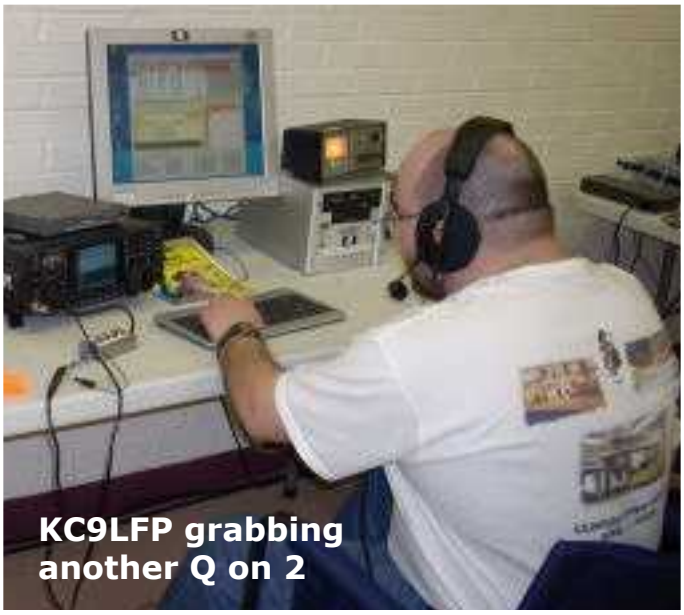
The station make up was only a bit different than our usual setup. On six we used the K9HA Icom 756Pro2 we have all come to love over the years. With a single 5 element beam we actually managed to sneak in some east coast QSO's to as far up as New Brunswick Canada. Not bad, eh hoser? Problem was the opening was short lived and very narrow but at least provided some excitement early Sunday morning for KC9LFP and KC9NJZ who had spent the night at the WeLCARS

Worldwide Headquarters, or WWWHQ.

Sharing the rotor with 6 was the 222 station. I had hopes that we would be able to try the new Elecraft 222 Tranverter/FT817 that I had gotten for Christmas. Unfortunately time did not permit to get it on the air and tuned up before the contest. So better judgment prevailed and we used what we knew worked before which was the IC7000 and DEMI 222 Xverter. With a single 15 Element boomer we were able to make some decent contacts. The station was troubled a bit by what seem to be coax issues. It would appear that the Old Cable Experts cable may be at the end of its life!

Over on the 2 meter side of things we again went to a trusted setup with my IC756Pro2 and Elecraft Transverter along with TE Systems 375 watt amplifier and fully elemented 13B2. The extra power was our attempt of creating our own HARP experiment in Fox Lake; it didn't work, we stayed frozen! The system worked well with one comment from some LID in Ingleside complaining we were too loud. Of course we didn't make too much of an issue of this as the same LID got us some pizza Saturday night!

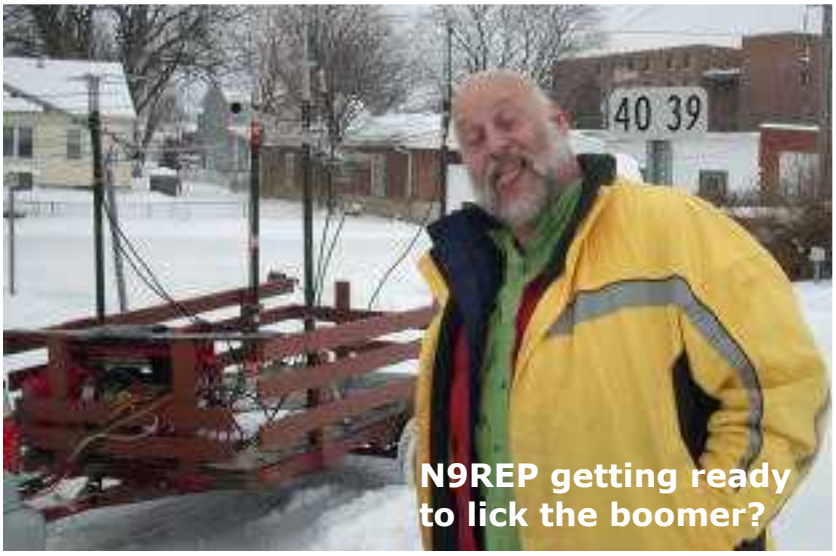
Last but not least we setup K9BTW's IC7000 on 432 into a single 19 Element boomer. The radio decided it didn't want to play right at the start for some reason. After cleaning contacts on the head and a CPU reset Dan's 7000 was ready for action and performed well. Along with Dan's 7000 we also used Joe's FT897 for 2 & 446 FM contacts. Contacts on 432 were generally hard to make as conditions were not favorable for distance of any sort on 432.



**KC9LFP grabbing another Q on 2**

N9REP, N9IFG, and I had wanted to get out and rove for the contest. Due to the cold temperatures during the week I was forced into a decision not to rove as I was not going to have sufficient time to be able to setup the rover antenna farm and assist with the WWWHQ setup and tear down. Joe encountered similar issues with his setup as the cold was fracturing feedlines and breaking bolts. As a result the only one brave enough to get out and rove from the group was N9REP. Wendell encountered his own set of problems, mainly to do with the trailer he was using to support his roving antenna farm. Apparently state of the art Japanese cars don't like trailers. Something to do with the fact that a trailer connected to a Toyota will lock you out with the engine running if you hook up a trailer and try to cross the Cheddar Curtain. Wendell was able to solve the issues and be back on the rove in rather short order.

**K9TMS tuning the new 222 transverter**



N9REP getting ready to lick the boomer?

We can't forget those that aided us along the course of the contest. KC9JQX saw to it that the rear door where the coax fed though was well insulated. Especially happy at this were KC9NJZ and KC9LFP as it meant they didn't freeze their tails at their overnight pajama party at WWWHQ. We also need to keep in mind that N9IFG managed to come out Saturday night and arrange a nice pizza feed along the way. One thing I would like to commend everyone involved on is the speed at which we got setup in and especially torn down in. We started tear down at 3PM Sunday and by 5PM Elvis had left the building and didn't need to return on Monday. That took everyone's help. Many thanks for the help to all. Joe and Jay would especially like to express their thanks to Metra for keeping them awake and getting them up in time to capture the few east coast grids we got.

Final scoring has us at about 10,400. One thing to be proud of is this was the second time the group contested in January and we beat the last score by 4,000 roughly and didn't meet any more of Wendell's neighbors!

See you on the bands in June when cold metal will feel refreshing!


6 and 222 stations with K9HA and KC9NJZ at the mics


K9BTW making contacts on 432

# Ubiquiti Products for HSMM

Steve Lampereur - KB9MWR

High Speed Multi Media (HSMM) is often referred to as being the Hinternet (Ham Internet), as it is primarily used under FCC Rules & Regulations Part 97. Under Part 97 commercial off-the-shelf equipment can be used at higher power and higher gain than the more common Part 15 802.11a/b/g operations.

The primary purpose for HSMM and Hinternet is to augment emergency communications via long range high speed wireless data networks that can handle voice, data and video communications. HSMM can also be used in the day-to-day aspects of Amateur Radio Communications.

One direction the High Speed Multi-Media Working group had was to develop in collaboration with TAPR, 3.3-3.5-GHz transverters suitable for use with 802.11 gear.

The thought is with the seemingly infinite amount of consumer wireless devices being deployed worldwide, the shared 2.4 GHz and 5.8 GHz noise floors are rising. The 3 GHz ham allocations are from 3.3 to 3.5 GHz yielding over 30 better suited non-overlapping full-width channels unshared with Part 15 unlicensed devices.

Ubiquiti Networks is a new company founded in 2005. Their "frequency freedom technology, seems to lead the way and promise integrated radio technology which uses an advanced RF integration and firmware design to provide a powerful platform capable of operation in any frequency imaginable. Basically Ubiquiti radios are Atheros chipsets with transverters onboard.

**Ubiquiti XR3**

There are three different Ubiquiti XR3 frequency ranges that are version dependant (hardware limited ranges): XR3-2.8 (2.70-2.90 GHz), XR3-3.5 (3.40-3.70 GHz), and XR3-3.7. The Ubiquiti XR3 XtremeRange3 is a mini-PCI Adapter 3.5GHz 400mW and lists for $240. The price is still considerably lower that an Icom ID-1 implementation and yields much higher throughput.


I few months back I blogged about their Nanostation. I have been finding the Atheros chipset ability to utilize 5 MHz channels very handy for side-stepping interference. Well, they have out done themselves. At a starting MSRP of $49, NanoStation Loco provides a breakthrough in cost, reliability, & performance. It also is supported by a Linux SDK to encourage open source development.

NanoStation2/5 “LOCO” - This dual-polarity (auto-switching/diversity) 8db antenna has 100mw output and POE (18V). The 5ghz version comes with 13dbi integrated antenna. The NS2/NS5 “LOCO” does not have external antenna connector like the standard NS2/NS5. It's also a little less powerful, only 20 dBm (100 mW) instead of 26. (400 mW). Keep in mind aftermarket firmware hacks let you do nearly one watt with the normal NS2, so this is likely a low ended report of what is actually capable of.


Another option if you need an external antenna is Ubiquiti's 2.4 GHz bullet. It's their simplest, and cheapest ($40) 802.11 device. It's basically a ethernet->N converter that allows you to connect an external antenna.

# Elecraft Transverters Review

Tom Staley - K9TMS
President, Stoned Monkey VHF ARC

Over the years I have built a number of transverters. A couple of years back I decided I wanted a kick butt 2 meter station. My requirements were that it be sensitive, have 25 watts out to directly drive my TE 400 watt amplifier, and have the band scope, filtering and voice keyer that were built into my Icom 756Pro2. Solution: build a transverter for 2 meters and drive it with my IC756. In those days my default transverter of choice would have been Down East Microwave. At the time DEMI was moving and not really open for new business. As time was growing short I had read some reviews on the Elecraft transverters. The specifications seemed to be in line with what I was looking at from DEMI so I decided to take a chance and purchased an XV144 kit. I have never regretted that decision.

Elecraft XV144 transverter and IC756

What I found was an extremely well documented kit that included a set of instructions that are really well written and up to date. I say up to date as there is a list of changes that are required as new part manufactures or part labeling changes happen over time. The assembly book reminds me of the Heath Kit days as each step has a check to insure you miss nothing. Installation polarity and position is well defined as well. The advantage of the Elecraft kits is that the few surface mount components used in the kit are already mounted to the circuit board for you. No holding a soldering iron in one hand, the solder in the other and the probe keeping the component in place in the third, assuming you are a product of genetic innovation. [It is useless to resist us! - Ed.] Not to mention that the fine point of your average Weller Soldering iron is not 5 times larger that the component you are soldering. In short, 99% of the components you are installing and soldering are through lead discrete components that can be seen plainly with the naked eye. The other thing that is nice is that if you do make a mistake it is much easier to correct that mistake without damaging the component or circuit board.

With a kit of this nature the average Joe ham [or even our not-so-average Joe hams... - Ed.] has a better chance of putting one of these together on his own successfully and actually having it function without 10 calls to the technical support staff at Elecraft. Along with the ease of assembly come some neat features.

Those features include power bar indicator that at least gives you an idea of your power

XV222 what's inside!

level. By accident I also learned it can tell you of an increase in SWR as well. "How?" you ask? Simple - if you do the calibration right and your SWR increases not all the bars light! Not perfect but can be a big help when you are trying to see if things are working when you left the 222MHz capable Power Meter 15 miles away in the shack at home and the contest starts in 5 minutes.

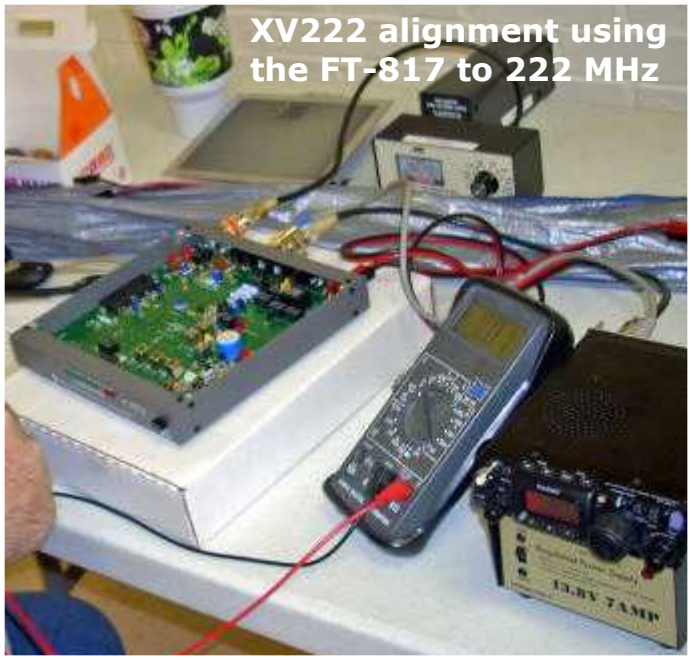
Elecraft also claims to have built in a sequencing function so that your external amplifier is properly keyed. This means one less module on the bench. On my 2 meter version the XV144 does do the work of keying the amplifier now which seems to function well. They do offer an option of a crystal oven heater that I would recommend that should stabilize the unit and keep the frequency from drifting much.

At this time Elecraft only offers Transverters for 50, 144, 222 and 432. All of these use a 28MHz IF and with input signal levels from 1dbm to 5 watts that will result in an output level of 20 to 25 watts.

Ok so we know that it isn't hard to build, has some nice features and performs well. It has to be a bear to tune up, right? Not really! For the most part adjustments can be made using mainly a DVM measuring DC Voltages. 85% of the tune up is done in this method. Final power setting does require a decent power meter and good dummy load. Unfortunately my MFJ VHF watt meter is not of this caliber so I still need a final tweaking in this department. The other alignment issue is setting the receiver coupling for a good signal. Elecraft describes a method here using one of their noise generators. I find a suitable RF signal generator with an adjustable output level to work just as well. All tune up checks and calibrations are very well documented and as long as the instructions are read thoroughly you should have little issue with tune up. Just read the instructions!

So far my XV144 has performed very well. Having the ability to see that my transverter is putting out full power from the power bar is very reassuring in trouble shooting the occasional occurrence of the amp isn't on again. The signal reports we get from the setup have been very good. The signal to noise on the receive side has been good as long as there is no noise source 200 yards behind you like at WWWHQ. Having the IC756 as the IF radio really has been an advantage in being able to spot other signals up and down the band on the band scope as well as using some of the noise filters to get rid of some of the noise issues we have to deal with from time to time.

My XV222 has yet to see on air time yet as it still needs a bit of further refinement in the tune up department yet and final connections to the FT817 radio that will be used as it's IF. So far the only difficulties with this transverter have either been in my abilities to clearly read at a slow pace or with my MFJ Watt Meter for 222 (Hopefully that revelation will lead to a review of a decent 222 watt meter). I do expect that the XV222 will be on the air for the June contest and we will have equally good reports with it like it's older sibling on two meters. I am planning on adding an AM6155 as the amplifier for the 222 station so the sequencing part of the XV222 will become handy in that regard.



One of the items I find with these transverters over some of my DEMI types is that there is not a rat's nest of wire to and from the radio, transverter and amplifier. The package is much smaller and will lend itself better to roving where space on the seat is valuable real-estate!

One nice thing I find with the Elecraft transverters is the selection of IF radios is really broad. The XV144 I drive with an IC756 which gives a signal level of about 50mW. My XV222 will be driven by my FT817 which will drive the Transverter at a level of 5 watts. The nice thing is the transverter can be easily converted from level to another by moving jumpers and re-adjusting the input level setting. This is handy just incase you win the Power Ball and suddenly can afford to put an IC7800 on as the IF Radio. I know, "When pigs fly," as my little brother would say!

From the "It looks cool in the shack" side of things I have to say that the Elecraft Transverters are much more elegant looking and along with it's flashing power bar gives you that "It Looks Cool" feel to using a transverter. With a few less wires for the shack cat to unplug it makes me rest assured I got them all reconnected at contest time.

So far the only negative item I have run into is that the transverters need to "breathe" especially if you are driving it at the 5 watt level. The load resistors for the input at this drive level will get hot so air flow is vital.

Bottom line is performance is good and the kit build up will not drive you insane! So if you are in the market for a transverter give the Elecraft folks a look before deciding.

## N9IFG Repeater Finally On the Air!

Joe Serocki - N9IFG
President, WeLCARS

The N9IFG repeater is on the air at 444.55+, PL 107.2. 25 watts. Right now the antenna is at very low and it's very limited in range. Soon the antenna will be at 30 feet, then 50 feet. Right now it's pretty much limited to the Fox Lake area only, soon to pretty much cover most of what we would consider the WeLCARS geographical area.

This is a local repeater, not meant to replace any other repeater, but rather to be used primarily for special events and public service activities. KB9I is too busy to tie up for special activities, W9FUL (Lake County Races) is primarily for their activities and heaven knows we don't need the lunatic fringe that seems to be attracted to KA9VZD around when we are actually trying to accomplish something, if it's even up!


While this is an open repeater and listed in the Repeater Directory, we could also use it as a semi-private system for BS talk-around if you want as the range will not be huge. It will not be tied to the IRLP node, which will remain on 145.575 simplex, PL 67.0, access code of 587.

I am in the process of looking for a better ID'er or even a nice controller, if anyone has a line on something and the interface doc for a GR300 that would be most excellent.

# Southern Appalachian Radio Museum (SARM)

Clint Gorman - K4KRB, SARM Secretary/Treasurer
Submitted by Keith Schreiter - N9QDS, WeLCARS Vice-President

For some years, a group of radio amateurs in Asheville, North Carolina dreamed about starting a radio museum…..and it finally happened in the summer of 2001 when the doors of the new museum were opened. The museum is located on the campus of the Asheville Buncombe Technical College. The school has been kind enough to let us use a room in the Elm Building….on the same floor where the electronic classes are held.

The museum is operated by officers of the local QCWA Chapter 145. Carl Smith, N4AA is the founder of SARM and was the first president. Five members of the chapter take turns opening the museum on Friday afternoons. If that time slot is inconvenient to tourists we can give tours on other days if we have advance notice.

Over the years we have had many donations, both cash and radios. Our last inventory count has over 250 items intems on display or in storage. The amateur items range from very old pieces such as spark gap transmitters to Collins S-line and broadcast radios from 1920's to 1950's models. A prize piece is an Edison Phonograph complete with recorded cylinders.

A first class amateur radio station, W4AFM is in operation in the museum. The call letters once belonged to Bill Hayes, a well known amateur in the Asheville area who helped many amateurs over the years. His son, also an amateur, arranged for us to use the call letters.

Our goal is to have a home of our own, or a least more room at the College. We have a building fund and are always open to cash donations to help in that cause. In the meantime all of us at the museum enjoy being around and sometimes tinkering with the old radios. Check us out at our web site. saradiomuseum.org.

Presently, John Travis, W4QCF (828-298-1847) is our President, Norman Harrill, N4NH (828-253-1192) is Vice President, and Clint Gorman, K4KRB(828-299-1276) is Sect./Treas. Call one of these numbers if you intend to visit the museum on days other than Friday.

# Ham Radio's Other Magic Band

Tom Staley - K9TMS
President, Stoned Monkey VHF ARC

Over the years we all have heard 6 meters referred to as the “Magic Band”. Well in my humble opinion there is a 2nd magic band that being 222 MHz.

Most of us are all familiar with what we can expect out of propagation with in the two meter band. For local line of sight work it is by far the most used and most popular. 222 MHz you will find compares very well with 2 meters in distance and general propagation. One of the large advantages I find with this particular band is that it is quiet! A quiet band will serve better as signals become weak as distance grows. Most times I find it quieter than two meters and not as prone to intermod which can be another advantage.

The issue with the 222 band is that it basically is a North American Ham Band and doesn’t present a large number of “boxes” that could be sold. As a result there is little in the way of equipment available that one can obtain for use on the band. These days there are radios available from Alinco, Yaesu and Kenwood and that is about it. Alinco is the only manufacture that produces a 222 mobile at the current time. I believe that the Kenwood and ADI mobile radios have gone out of production. This one fact makes it very difficult to get onto 222. Also realize that these are simple FM radios that will serve good for line of sight but not much when it comes to distances past the horizon.

As with two meters 222 enjoys many of the same “band” enhancements due to weather and atmospheric conditions. Many times with our contest station we have worked aurora signals, in general if you hear it on 2 most likely you will also hear it on 222. Tropo also happens on the 222 band so watch those fronts that come through in the late summer and early fall they tend to do some really interesting things with the signals. My current longest contact on 222 has been to the New England area during a contest via aurora propagation. I have also made arm chair copy contacts to as far east as West Virginia.

I have found over the years that our contest station generally gets close to the same range out of 222 as our 2 meter station during the warmer months. What is more impressive is at times we have made contacts at the same range with greater ease than 2 meters due to noise conditions on two.

A few years back I had to spend the January VHF contest in the San Francisco Bay area due to a work related issue. As an avid VHFer I was a bit disappointed with the realization that I was going to have to contest with the, 6 Landers excuse me, Fruit and Nuts. After talking to a couple of local guys they encouraged me to take a radio or two and try the bay area during the contest. Trying to keep things light as possible I took my IC706, ADI 222 Mobile and Icom Quad Band HT. I was expecting to find conditions a bit poorer there because of the terrain. What I wasn’t prepared for was the extent of the activity on 222, well actually 223.5 FM. With a 5/8 antenna a top the rental car I was able to work up and down the bay area with ranges close to 100 miles. Add 3500 foot of mountain to that and the fun was even more distant. The activity on 222 was a real treat and really made the decision to bring the radio a good one.

I can hear a lot of you out that saying ok I know it is a good band how do I get on it? As mentioned before there is little in the way of commercially produced ready out of the box 222 radios. Basically no radios if you are looking to get into the weak signal portions of the band. Assuming that your interest lies in weak signal work there are basically two avenues that one could take to acquire 222 capable radio.

USED: The first easiest way to go is by

obtaining one of the hard to find radios on eBay or ham fest. Yaesu made the FT736 that could have a 222 module installed. Icom at one time made an IC375. Either of these equipped with 222 is going to set you back most likely the price of an IC7000. That is a large bite in the wallet especially for those of us with a, to quote N9YH, “Meager Allowance”!

TRANSVERTER: The most logical thing to look at then is a transverter. There are some things that one needs to examine if you intend to use a transverter.

First is the IF radio. Generally most IF radios for 222 will be in the 28MHz range. So if you have an HF radio capable of 28MHz you might at least have the IF radio. At issue with today’s crop of transceivers is that it is a bit harder to connect and obtain the proper drive levels to run a transverter. The most useable IF radio these days is one that will only put out 5 to 10 watts in the 28MHz band. The FT-817 and IC703 are a couple of good examples of radios in this wattage class. Higher power radios can be used provided that the power can be dialed back. Caution needs to be used with some of the modern radios. The Icom 706/7000/746 have a nasty habit of pulsing a full power pulse before throttling back to the desired wattage level. This isn’t heard by the human ear but will be by a transverter. 100 watts into a circuit only expecting a couple of watts of drive lets out the pretty black smoke quickly. The use of a small circuit to provide and ALC voltage to the radio can overcome this issue. Another issue to consider is the interfacing of the radio in regard to PTT. Many radios these days can’t directly drive a transverter in this regard. Of the previously mentioned radios the FT817 is the easiest to interface and the Icom requires and external circuit to be made. Speaking of PTT one needs to be aware of the transmitter keying sequence. One needs to make sure that if you are using an external amplifier that the amp is un-keyed before the transverter. Invest in a sequencer and protect your transverter. One thing should be noted that Elecraft is supposed to have the sequencer function built into their transverters.

Ok on to the transverter. In general there are several good manufacturers of transverters. Most all have kit forms. Some have ready made transverters. In my experience I have had good luck with either Down East Microwave (DEMI) or Elecraft transverters. The Down East folks will sell you either kit or assembled/tested transverters. Of course that assembly and testing does come at a price add a $100. As far as the kits go you need to be aware that they are vastly different. The DEMI kits are surface mount component type radios. These kits are for the best builders out there. Most components you will be soldering are about the size of the tip of your soldering iron, if you’re lucky. The Elecraft kits on the other hand are more reminiscent of the Heath Kits us gray haired hams can remember. They use mainly through-hole construction which is easy to follow and accomplish with a decent set of tools. As far as operation either work well.

So is a transverter really better? Absolutely yes if you are interested in hearing weak signals at a distance. Most of the transverters out there now are super sensitive in the receiver department as well as very quiet in the S/N department. Does it operate FM, yes it will. It will not be as accurate frequency wise as your PLL FM rig but it will do an adequate job.

So there you have a basic education of 222 MHz. It can be a real fun band provided you have the time and can invest in the radios. And remember 222 = 2 points per QSO and it is the lowest frequency band in the UHF contest!

# Cool Stuff You Should Buy

Chris Burke - N9YH and Keith Schreiter - N9QDS

## The Ultimate in 12 Volt Power Distribution

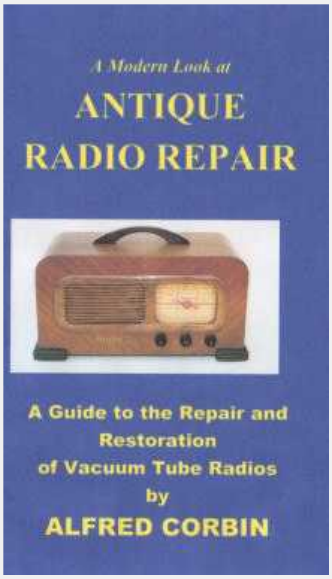
Lisle based Littelfuse has a product that can take the complication out of any custom 12-volt wiring job with their new ISIS Intelligent Multiplex System. ISIS is a solid state electrical system that can eliminate a lot of complication and a tangled mess of wires and gives you complete control over automotive electrical accessories. ISIS is the first product that gives end users the ability to install an OEM quality wiring job in their vehicles by employing a plug-and-play modular design similar what's used in OEM applications.

Though the ISIS is aimed at auto enthusiasts who are creating custom wiring harnesses for their cars, it can easily be applied to custom radio installs. With a $799 suggested retail price for the basic 2-cell starter kit the ISIS system isn't for the average ham that's going to put a dual-band FM rig and an HF rig in their car, but it might just be the perfect solution for high-powered rovers or command vehicle applications. www.isispower.com

## A Modern Look at Antique Radio Repair

This is a guide to the repair and restoration of ancient and middle-aged (Antique) radios of the vacuum-tube era. It is written for anyone with some curiosity about what makes the old sets tick. The text is intended to be basic enough for a non-technically educated person to grasp easily, yet includes enough theory for a technician or engineer to learn more about this rapidly disappearing technology.

This book is not a “Radio for Dummies” sort of treatment, nor is it intended to be a text on electronics theory. It focuses mainly on the practical aspects of failure modes in old radios and techniques of troubleshooting and tracking down problems. Woven in with the practical meat-and-potatoes of radio servicing is just enough theory to give a beginner a good understanding of the principles of radio receiver operation.




Cost $29.95
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## Battlestar Galactica Life-Size Cylon Centurion

Trouble with the neighbors? Unfortunately this life-sized Cylon robot isn't real and can't gun down the pests in your life, but it will give your spouse something to complain about when you put it in the living room. Especially when they see the $8590 price tag. www.nbcuniversalstore.com