

The Zero Beat

THIS MEETING

February 10 2016
7:30 P.M.
UFCW Hall
876 Horace Brown Dr.
Madison Heights, MI

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GENERAL MEETING

The next meeting of the Hazel Park Amateur Radio Club begins at 7:30 PM. Socializing starts around 7:00 PM. The **meeting location is UFCW Hall, 876 Horace Brown Dr, Madison Heights**. The location is south of 13 Mile Rd, between John R and the I-75 freeway. Turn south at the stoplight at Barrington St, then just before the dead end sign, turn right onto Horace Brown Dr. **Enter the building on the east side.**

Meeting Topic: "Software Defined Radios (SDR)"

by Tom Hagen & Ken Redcap of the Society of Amateur Radio Astronomers

Tom and Ken are both ham radio operators and engineers at Continental Automotive Systems. They are active members of SARA (Society of Amateur Radio Astronomers). Ken is the president of SARA and Tom is vice-president.

They have built several astronomical receivers using various modern software defined radios. These receivers are sensitive enough to record signals from distance astronomical sources. Many of the software programs used with these radios are free downloads. Some of the radios are quite inexpensive. Most modern HF transceivers also use SDR techniques.

Come early and visit with fellow hams. Everyone is welcome to come to the meeting and bring a friend along.

PRESIDENT'S QRM

HPARC started out 2016 with momentum and signs point toward it continuing. We have gained members, increased our meeting attendance, assisted more new Technicians, and our instructors have generated more new radio operators and upgrades. Financially we are ahead. Our Facebook members are growing and by most count the membership is in good spirits.

All this does not happen by accident. It is the hard work and devoted efforts of contributing members that enable our club to grow and function. The recent

Swap, coordinated by Hugh, enlightened by Lester, guided by Walter kept on tract by Jim and supported by so many others is a perfect example of what our club is all about. All of the contributing members whom played a part in the success of the Swap should be proud. My sincerest appreciations and gratitude go to everyone who played a part and contributed their time.

The Board established a few continuing goals for our term.

1. Generate more support for the new hams to get on the air

(Continued on page 2)

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VOLUNTEERS

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- **Meeting Coffee & Donuts:**
Dan Conroy KD8SPD
- **Sunday Net:** Bill N8QVS
Bob N8REL
Rey W8REY
- **VUCC/WAS Awards Card Checker:** Sean Fleming
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- **Banquet:** (Open)
- **Field Day Chair:**
John Teagardin, AA8UU
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- **HPARC Official Cook:**
Bill Ketel N8QVS
- **Hamfest Chair:** Hugh Boyle
KE8BED (248) 755-6094
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- **Holiday Party:** The Board
- **Oak Apple Run Royal Oak:**
Mike Van Buren WD8S
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QRM, CONT'D

(Continued from page 1)

2. Improve the meetings by decreasing the administrative activity
3. Improve our reputation
4. Upgrade the curriculum
5. Increase membership
6. Increase membership involvement

My personal goal remains as "Make HPARC the club to go to".

During last month's meeting the M2M (Member to Member) clearly displayed the immediate needs of the new Hams and the willingness of the seasoned Hams to offer their experience. When the question was raised "who would be willing to take a phone call from the new hams and guide them?", just about every hand went up. That's what I'm talking about.

Whether you realize it or not, you are ELMERS, maybe not on paper but definitely in spirit. It is time to step forward and be recognized. We would like to publish your names, call letters and contact information so that both new hams and old know precisely who to contact. The goals can only be accomplished BY the membership FOR the members.

73,
Ken AD8M

MENTORS

If you are such a person that Ken described please contact any board member so you can have your name on the list. Let them know what area of ham radio you can help with. Your name, email and special skill will be in the Zero Beat so members can contact you when they need help.

You don't need to be Mr. Atlas or even an Electrical Engineer to apply. Just be friendly and willing to help. Remember we all know something.

Check the top of this page for a Board member to contact.

MEETING MINUTES

Meeting called to order at 7:34pm by President, Ken AD8M.

Introductions were given. we had 4 new members: 1 paying member (N8VK), and 3 members who get a complimentary year of membership for passing exams (W8MJC, KE8CVI, KE8CVJ) offered by our club.

A presentation on nets and traffic handling was given by Mark K8ED, our ARRL MI Section Traffic Manager.

Ken directed members to speak to Hugh KE8BED to sign up to work times at the swap.

Coffee and Donuts were served and enjoyed by all.

Member to member: New member/new ham KE8CVJ asked for suggestions on a radio to get, which sparked a host of suggestions:

WB8SBI recommended QST reviews, and recommended that he go with a name brand other than the Chinese brands, because a high percentage of them fail to meet FCC requirements for spectral purity.

K8GT recommended a mobile radio as a starter radio, and an HT later on.

AD8M added that antennas are equally important.

N8FE pointed out that the roll up j-pole antennas are fantastic.

KE8UM suggested that he get a 4 or 5 watt handheld, and not a miniature lower-power one.

N8VK recommended reading reviews on eHam.net, and pointed out that for VHF/UHF, antenna height is extremely significant.

The treasurer's report was presented by JD, who pointed out that table rental revenue is starting to come in.

The meeting was adjourned at 9:00pm.

Respectfully submitted
Reuven KB3EHW



**And you thought
807s was BEER!**

Check out the
[quintessential vacuum tube.](#)

AROUND TOWN

HPARC Buddy Breakfast every Saturday @ 9:00 AM (or so)

Jimi's Restaurant, 714 South Washington Ave, Royal Oak (across from OCC). Come for the socializing — we're in the back room. Parking: lots of spaces in Jimi's parking lot, and street parking is free until 11 AM.

Oakland Co. ARPSC Siren Testing, 1st Saturday @ 1 PM

Resumes in March.

Macomb Community College Electronic Lab

4th Wednesday of each month from 7-10 PM.

12 Mile & Hayes Rd. (Bldg "S" - Room S135) Extensive collection of equipment to use/learn plus a ham radio station to use and a big 3 element HF Yagi antenna on the roof of the building. Hams are invited from all clubs.

Amateur Radio License Testing

HPARC and the City of Oak Park offer amateur radio license testing on the **first Tuesday of even numbered months** at the **Oak Park, Michigan Community Center** (14300 Oak Park Blvd, Oak Park, MI 48237) beginning at 7:30 PM

BECOME A VE



The Club needs more VE's. We hold Testing sessions the first Tuesday of even numbered months plus at the end of each class. Although we have many VE's they all cannot make every test session. We usually need 6 or 7 at each session.

If you hold a **General or Extra class** license and are interested in becoming an ARRL Volunteer Examiner (VE) and serving the Amateur Radio community, it's easy and free!

If you are already a VE with another VEC, then the process is even easier. Either way, please check out their website and join the HPARC VEC TEAM.

<http://www.arrl.org/become-an-arrl-ve>

Contact

Jerry W9NPI the HPARC VE Alison

HAZEL PARK AMATEUR RADIO CLUB, P.O. BOX 368, HAZEL PARK, MI 48030 www.hparc.org

BUILDING A CHEAP ANTENNA ANALYZER

By Wes Plouff AC8JF

Last fall I read an intriguing article about an automatic antenna tuner built by WB00EW. His tuner used an antenna analyzer as a low-power RF source and SWR meter. How could it be cheap enough to dedicate to a homebrew project?



Quarter coin shown for size comparison.

The analyzer turned out to be the Fox Delta AAZ-0914A, available as a kit for only \$54.00. Fox Delta sells assembled units for \$10 more, free for “senior hams,” but despite my gray hair I decided to take the plunge and build one myself. The result, including shipping charges and accessories, gave me a useful piece of RF test equipment for about \$80.

The kit is the brainchild of I2TZK, K7SFN and VU2FD. It’s inexpensive because it uses a PC for display and computation. The analyzer itself is a USB-powered 3 x 4-1/2 x 1-1/4 inch box, smaller than a QSL card.

Two weeks after ordering the kit online, a small box arrived from Rajkot, India. Inside were a small printed circuit board, small bags full of parts, a metal enclosure and a few pages of documentation. This wasn’t a Heathkit. Instead of detailed instructions, there were a parts list and a board layout diagram.

Assembling the unit went easier than expected. The components came in separate bags for each value or type. Most of the components were quite small. All the surface mount parts were already soldered onto the board, though. Using a fine-tipped soldering iron and reading glasses, the work was easy but tedious. I kept on track by marking each component on the layout diagram as I installed it. Assembly took three hours because I worked slowly.

Two problems cropped up while building the unit. One RF choke didn’t match the hole spacing on the printed circuit board. I soldered the synthesizer daughterboard directly onto the main board instead of using socket pins supplied but not on the parts list. In the end, though, the unit worked fine.

The analyzer needed a few more things to be usable. A USB “printer cable” with a “D” shaped connector at one



Clockwise from upper left: synthesizer daughterboard, resistor bridge, antenna connector, level detector chip, PIC microcontroller with crystal, USB connector, expansion connector.

end provided the computer connection. An SO-239 to BNC adapter was needed for the analyzer’s antenna connector. Adding rubber feet to the case completed the unit.

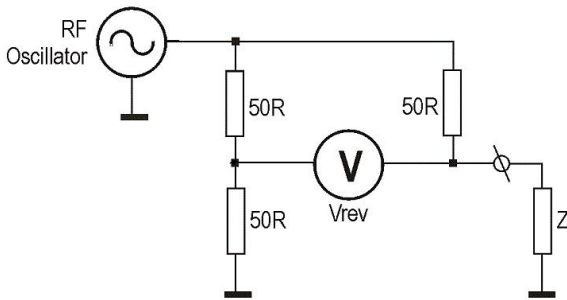
I powered up the board without its PIC microcontroller and checked voltages. Then I installed the PIC chip, plugged the USB cable into my laptop, and was rewarded with a blinking LED. Windows 7 found and installed the USB device driver right away.

PC software and documentation were downloaded from the Fox Delta web site. Installing the software meant copying just one file into a directory and creating a shortcut icon. After a couple of tries, the software found the analyzer hardware. It asked for a one-time calibration, but that was simple, a frequency sweep with the antenna connector open, then a sweep with the connector shorted. After that, I tested the analyzer with resistors of different values. The SWR readings came out close to the expected values.

The antenna analyzer design is quite simple. As shown in a simplified diagram, it uses a resistor bridge driven by

(Continued on page 5)

ANALYZER KIT CONT.



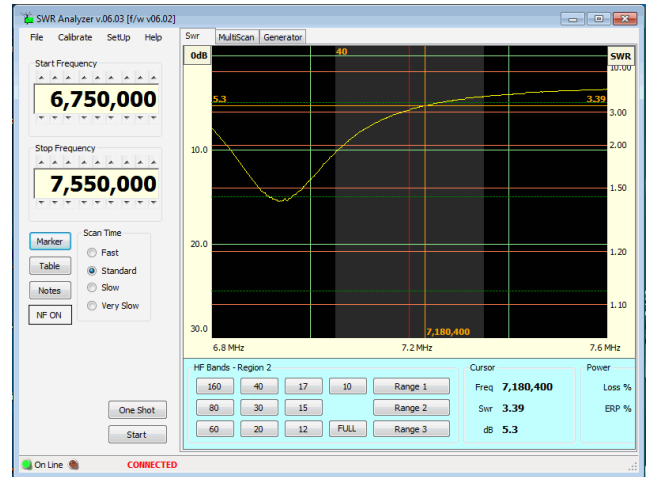
Simplified diagram of the antenna analyzer

an RF signal source. If the unknown impedance Z is 50 ohms resistive, then voltmeter V will read zero, or an SWR of 1. Z is actually the antenna and feed line. As the antenna impedance gets higher or lower than 50 ohms, the voltmeter reading rises, along with the SWR. In the AAZ-0914A, the RF oscillator is a synthesizer chip, and the voltmeter is an RF level detector chip whose output is measured by an A/D converter on the PIC microcontroller. When in use, the analyzer drives about 10 milliwatts of RF to the antenna.

I2TZK "SWRAnalyzer" software converts from voltage measurements to SWR. Operation is easy. Just choose any HF ham band or the whole range from 1 to 35 MHz, then click on a button to start a 500-frequency sweep. Results are shown as a graph of SWR versus frequency.

This analyzer has limits. It may not be as accurate above 30 MHz. Since the detector is untuned, picking up strong

RF sources nearby, like broadcast transmitters, can throw off the analyzer readings. SWR measurements below about 1.05 are noisy.



The first real test of the analyzer was to measure my OH2EC multiband dipole. Oops! The readings showed that each resonant frequency was too low. Over a few years, the wire had stretched out. However, now that I had a useful tool, trimming the antenna back to the right frequencies wasn't difficult.

Overall, I'm happy. This is a nice piece of equipment for working with antennas, but a lot less expensive than a product from MFJ.

The Fox Delta antenna analyzer is for sale at <http://www.foxdelta.com/products/aaz-0914a.htm>

2016 SWAP A BIG SUCCESS



Jonathan Devine posted on the HPARC Facebook page —Fantastic turnout of vendors and patrons at the Swap today!

Sam Uel—I'll say! A LOT of great people and great stuff! DE KA9PAZ

John Custer Jr—It was nice. Was out there today. I will be coming back for the next one.

William Ketel— It was indeed great. A bit before ten one vendor was walking out and he told me that he had to leave because he had no more stuff to sell. Definitely a "happy camper". I think that the perfect weather helped a bit as well.

Tony Gallucci—The new location is great!

HPARC NETS

HPARC Official Sunday Night 2-meter Phone Net

Every Sunday at 9:00 PM local time on the DART repeater, 146.64 (PL 100), catch up on club news and information, and just to keep in touch. All amateurs are welcome to check in.

Thursday Night Youth Net, 8 PM EST on the DART repeater, via Echolink *759629 (W5DDL-R).

Yacht Net, Saturday night, 8 PM EST. A youth net on the DART repeater, via Echolink *481872 (W8PIF-R).

Homepage: <http://yachthams.webstarts.com>

N8WYO CW net (Medium speed)

Named in memory of Al N8WYO. The net meets Tuesday night at 8:00 PM on **28.028 MHz** All amateurs are welcome. CW speed fluctuates between 20-25 WPM, but Joe will slow it down if necessary. Listen in at 8 PM sharp!

Wolverine Net

The 75 Meter Wolverine Net meets on 3935 KHz daily at 7:00 PM local time, with pre-net starting at 6:00 PM. You can get details from <http://www.wssbn.com/>

Oakland County ARPSC

Every Thursday @ 8 pm on 146.90 (PL 100). Hospital Radio Net on the last Thursday of each month @7:30. (W8OAK-3 will run packet on 147.56 MHz for those wanting to practice and test their equipment)
<http://www.arpac.com/>

NTS Traffic Nets

The Southeast Michigan National Traffic System (NTS) net Normally held every night at 10:15 PM local time on the 146.76 (PL 100) repeater. New people are welcome.

WELCOME TO HPARC !

Ricardo Caudillo KE8CVJ new Tech
Mike Carelli W8MJC new Tech
Vince Kopacko N8VK

2016 QSO PARTIES

State QSO Parties are easy contests that welcome newcomers and hotshot contesters alike. They last anywhere from 12 to 48 hours, always on weekends. The object is to work amateurs in one state on SSB, CW and, in some contests, using digital modes. Two of them cover entire regions – the first and seventh call districts. QSO parties will be held in 48 or 49 states plus two Canadian provinces. Don't worry if you've never tried a QSO party before. Most participants will be happy to walk you through the on-air exchange.

Here is a list of 2016 State QSO Parties by UTC date. Some contests, like Michigan, take place on a single day in local time that runs past 0000Z into the next day on UTC time.

* = estimated date.

February

6 – Minnesota
6-7 – Vermont, British Columbia
13-14 – New Hampshire*
27-28 – South Carolina
28-29 – North Carolina (leap year!)

March

12-13 – Idaho, Louisiana*
13-14 – Wisconsin
19-20 – Oklahoma*, Virginia

April

2-3 – Mississippi*, Missouri
9-10 – Georgia, New Mexico*
16-17 – Michigan, Nebraska, North Dakota*, Ontario
30-31 – Florida

May

7-8 – New England – CT, MA, ME, NH, RI, VT
7-8 – Seventh District – AZ, ID, MT, NV, OR, UT, WA, WY
7-8 – Delaware, Indiana
14-15 – Arkansas

June

4-5 – Alabama
18-19 – West Virginia*

Be sure to double-check dates on the WA7BNM Contest Calendar at <http://www.hornucopia.com/contestcal/>, or on the N5NA QSO Party Calendar at <http://qsoparty.eqth.net/>.

[ED—Thanks Wes AC8JF for the list. Will publish more dates this summer]

ARRL CHANGES

The ARRL CEO Dave Sumner K1ZZ plans to retire on April 18, ending more than 44 years of service at ARRL HQ. For many, it will be hard to imagine headquarters without Dave at the helm. None the less, on that date, the new CEO Tom Gallagher NY2RF will step into office,.

There will be a few weeks of overlap as Tom and Dave will be working together to effect a smooth transition of leadership. Tom's selection comes after an extensive search and an offer was tendered following the decision at the January ARRL Board meeting. Tom accepted, and the Board held an electronic meeting Monday evening January 25, where he was elected to serve as CEO and Secretary following Dave Sumner's retirement. Tom's bio is available on the ARRL web site.

<http://www.arrl.org/news/tom-gallagher-ny2rf-will-succeed-david-sumner-k1zz-as-arrl-ceo>

In January, The ARRL Board of Directors also elected ARRL First Vice President Rick Roderick, K5UR, of Little Rock, Arkansas, as the ARRL's next president. The Board took the action as it convened for its 2016 Annual Meeting January 15-16 in Windsor, Connecticut.

Complete article available at

<http://www.arrl.org/news/changing-of-the-guard-rick-roderick-k5ur-elected-as-arrl-s-16th-president>

SCHOOL ROUNDUP

February is special in that besides many QSO Parties, there is the ARRL School Roundup. The objective is to exchange QSO information with club stations that are part of an elementary, middle, high school or college. Non-school clubs and individuals are encouraged to participate.

Sponsored by the ARRL, its Hudson Division Education Task Force and the Long Island Mobile Amateur Radio Club (LIMARC) to foster contacts with and among school radio clubs.

Award certificates will be issued for various US and DX categories. More information is available at

<http://www.arrl.org/school-club-roundup>

The many QSO Parties are listed on page 7.

There are many more contests. For a list of current contests go to the [HPARC](http://www.hparc.org) website.

For a complete list. Visit

<http://www.hornucopia.com/contestcal/>

HAMFESTS

02/21/2016

Livonia Amateur Radio Club
Livonia Civic Park Senior Center
15218 Farmington Road
Livonia, MI 48150

<http://www.livoniaarc.com/index.php?page=swapshop>

Talk-In: 145.35 (PL 100) or 146.52 Simplex

Public Contact: Doris Kelterborn, K8DXJ

PO Box 51532 Livonia, MI 48151

Phone: 734-941-5043

Email: k8uns@arrl.net

05/20/2016

Dayton Hamvention
Hara Arena (near Dayton, OH)

www.hamvention.org

NEW—no ADA permits in advance. Take your state ADA parking permit or license plate/tabs. 500 parking spaces given to first come first served. (per website)

CONTESTS

- 5-7 + YLRL YL-OM Contest
- 6-7 + Vermont QSO Party
- 6 + Triathlon DX Contest
- 6-7 + 10-10 Int. Winter Contest, SSB
- 6 + Minnesota QSO Party
- 6-7 + British Columbia QSO Party
- 6-7 + Mexico RTTY International Contest
- 8-12 + ARRL School Club Roundup
- 13-14 + CQ WW RTTY WPX Contest
- 14-15 + KCJ Topband Contest
- 13-14 + Dutch PACC Contest
- 13-14 + OMISS QSO Party
- 13-14 + New Hampshire QSO Party
- 14-17 + Classic Exchange, Phone
- 20-21 + ARRL Inter. DX Contest, CW
- 20-21 + Russian PSK WW Contest
- 26-27 + CQ 160-Meter Contest, SSB
- 27-28 + South Carolina QSO Party
- 27-28 + North American QSO Party, RTTY
- 28-29 + North Carolina QSO Party
- Mar 1 + AGCW YL-CW Party
- 5-6 + ARRL Inter. DX Contest, SSB

2025-06-03
KRAM

2016 Meetings

- February 10
- March 9
- April 13
- May 11 (Elections)
- June 8 (Banquet)

TIME

Socializing @ 7:00 PM
Meeting @ 7:30 PM

PLACE

UFCW Hall
876 Horace Brown Dr.
Madison Heights 48071



Meeting and Swap location



Hazel Park Amateur Radio Club
P.O. Box 368
Hazel Park, MI 48030



Scan this QR code to visit the
HPARC web site

Please check mailing label — is your membership about to expire?