Umpqua Valley Radio Club

WATT'S UP

January 2017

Watt's Up Staff: Editor, Email & Mail out Distribution –LaDon KA7AAR

Newsletter for the Umpqua Valley Amateur Radio Club

P.O. Box 925 Roseburg, OR 97470

Club Officers

President
Wayne ESTES W9AE
1st Vice President Lynn Patterson W7HDU
2nd Vice President Christine Masters AF7OK
Secretary Russ Nelson W7DUR
Treasurer Jim Stuntz KF7FIB
Member-at-Large
Ralph Lamell KI7BRN
Lee Stumpe K7AZW
Club Call Signs UVARC Club Net Info
146.900 (-) PL 100.HZ
Wednesday at 1900 hours
HF Club Net
HF Net Wednesday at 1930 hours at 28.400 MHZ (This is an open Net)
KC7UAV
KC7TLY
ARES Nets
Douglas County ARES District 5 Ares District 5 Ares 3964 KHz Sundays at 5:30 PM
146.900 repeater PL 100.
Mondays at 7 PM

President's Message

Greetings UVARC members. This is my first message as the newly elected president of UVARC. I want to thank the members for the vote of confidence. Happy 2017!

The December potluck dinner was a great success. Good attendance and good food. Unfortunately we couldn't present the Ham of the Year award to Christine AF7OK. Hopefully we can do that at the January meeting.

I hope to keep the club active. What comes to mind for me is on the air operating events and educational activities.

I hope we can continue the trend of local operating events. The weekly 2m and 10m nets are well attended. Some digital mode experiments are going on. Steve Burke has suggested mountaintop operation during VHF contests. I would like to try that.

I hope we can have a presentation at most club meetings. If there is something you want to learn about, ask if somebody can do a presentation. If you have learned something new, consider making a presentation about it to the club. I can supply a projector if you need it. You don't need to be an expert to make a presentation-my soldering presentation is a good example.

I also hope we can have more hands-on activities such as the successful J-Pole antenna construction party. If you built something useful, consider hosting an event to show other club members how to build it.

At the January 19 meeting I plan to bring an ARRL Handbook and ARRL Operating Manual in case anybody wants to borrow them. A year ago somebody borrowed the ARRL Antenna Manual. If you still have it, please return it at a club meeting.

73, Wayne Estes W9AE

CLUB MEETING MINUTES

Pres' Wayne opened Jan 19 2017 meeting'. Pledge to Flag' Roll Call by name and radio call sign ' 19 present
Minutes of November meeting read by secretary. No minutes of December meeting because of UVARC Dinner.Motion to accept by Dennis, seconded by Rick' motion passed. Treasures report by Jim, total of savings and checking motion to accept by Jerry,seconded by Lynn'- motion passed'.
Wayne announced Ham of the Year award went to Christine Masters, AF7OK . Jeff Dilley -new member- was introduced. Saturday breakfast at 8 am at Dennys. They will be remodeling soon and will be closed. Early bird winner Richard AF7TP.Two books , donated by Lee, are available, one the ARRL handbook.Wayne will take care of renewing the meeting room for 2017,
We discussed the Coffee problem - having difficulty of getting water because the handles have been removed from the utility sinks by the courthouse staff.we do need a new coffee maker.
Dennis reported Crater Lake information meeting Feb. 4th, concerning Cross Country events. Member at large member needed as Lynn was elected vice President therefore he needed to step down. Ralph KI7BRN, was voted in' Jim KF7FIB, renewed the club call signs for 10 years. We dicussed location for Field Day for this summer. Committee SteveKB7WDP-Lynn W7HDU , Wayne W9AE. Steve made contact with VA to start Radio communications with Ham Club. Lee will present information on JT 65 BAND Feb meeting . No further business, motion by LaDon,seconded by Ralph to adjourn meeting. Wayne adjourned at 8:15 PM

Testing Antennas.

a few thoughts Making antennas is one of the most popular aspects of our hobby - and for good reason. Even the most "practically-challenged" radio amateur can make an antenna. And the great thing about antennas is that it's almost impossible to make an antenna that does not "work" to some extent. By "work" I mean radiate radio waves. To that extent, antenna projects are always a success! But how do we test our antennas? The most common measure of a "good" antenna is its Standing Wave Ratio. Good antennas have a low SWR, right? Unfortunately, although SWR is easy to measure and a low SWR at the output of our transmitter is a good thing, SWR tells us virtually nothing a Power Transfer and SWR for a transmitter to deliver maximum power into the antenna, the antenna impedance must be the same as the output impedance of the transmitter - this is a low SWR. Moritz von Jacobi published the maximum power(transfer) theorem around 1840 and this theorem indicates that maximum power transfer occurs when the load (antenna) resistance is the same as the source (transmitter) impedance. However, the easiest way to get a great match with an antenna is to make it lossy (RF power gets turned into heat, not radiated). A example of this is a dummy load where the objective is to turn all RF power into heat and radiate none at all.A good dummy load is a handy piece of test equipment for any shack, it will have a low SWR over a wide band - but will be a terrible antenna as it will radiate virtually no energy. about how "good" the antenna is. In fact a good (low) SWR can be an indication of serious antenna problems!

Power Transfer and SWR

For a transmitter to deliver maximum power into the antenna, the antenna impedance must be the same as the output impedance of the transmitter - this is a low SWR. Moritz von Jacobi published the maximum power(transfer) theorem around 1840 and this theorem indicates that maximum power transfer occurs when the load (antenna) resistance is the same as the source (transmitter) impedance. However, the easiest way to get a great match with an antenna is to make it lossy (RF power gets turned into heat, not radiated). A example of this is a dummy load where the objective is to turn all RF power into heat and radiate none at all. A good dummy load is a handy piece of test equipment for any shack, it will have a low SWR over a wide band - but will be a terrible antenna as it will radiate virtually no energy.

To a lesser extent all antenna systems (antenna plus feeder) turn some RF energy into heat and in doing so their SWR is usually improved by losses. Many wideband antennas actually incorporate resistors. Where small antennas, such as magnetic loops, are being used, a good SWR over a wide bandwidth without re-tuning is almost always a bad sign. Curiously at least one loop supplier tries to make low SWR over a whole band without the need to re-tune, into a feature! This is a clear example of low SWR indicating a design fault. An example of an antenna that has a high SWR is a doublet fed with open wire line. The SWR at the feedpoint of a doublet can be very high (10 or more) but because the feeder losses of the open wire line are so low, the overall antenna system is still a good performer. Interestingly a doublet is an example of antenna that does not even need to be resonant to work well. Low SWR and resonance are two very over-rated measures of antenna performance. As an aside, another measure of antenna performance is the current flowing in the antenna. Antenna current in the radiating element is what you want to maximize. If using home-made transmitters and "tricky to match" antennas, such as short loaded verticals, antenna current is often the most reliable measure of antenna performance. Despite these thoughts, SWR cannot be dismissed as irrelevant as most modern transmitters have SWR protection circuits which lower the transmitter power if a high SWR is detected at the antenna socket so to keep your transmitter "happy" a low SWR at the radio is a good thing - provided you don't think it is telling you much about your antenna.

Radiated Power

If we accept that a dummy load or an antenna could have a low SWR for a variety of reasons (including losses - excessive or otherwise) how could we decide which was the better "antenna"? The difference is clearly how much power is radiated (and in what direction). In the case of a dummy load it probably gets hot showing that the power is being turned into heat. Measuring radiated power for an antenna is difficult to do in any meaningful way. All parts of the antenna system will have losses but as they are small, measuring heating effects may require specialized equipment and is not generally practical. Even if we can measure those losses, there will be there loss factors due to the environment that the antenna is in, which will mean that identical antennas in different locations will have different overall losses - with subsequent differences in performance. This moves into the realm of measuring overall system performance. Done accurately, this is a fascinating way to see just how good your antenna really is!

Practical Measurement of Radiated Power ...and a new product The real test of any antenna is how well it performs in real life. SWR, antenna current and even radiated power only show part of the story. In the past, the performance of antennas has been evaluated in a variety of ways including plying field strength meter and a new product The real test of any antenna is how well it performs in real life. SWR, antenna current and even radiated power only show part of the story. In the past, the performance of antennas has been evaluated in a variety of ways including plying field strength meters around in helicopters! Radio amateurs have occasionally driven round with field strength meters, although measuring the performance of HF antennas by measuring field strength near the ground is not a very good technique and is fraught with problems.
One possible way to test performance is using the Reverse Beacon Network. In essence this is a network of receivers with special software that can detect stations calling CQ on CW and pass their call signs to an internet database. this works well but to use it effectively you need to be a CW operator - and call CQ a lot! It is especially useful for SOTA/NPOTA activators to check propagation. In many ways, a better system is the Weak Signal Propagation Reporter network (by Joe Taylor, K1JT). Many remote receivers detect signals well below the noise and report back to a central website. The power levels used are low (often less than a Watt) but because of the way the system works, the performance of these low power transmitters is the equivalent of tens, hundreds, even thousands of Watts! Getting meaningful results from this system requires the user to do a lot of additional work though. This is where our new product comes in We are getting ready to launch something rather special - hopefully in time for Christmas. It will consist of some special hardware and associated software to enable comprehensive testing of real antenna performance in a way never possible before. I will be providing more details soon. At SOTABEAMS we are pretty excited by this development!

73 Richard G3CWI

This New Product is now available from WWW.sotabeams.com for around $ 70.00 (US) Go out to their Web site to see the product and its reviews. I will Have one of these products the first part of February. Email me at ladons@frontiernet.net if you would like to see this product and I will find a way to make that happen,