The Mt. Vernon Amateur Radio Club
April, 2013 Newsletter

Meetings are held the 2nd Monday of each Month at 7:00 PM at the Knox County Chapter of the American Red Cross, 300 N. Mulberry Street, Mt. Vernon, Ohio

Ham Radio Rocks

Local Ham Coumminity

K8EEN Repeater: 146.790 Mhz (-600 Khz With PL of 71.9 Hz)
KD8EVR Repeater: 442.100 Mhz (+5Mhz With PL of 71.9 Hz)

Sunday Night ARES Net at 9:00 P.M. on The K8EEN Repeater
Wednesday Night Social Net at 9:00 P.M. on the KD8EVR Repeater

Weather Spotters Guide Available

For those of you that missed the Skywarn program last month (as I did), I have come across some very useful information called the "Weather Spotters Guide". This, along with other interesting downloads is available at:

http://www.nws.noaa.gov/om/brochures.shtml#children

The direct download to "Weather Spotters Guide" is here:

http://www.nws.noaa.gov/om/brochures/SGJune6-11.pdf

I have not read the guide all the way through, but it looks as if it covers everything the course does. It would be a good idea to print it out and keep with you to help with severe weather observations.

For more information on severe weather, check out "Duck Duck Goose… Are you ready for severe weather?". This is from the Ohio Section News, March 21, 2013 and reprinted in this Newsletter. It has so much valuable information and although a bit long, but I thought members should have it available to them.

The next meeting of the Mt. Vernon Amateur Radio Club will be Monday, April 8, 2013 at 7:00 P.M. in the Red Cross Annex Building, 300 North Mulberry Street, Mt. Vernon, Ohio.

Please remember to check into the long running Sunday Night ARES net at 9:00 P.M. on the K8EEN 2-meter Repeater.

Also check out the UHF net on the KD8EVR Repeater. This net runs each Wednesday at 9:00 P.M. and is a social net. Please join us for the fun of it.

Every Wednesday at 5:00 PM, MVARC club members meet at Wendy's, 522 South Main Street, Mt. Vernon, Ohio. Dinner Coordinator Dick Huggins, N8RDH, reports good turnouts for this event. Come share dinner with friends, or make new friends, by attending one or all of these events.

Join MVARC club members every second Saturday of the month for breakfast. Breakfast Coordinator Arlin Bradford, KD8EVR, reports good turnouts for this event.

*****The next Breakfast will be April 13, 2013 at 9:00 AM at Allison's Finer Diner, 11587 Upper Gilchrist Road, Mt. Vernon, Ohio*****

Treasurer's Report

April 1, 2013
for March 1 to March 30, 2013

Balance on 3-1-13:	$	2283.91
Income:		
Dues:	$	12.00
50-50:	$	13.00
Interest:	$	
HTs for class - sale	$	500.00
Donations:	$	
Expenses:		
Ohio Repeater Council dues	$	10.00
Red Cross Donation	$	120.00
Balance on 3-30-13:	$	2678.91
Designated Funds:		
Year 2005 Repeater Fund:	$	536.39
Field Day Fund:	$	81.00
Communication Vehicle Fund:	$	471.04

Barry Butz N8PPF

UPCOMING BALLOON PROJECT

By Barry Butz, N8PPF

Our son Craig KJ6DYP and his students are preparing for their fourth high altitude balloon launch.

This year instead of going on an expedition, they will launch from the school grounds in San Francisco, within sight of the Golden Gate Bridge. This way they can launch early in the project week and have time to analyze their data and write their report.

The expected launch date is April 9th at sunrise (which is about 9:45 am here). Normally the ground level wind is calm that early. If conditions aren't good, the launch will be delayed a day.

To watch the flight on the internet go to www.aprs.fi and search for KJ6UIM-11 (the balloon) or KJ6DYP-7 (the chase car). This site collects APRS data from around the world and puts it on the internet. The balloon altitude and speed are shown on a Google map. You can also keep track at

The Mt. Vernon Amateur Radio Club

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Members are encouraged to send articles pertaining to Amateur Radio, with an emphasis on local activity, equipment reviews, and personal experiences to the Newsletter Editor. Articles are due on the Sunday before the first Monday of the month.

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http://ikaros.xrg.us/livestream.html

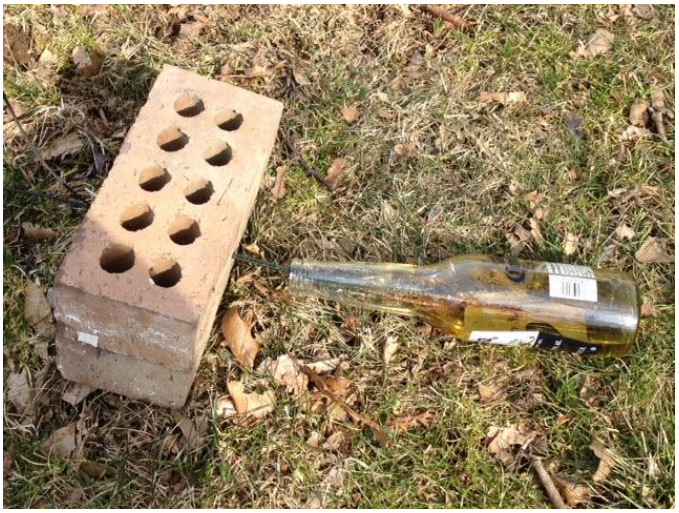
where the team will also post real-time updates via Twitter.

I will report any last-minute information on Sunday night's net and any last-last-minute information at the meeting next Monday. Anyone wanting last-last-last minute info, contact me and I will email you.

TECHNICAL TIDBITS

Tricks, Tips, and Slips
by Barry Butz N8PPF

At the last club breakfast we were talking about how to clean old copper antenna wire so it could be soldered and reused. Various cleaners and chemicals were discussed but no one had actually used any method except the old reliable but labor intensive scraping and sanding. A couple days later Doc AA8WP mentioned that he used to clean copper pennies by soaking them in vinegar. This seemed pretty benign so I decided to give it a try.
It so happened that my G5RV had one broken feed wire. The wires were quite discolored from a few years of exposure and were unlikely to take solder. I devised a dip tank and inserted the ends of the broken wires.



Success! After about 24 hours the copper looked nice and clean, even inside the twisted strands. Less time might have worked but I started the soak late in the day and didn't return until the next afternoon. You can see the corroded and vinegar treated wires here.

AFFILIATED CLUB NEWS

By E.Mike McCardel, KC8YLD

Portage County ARS had Portable J-Pole Project Day March 9. They had a Vibroplex Factory 'Tour' at their March 11th Meeting. I hope the PCARS club takes up their President's, WB8LCD, challenge he made in his From the President article. "While we are a 'communications' hobby, it seems our weak link is communicating about our hobby to those who are not involved. Why not try to put yourself out there – get in front of people who are not hams, and let them know what a wonderful hobby this really is"

Massillon ARC is considering a DXpedition to one of the Lake Erie islands near Sandusky, Ohio. This idea will take a real commitment for people to go there and operate for 24 hours! They also plan to host W8NP in the club shack again this year during the Alliance VHF QSO Party.

Cambridge ARA is in full swing celebrating their 100th year in existence. Look for their monthly special events:

April 6, 2013 (Cambridge Glass Company)

May 4, 2013 (William Boyd aka Hopalong Cassidy)

June 13, 2013 (W8VP VHF Contest Record holder 25 Years)

July 13, 2013 (Morgan's Raid 150th Anniversary)

August 10, 2012 (Salt Fork Arts & Crafts Festival)

September 14, 2012 (Peter's Creek "S" Bridge 185 Years)

October 12, 2012 (First Bridge in Northwest Territory)

November 9, 2012 (203 years Guernsey County Ohio)

December 7, 2012 (Cambridge ARA 100 Years Old)

CARA has announced Bob Burton, Jr., KB8ZM, the Amateur of the Year and Larry Dukes, KD8QYV, received the Cambridge Amateur Radio Association's 2012 Volunteer of the Year Award.

At the Allinace ARC March Meeting, Mike Sciarini, WA8MKH, presented on the subject of choosing an antenna analyzer. AARC sponsors the e Stark County VHF QSO party to be held on April 6 from 12-4 PM. This year marks the 4th year for the Stark County VHF QSO Party under the AARC sponsorship. Visit www.w8lky.org for more information.

OH-KY-IN ARS is in their 53rd year of service to the Cincinnati area. At their March meeting program they featured Fred K9OHE showing how to build an easy antenna.

Western Reserve ARC will be sponsoring a booth at the GREATER YOUNGSTOWN HOME & GARDEN SHOW 2013. March 22-24. They are also getting ready for Filed Day already.

I want to quote Delaware ARA Newsletter editor Stan N8BHL about keeping clubs alive:

"While many experts are trying to figure out how to keep their clubs alive, how to keep the hobby vibrant, the answer's right in front of us: each other! This is what society is missing- personal friendships and all the things that go with people! Cultivate the friendship! Get on a repeater and chat with someone! Get to know someone at a DELARA meeting - and the rest will follow!"

Well said Stan! It's this attitude that makes good clubs great.

This news is from the Buckeye Belles, Belle Sally Taylor-Gardner N8EEG received her 30 year continuous membership sticker last summer. This in Nov-Dec YLH, which just arrived at Ye Ed's. In Jan-Feb issue, arriving in same envelope, Belle Ruth Rickett W8LGY 60 years Associate Belle Marte Wessel K0EPE 55 years Congratulations!

Greater Cincinnati ARA will witness the presentation "Message Handling for Fun but Not Profit or How to Help People While Really Just Playing Radio" at their March 27 meeting. They will hold their GCARA Auction at their April 24 meeting, so clean your shacks out so you can bring new old stuff home.

Salem Area ARA presented Mel Lippiatt, KA8OEB, with SAARA's Ham of the Year award at the SAARA annual dinner. They are gearing up for all their 2013 projects and commitments.

Lake Erie ARA's Program at Harry's Steakhouse on March 26th will be DIGITAL COMMUNICATIONS AKA "What's That Strange Noise on '76?" By Eric Jessen, N8AUC. Their April meeting will be April 30 at Stancato's in Parma. Presentation will be Traffic Handling. LEARA has been meeting for nearly 44 years.

Mount Vernon ARC sponsored their local Skywarn training March 18, and will be participating in Knox County's LEPT exercise April 18. They will be supporting communications during the Earth Day Challenge Half Marathon April 21.

Thanks all for getting out of meeting mode.

73,
E.Mike McCardel, KC8YLD Ohio Section Affiliated Club Coordinator (interim)
kc8yld@arrl.net

Radio-Activity

By Don Russell, W8PEN

Digital Modes for the Technician

I was reading the April issue of QST today. In the "It Seems to Us" column" it was stated that Technician Class hams have more frequencies on the HF bands then some realize.

Now, everyone knows that Technician Class hams (and what is left of the Novice licensees) have SSB privileges in the 10 meter ham band at 28.300 to 28.500 Mhz, limited to 200 watts PEP. This is a real plus to our Tech friends. It means that during the up-swing of the solar cycle they can work the world on almost a daily basis. Even during low sunspot activity (the bottom of the solar cycle) 10 meters is often open to stateside stations and some DX is also available. All a Tech Class ham needs is an HF transceiver and a simple dipole or groundplane antenna to get in on the fun. Antennas are pretty simple (and cheap) to make for the 10 meter band. The most expensive part is the coax which runs about 36 cents a foot for the popular RG8-X. So, if you have a 50 foot run, you are talking around $20. Antenna Insulators can be had for under a dollar each or be made for free. Antenna wire can be just about anything you have laying around, including old electrical wire.

Yes, transceivers are expensive. But you can usually pick one up used for under $500 and you will need it sooner or later if you plan to upgrade to a General Class or higher anyway. Many HF rigs now include 6 meters and often 2 meters and 70 Cm, which of course are bands used by the Technician Class hams.

Here is a secret that most Technician Class hams never consider: Techs also have CW and Digital privileges on 10 meters. By digital, I mean the popular RTTY and PSK31 modes and many others! Many Techs that graduate to General Class or Extra discover the digital modes and find them so much fun that they ignore voice modes altogether. Well, one does not have to wait to upgrade. Yes, 20 meters is the most popular band for digital. However, when the band is open, 10 meters is pretty active on digital too. If you set up for digital modes for 10 meters, you will be ready to go on the other bands whenever you upgrade. In fact, using digital on 10 meters may provide enough incentive to upgrade to the next level.

The Technician Class hams also have CW privileges on other HF bands too. Namely on 80, 40, and 15 meters. Sorry, no digital modes allowed on these bands. There is nothing saying one cannot use their computer to decode CW off the air and send CW with a keyboard. In fact, I remember Arlin KD8EVR doing so. Being a CW guy myself, I do not advocate operating CW like this, but it is legal. I can see where one could have a lot of fun operating like this.

Here are the CW and Digital Frequencies allowed by Technician Class hams on the HF frequencies:

- 3.525-3.600 MHz: CW Only
- 7.025-7.125 MHz : CW only
- 21.025-21.200 MHz: CW Only
- 28.000-28.300 MHz: CW, RTTY/Data--Maximum power 200 watts PEP
- 28.300-28.500 MHz: CW, Phone--Maximum power 200 watts PEP

Perhaps one of our members who operate the digital modes would like to present a program entitled: Setting up a station for the digital modes. It would be an interesting and fun meeting night. Also, it would be interesting to start a local 10 meter net to encourage our Tech club members to get on 10.

Programming the Baofeng UV5R

Many club members took advantage of the deal the club offered on the Baofeng UV5R handheld radios. Dual band radio and mobile antenna for $50. What a great deal. Thanks to KD8EVR, these radios were already programmed with local operating frequencies.

Manually programming these radios can be a pain. Although I did have some success doing so. I personally decided that I would like to have two of these handhelds, so I bought an addition one for $44 via Amazon.com. I went ahead and purchased the programming cable while I was at it.

To assist those wanting additional frequencies programmed into their radio I will bring the programming cable and software to the April

meeting. It should be a simple matter to download what is on the radio, add frequencies, and then upload the changes to the radio.

Until then, keep being Radio-Active. See you at the April meeting.

DUCK, DUCK, GOOSE…ARE YOU READY FOR SEVERE WEATHER?

From the Ohio Section News, March 21, 2013

Duck, Duck, Goose is a traditional children's game often first learned in pre-school or kindergarten then later adapted on the playground for early elementary students. The object of this game is to walk in a circle, tapping on each child's head until one is finally chosen to be the new goose. The "goose" then rises and chases and tries to tag the "picker", while the "picker" tries to return to and sit where the "goose" had been sitting. If the picker succeeds, the "goose" is now the new picker and the process begins again.

DUCK is the watchword when storms loom. The National Weather Service uses the acronym to remind children and adults alike that there are key safety rules during severe storms--especially those that might lead to tornadoes. "These simple phrases can be a quick reminder for anyone of their safety plan during the chaos of a storm," said Knapp, who directs the Kansas Weather Data Library, based at Kansas State University. According to Kansas State Climatologist Mary Knapp, the acronym DUCK stands for:

--Down to the lowest level;

--Under something sturdy;

--Cover your head; and

--Keep in the shelter until the storm has passed.

When we talk about tornadoes we often think of tornado alley out in Oklahoma or Kansas. However the Columbus Dispatch Ohio Tornado Database contains reports of over 1,000 tornadoes that have touched down in Ohio between 1950 and 2012. According to the database 51 tornado reports were found in the year 2010, 38 tornado reports were found in the year 2011 and 11 tornado reports were found in the year 2012. You can view a map of where the tornado first touched ground and view a report of the size and duration of the tornado on the Columbus Dispatch Ohio Tornado Database at their website

http://www.dispatch.com/content/pages/data/weather/tornado.html

You can search the database by county, year or Fujita scale magnitude. You can also view the 10 closest tornadoes to any address, city or ZIP code. Additional information and safety tips are available on the National Weather Service and Federal Emergency Management Agency websites: www.NWS.gov and www.FEMA.gov.

Although the number of tornadoes in 2012 was lower compared to 2010 and 2011 it is still important to be vigilant and aware that a tornado can strike anywhere and sometime strike without warning. So as the severe weather season approaches, take some time now to make a safety plan for your family, friends, neighbors and co-workers. Planning ahead will lower the chance of injury or death in the event severe weather strikes.

Tornadoes develop from severe thunderstorms. They are usually preceded by very heavy rain and/or large hail. A thunderstorm accompanied by hail indicates that the storm has large amounts of energy and may be severe. In general, the larger the hailstones, the more potential there is for damaging winds and/or tornadoes.

The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths have exceeded the width of one mile and 50 miles long. Tornadoes generally move from southwest to northeast, but have also been recorded traveling in any direction. The forward speed of a tornado varies from 30 mph to 70 mph. So take shelter and do not try to outrun a tornado if you are in a vehicle on the roadway.

Peak tornado season in Ohio is generally April through July, and they usually occur between 2 p.m. and 10 p.m. Tornadoes have happened in Ohio in the months of January and December so it is apparent that they can happen at anytime of the year in Ohio.

The Enhanced Fujita Scale is a set of wind estimates (not measurements) based on damage. It uses

three-second gusts estimated at the point of damage based on a judgment of eight levels of damage.

Enhanced Fujita Scale

OPERATIONAL EF SCALE
EF # = 3-Second Gust (MPH)
0 = 65-85
1 = 86-110
2 = 111-135
3 = 136-165
4 = 166-200
5 = Over 200

Tornado Loss Prevention Tips

Of utmost importance is the prevention of loss of life. Follow the DUCK rules above and take shelter before a tornado strikes.

The following steps are suggestions that homeowners should take before a tornado or other natural disaster occurs to assure speedy and hassle-free recovery.

The Insurance Information Institute has a web tool that makes conducting a home inventory a breeze. Now you can catalog your possessions online, room by room. Once completed, you can add items and photos. Maintaining a comprehensive inventory will come in handy, should you need to file a claim or reevaluate the amount of insurance you carry. It's good for renters, too. Visit

http://www.knowyourstuff.org to get started.

Home Coverage and Preparedness Tips

Tornado losses are most often covered by the "windstorm peril" under the homeowner's insurance policy. Check with your homeowner insurance agency to assure adequate coverage is provided by the policy. Notify the insurance agency of any additions or improvements to the home. Consider purchasing the replacement cost coverage endorsement for the home and its contents. It would give the option to rebuild or replace damaged property at current costs rather than depreciated values. If you experience a storm-related loss to your home that is covered by your insurance, notify your insurer in a timely manner, as required by your policy.

A home Inventory will assist you in settling your claim. You should Videotape, photograph or compile a written inventory of your home and belongings. Keep the inventory off premises in a bank safe deposit box or other secure location. The inventory will provide a record for you and the insurance company, should a loss occur. Update your inventory every time you move or every two to three years.

When doing a written inventory go through each room of the home and list every item. Include the purchase date, price and model numbers. You should include professional, written appraisals of antiques, jewelry and other costly possessions. If you need a sample of a personal property inventory form visit here:

http://www.ohioinsurance.org/renters_insurance/images/inventory.pdf

When doing a video or photo inventory pan the camera around the room to capture all items. Obtain close-ups of expensive items such as jewelry, china and furs and consider grouping items together for easier inventory. Narrate the video by noting purchase costs and dates. Include model and serial numbers for appliances and electronic devices.

If there is threatening weather, shelter your vehicles to prevent damage from winds, flying debris and hail. Vehicles are protected under the "other than collision" (comprehensive) portion of an auto insurance policy, if damaged by windstorms or hail.

After the loss photograph any damage and inventory losses. Photos will assist when settling claims. Secure property from further damage or theft and save related receipts, since many insurers will reimburse for these expenses. If required to seek temporary housing due to a covered loss such as a tornado, check your policy for "loss of use" coverage. Many policies cover such expenses up to a stated amount.

And above all keep you Skywarn training current and when storms approach keep your eyes to the sky and be prepared to DUCK and take immediate action for your safety.

Skywarn Spotter training should be announced for your area. In the meantime, make use of these online courses and the two PDF files on the www.nyc-skywarn.org webpage.

Online courses & modules from MetEd:

Skywarn Spotter Convective Basics:
https://www.meted.ucar.edu/training_module.php

?id=816

Skywarn Spotter Training:
https://www.meted.ucar.edu/training_course.php?id=23

Role of the Skywarn Spotter:
https://www.meted.ucar.edu/training_module.php?id=817

Squall Lines & Bow Echoes:
https://www.meted.ucar.edu/training_module.php?id=18

Summer Severe Weather:
https://www.meted.ucar.edu/training_course.php?id=2

Winter Weather:
https://www.meted.ucar.edu/training_course.php?id=6

Tsunami:
https://www.meted.ucar.edu/training_course.php?id=38

Hazardous Weather/Community Risk:
https://www.meted.ucar.edu/training_module.php?id=890

Additional website of interest:
http://www.weathersafety.ohio.gov/TornadoFacts.aspx

http://www.disastercenter.com/ohio/tornado.html

http://skywarn.org/

http://skywarn.org/local-skywarn-groups/ohio/

73,
David Maynard, WA3EZN
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W8P SPREADS THE WORD ABOUT END POLIO NOW

By Dan Romanchik, KB6NU

On Saturday and Sunday, February 23-24, 2013, amateur radio operators gathered at WA2HOM, the amateur radio station at the Ann Arbor Hands-On Museum. We were there to operate special event station W8P to commemorate the founding of the Rotary Club on February 23, 1905 and spread the word about Rotary International's End Polio Now Campaign (www.endpolio.org).

The goal of the End Polio Now program is to rid the world of this terrible disease. Rotary International launched this program in 1985, and with the aid of UNICEF, the World Health Organization, and the Bill and Melinda Gates Foundation has cut the number of cases by more than 99.9%. In 1988, polio was endemic in 125 countries. In 2012, polio is endemic in only two regions. We like to say that we're "this close" to eradicating polio.

The unique part of the special operating event is that stations all over the world took part in it. Rotary is an international organization, and its amateur radio fellowship, Rotarians on Amateur Radio (ROAR), includes members all over the world. In Australia, a group operated the special event station VI4POLIO. In Europe, Pertti, past president of ROAR, operated his station, EA7GSU. Here in the States, a group that included yours truly; Jack, N8PMG; Jameson, KD8PIJ; Dinesh, AB3DC; and Mark, W8MP operated W8P.

Since the museum is only open from 1500Z – 2200Z, we were only able to operate for seven hours on Saturday. We spent all of our time on 20m phone, with our beam

pointed southwest, concentrating on working mostly U.S. stations. We had originally intended to operate on 14.287 MHz, but quickly had to change frequencies, as that portion of the band was occupied by participants in the Mississippi QSO party.

We finally ended up on 14.227 MHz and made a total of 110 contacts on Saturday. This included 29 states and four DX contacts.

On Sunday, we only operated for a couple of hours and made another 27 contacts. While we made fewer contacts on Sunday, the contacts that we did make were more poignant than the ones on Saturday.

My first contact on Sunday was with a gentleman who was spending the winter in Florida, but whose hometown was Standish, Michigan. He told me that his mother had polio, and in the late 1930s and early 1940s, they would put her on a bus for Ann Arbor, where she would receive treatments. While there's no way to be sure, I think that this ham's mother was taking part in some of the research leading to the Salk vaccine in 1955. That research took place right here at the University of Michigan in Ann Arbor.

I also talked to hams that had direct experience with polio. One was a polio survivor himself. Another's wife was a polio survivor. A third was a physician who had been to Africa and had treated polio victims there.

It was a real treat to combine two activities that I enjoy so much–amateur radio and Rotary–and it felt good to know that in some small way I was furthering the work of the End Polio Now campaign. I hope that next year we will once again operate this special event and get even more Rotarians and amateur radio operators to participate.

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When he's not trying to save the world, Dan, KB6NU enjoys working CW on the HF bands. For more information about his operating activities and his "No-Nonsense" series of amateur radio license study guides, go to KB6NU.Com or e-mail cwgeek@kb6nu.com.

NORTHERN OHIO WIDE AREA UHF REPEATER LINKS

MT. VERNON, OHIO	442.100/+ 71.9
APPLE VALLEY, OHIO	FUTURE
MARENGO, OHIO	FUTURE
MANSFIELD, OHIO	443.075/+ 151.4
ELYRIA, OHIO	443.9875/+ 162.2
VERMILLION, OHIO	53.290/52.290 107.2
SANDUSKY, OHIO	146.805/- 110.9
GIBSONBURG, OHIO	443.1875/+ 107.2
POLK, OHIO	443.675/+ 162.2
REPUBLIC, OHIO	147.255/+ 107.2
REPUBLIC, OHIO	443.4375/+ 107.2
BERLIN HEIGHTS, OHIO	442.675/+ 162.2

Please note the frequency/split(+ or – 5 Mhz) and CTCS in hertz.

CODES FOR ECHOLINK
(KD8EVR-R Via W8PEN-L)
And K8EEN-R

#00	CONNECT TO RANDOM NODE
#01	CONNECT TO A RANDOM LINK
#03	CONNECT TO RANDOM USER
#08	ECHOLINK STATUS
#09	RECONNECT TO LAST CODE
#*XXX	CONNECT TO NODE XXXX
#	DISCONNECT
#79	K8EEN REPEATER
#80	K4OBX-R HATTERAS ISLAND, NC
#82	KG8FV-R ASHLAND, OH
#84	W8DF-R BATTLE CREEK, MI
#100	KD8EVR ARLIN BRADFORD PC/IPHONE
#102	K7FED-R HENDERSON, NV

For more information on using these codes on the KD8EVR repeater or the K8EEN repeater, please see the February 2013 issue of our Club Newsletter

US Amateur Radio Bands

US AMATEUR POWER LIMITS

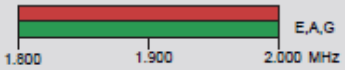
FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

Effective Date March 5, 2012

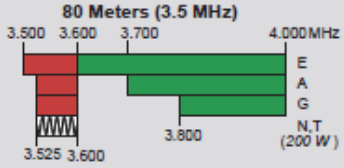
Published by:
ARRL The national association for AMATEUR RADIO®
www.arrl.org
225 Main Street, Newington, CT USA 06111-1494

160 Meters (1.8 MHz)

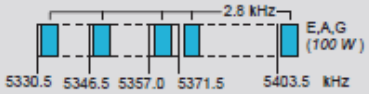
Avoid interference to radiolocation operations from 1.900 to 2.000 MHz



80 Meters (3.5 MHz)

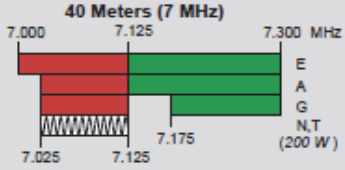


60 Meters (5.3 MHz)



General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated output of 100 W PEP. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III as defined by the FCC Report and Order of November 18, 2011. USB is limited to 2.8 kHz centered on 5332, 5348, 5358.5, 5373 and 5405 kHz. CW and digital emissions must be centered 1.5 kHz above the channel frequencies indicated above. Only one signal at a time is permitted on any channel.

40 Meters (7 MHz)

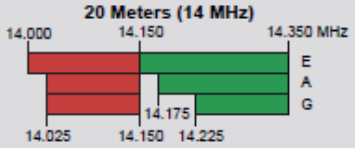


Phone and image modes are permitted between 7.075 and 7.100 MHz for FCC licensed stations in ITU Regions 1 and 3 and by FCC licensed stations in ITU Region 2 West of 130 degrees West longitude or South of 20 degrees North latitude. See Sections 97.305(c) and 97.307(f)(11).
Novice and Technician licensees outside ITU Region 2 may use CW only between 7.025 and 7.075 MHz and between 7.100 and 7.125 MHz. 7.200 to 7.300 MHz is not available outside ITU Region 2. See Section 97.301(e). These exemptions do not apply to stations in the continental US.

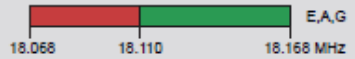
30 Meters (10.1 MHz)

Avoid interference to fixed services outside the US.

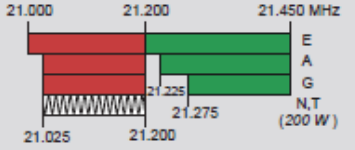
20 Meters (14 MHz)



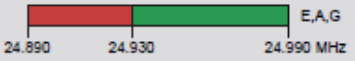
17 Meters (18 MHz)



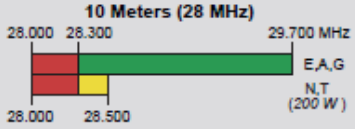
15 Meters (21 MHz)



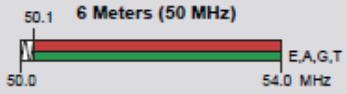
12 Meters (24 MHz)



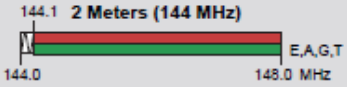
10 Meters (28 MHz)



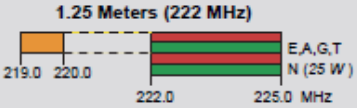
6 Meters (50 MHz)



2 Meters (144 MHz)

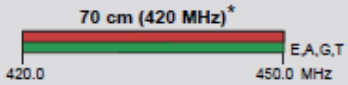


1.25 Meters (222 MHz)

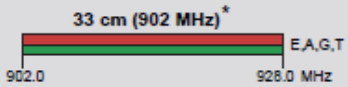


*Geographical and power restrictions may apply to all bands above 420 MHz. See *The ARRL Operating Manual* for information about your area.

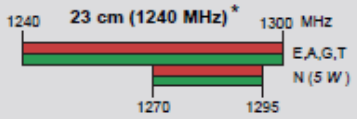
70 cm (420 MHz)*



33 cm (902 MHz)*



23 cm (1240 MHz)*



All licensees except Novices are authorized all modes on the following frequencies:

2300-2310 MHz	10.0-10.5 GHz *	122.25-123.0 GHz
2390-2450 MHz	24.0-24.25 GHz	134-141 GHz
3300-3500 MHz	47.0-47.2 GHz	241-250 GHz
5650-5925 MHz	76.0-81.0 GHz	All above 275 GHz

* No pulse emissions

KEY

Note:
CW operation is permitted throughout all amateur bands.

MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.

Test transmissions are authorized above 51 MHz, except for 219-220 MHz

- = RTTY and data
- = phone and image
- = CW only
- = SSB phone
- = USB phone, CW, RTTY, and data
- = Fixed digital message forwarding systems only

E = Amateur Extra
A = Advanced
G = General
T = Technician
N = Novice

See *ARRLWeb* at *www.arrl.org* for detailed band plans.

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