

The Radio Hill Gazette

March 2015

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From the Editor

Welcome to another edition of the Radio Hill Gazette.

February is behind us and there was plenty to keep us occupied.

The expedition to Navassa Island (the most needed DX entity in 2014) was completed without incident. They handed out over 130k contacts. I hope you were able to get into the log and score a new DX entity for your DXCC efforts.

There are plenty of easy to contact DX entities on the air over the next few weeks. Some are close, like Cocos Island, and others are farther away, like Sudan, but all are reachable if you want to make contact. A key factor is your mode selection and band permissions, as not all locales are able to transmit and receive in the same portions of the band as we can, and some may use modes other than SSB or even CW. So, be flexible and you can make it into their logs.

If you want some easy DX, the ARRL DX contest SSB mode is the first weekend in March. This is an event where other countries only get points contacting US (and Canada) stations – their antennas are pointed at you and not at each other. This is a great opportunity to get some more DX in your log.

By my reckoning, there are more than 140 active DX entities that are well within reach of basic dipoles driven with 100 watts. This means anyone willing to try should be able to achieve their DXCC.

Anthony
Editor, RHG



This is a great hobby!

Jim Brink W9JFB

OK it's been said before but it's worth saying again. The thing that makes this a great hobby is the people you come in contact with. Last spring I was looking at using one of these AD9850 modules that are available on ebay for about \$7 to build a VFO or signal generator. You use an Arduino to control the AD9850 module and get a 40 meg to 0 hz signal out. Kind of an obscure knock together project but it caught my interest so I ordered the AD9850. By the time the part floated over from China I was on some other project so the part sat on my bench for about seven months. I have been looking at the Arduino again this winter so I decided to get the AD9850 working and went back to the web to get the code. Everybody that did the project thanks Rich at www.AD7C.com for the code so I wound up on his site. At the site the home page displayed but everytime I clicked on a link I got an error. I sent Rich an email and in four hours he responded, apologised and reported that he fixed the site. What a great guy, I downloaded the code and it worked.

So now I have this Arduino VFO and it seems like it could be the front end of a QRP cw rig, what do I need, a switch ckt, an amp, and a low pass filter?

Anyone have any ideas?

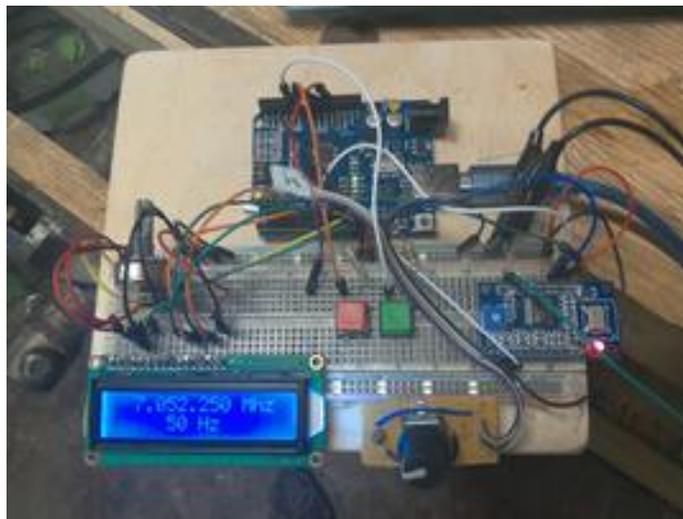


Illustration 1

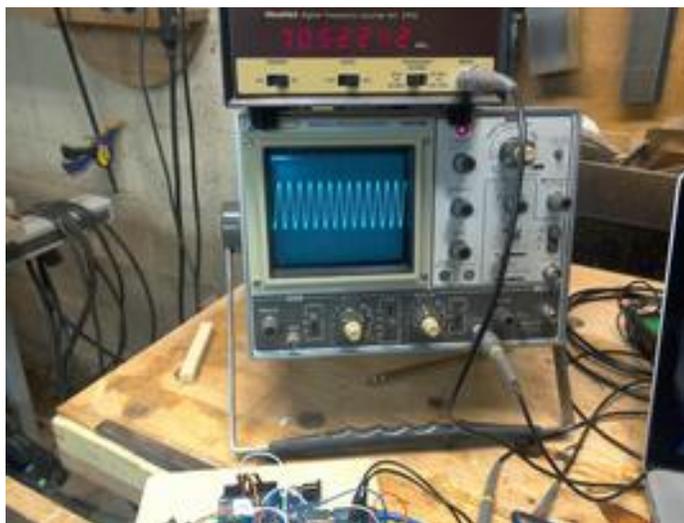


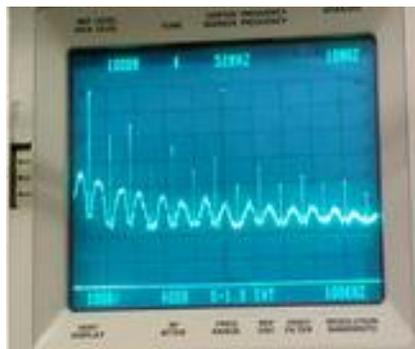
Illustration 2

A little about Spectrum Analysis

Rob Glowacki N9MVO

The spectrum analyzer shows a lot of information about an RF signal.

Taking the picture as an example. The signal is an unfiltered output of a Raspberry Pi microcomputer that is generating an RF signal at 7 MHz.



The screen display shows signal strength in the vertical scale, and frequency in the horizontal scale. Indications on the display show a center frequency of 52 MHz (top center), and 10 MHz per horizontal division (top right). That makes the horizontal display of this picture 2 MHz to 102 MHz. The vertical scale is 10 dB/ vertical division, (lower left). Decibels represent a ratio of two levels. The 'm' in dBm means the standard level is 1 mW or 1/1000 Watt. Regarding power levels, a 10 dB increase (or decrease) represents a factor of 10.

Illustration 3

The first spike at the left of the screen goes to the indicated reference level (10 dBm) at the top of the graticule. That means the signal is 10 dB greater than the standard, or 10 mW. So, the 7 MHz signal from this Raspberry Pi is 10 mW. The next spike is the second harmonic, at 14 MHz. That is 2 divisions below the top of the graticule, or 20 dB lower than the 7 MHz carrier level. That would be at 0.1 mW.

The third peak from the left is the 21 MHz output at the third harmonic of the 7 MHz desired output signal. It is only 15 dB below the 7 MHz carrier. Since 3 dB represents 1/2 the power, -15 dB means $1/2 \times 1/2 \times 1/2 \times 1/2 \times 1/2$ (1/32) times the carrier level, or about 0.32 mW

The fourth peak at 28 MHz, is about 30 dB down from the carrier level or about 10 micro Watts. The fifth spike at about 35 MHz is about 25 dB down or about 32 uW. Power produced at these frequencies is getting pretty low.

You can see the progressively lower indications of the odd harmonics (3rd, 5th, 7th etc.) that roughly correspond to the mathematical formula of a square wave, 1 (fund) + $1/3(3f)$ + $1/5(5f)$. . . I think that's it, isn't it? (The only math formula I remember is that "the sum of the square roots of any two sides of an Isosceles triangle is equal to the square root of the remaining side.*") In any case, the amplitude goes down as the frequency of the harmonic goes up.

(*see 'The Wizard of Oz', MGM, 1939)

The even harmonics (2nd, 3rd, 4th etc.) shouldn't be there at all, but the signal we are looking at is not a perfect square wave. The humps in the base line between the peaks are also due to the imperfection of the square wave. The source of the signal is a digital pulse, and digital devices do not need perfect square waves.

This spectrum shows that a low pass filter, reducing frequencies above 7.3 MHz by as little as 10 dB could clean up the signal nicely. A band pass filter, tuned to 7 MHz could also lower the level of that hump below the 7 MHz carrier as well as the harmonics. At higher power, this would be necessary, but at the 10 mW power level, 35 dB down is low enough for FCC requirements.

FCC specs: "For transmitters installed on or before January 1, 2003, the mean power of any spurious emission from a station transmitter or external RF power amplifier transmitting on a frequency below 30 MHz must not exceed 50 mW and must be at least 40 dB below the mean power of the fundamental emission. For a transmitter of mean power less than 5 W installed on or before January 1, 2003, the attenuation must be at least 30 dB."

It's only the harmonic spikes that must be reduced to meet FCC requirements. The 'hump' below the carrier does not have to be attenuated. Of course, the FCC does require that amateur stations have "spurious emissions reduced to the greatest extent practicable." At this power level, these 'spurs' are unlikely to create much interference, though.

73 de N9MVO,

Rob

New faces at construction of 2-14-15

Dave Sims K9KBM



Bob Benwitz N9JAX is from Mt Prospect

Bob is retired and brought his rig in for diagnosis which turned out to be a band switch problem on 40M.

Robert Hazelrigg N8JJS is from Arlington Heights

Robert is a practicing physician and getting back into the hobby.



David Hug KD9CVI is from Northlake

Dave has a computer rehab business and has donated a large amount of classic radio equipment to the club.

Trading post, things for sale or trade

“Nothing! I have absolutely nothing!”

Calendar and things to do

March

Board of directors meeting	4
Breakfast at Maxfields	7
ARRL DX SSB	7-8
Club Meeting	19
EmComm Roundtable	21

There are plenty of contests this month operating in many modes on various bands, so find one and listen in. Check out <http://www.hornucopia.com/contestcal/weeklycont.php> to see what's coming up.

Looking ahead

Cruise 2016

Technician training class coming soon

We have our new tech licensing class finally scheduled with the Schaumburg Park District. Registration has just opened up if you live in the park district, and if you're outside of the park district registration will be open in a week or so for everyone else.

The park district web site is www.parkfun.com, and our Tech class is barcode # 63749 in the catalog. We'll be using the ARRL Tech license book for the class, so anyone interested should get a hold of a copy. The current book is the 3rd edition, and the ISBN number is 978-1-62595-013-0. It's going for \$25 on Amazon, or you might be able to find it locally if you want to. I'd definitely recommend the paper book, not the Kindle e-book edition, because it's easier to take notes and do the exam questions in the back on paper. I'll have a couple of new copies of the book with me if someone registers last minute and wants to pick one up at the first day of class, but if people have time they probably want to order their own up front and maybe actually read ahead a bit as well if they have time.

The classes will start running on March 14th, and run from 9AM until noon. It runs for 6 Saturdays, but I believe there's a park district holiday in there somewhere, so the 6th class day will actually be 7 weeks out at completion because we'll have to skip one class day in there.

They currently have our class located in one of the rooms in the CRC building at Bode and Springinsguth, so unless some construction changes things on us, we'll be there.

Pass the word around if you know anyone interested. Any questions, have people contact me directly at bruce@bwarrington.com, or if you don't remember that, go ahead and use any of the "info" or "webmaster" links on the main page of our web site as well, all of those go to me to forward to the club as well, so e-mails to any of those places will get an answer.

VE Testing Results

Results for February 7, 2015
 Next Test March 7, 2015
 Park District CRC; Sr. Center;
 Sunshine Room.



CLASS	NUMBER TESTED	NEW LICENSE or UPGRADE
Technician	0	0
General	3	3
Extra	3	3
Total	6	6

New/Upgraded Licenses:

****Technician****

****General****

Kenneth Field KD9CXZ
 Ryszard Puskarz KD9CRR
 Dirk Smith K9DFS

****Amateur Extra****

Kennety Kociolek KD9CRT
 Arthur Ching KD9BRV
 Stanley Zydek AC9KT

The SARC-sponsored VE exam sessions are held at 9:00 a.m. on the first Saturday of each month (unless it is a holiday or advised to the contrary by Schaumburg Park District) at

Schaumburg Community Rec Center (CRC)
505 N. Springinsguth Road
Schaumburg, IL 60168-0251

The CRC is located at the S.E. corner of Springinsguth and Bode Road, park in the North lot and enter through the North doors. Testing will be in the Sr. Sunshine Room, signs will be posted to guide the way to the room.

The fee for taking a VE exam is \$14.00.

According to the FCC, the test fee allows an examinee one attempt to pass or fail each of the three examination elements. In addition, the order in which the examination elements are taken is not restricted; they may be taken out of sequence.

As in the past, an identical fee will be assessed to any applicant who fails an exam and wants to retest at the same session. The only condition is that the same exam (identical set of questions) cannot be given to the Applicant, since all our exams are unique, this is not a problem at our sessions.

Tom Doyle K9MF
 W5YI-VEC CVE & Test Session Manager
 847-895-0174
 Email: K9MF@ARRL.NET

SARC Email Reflector

Want to know what's happening in the club? Join the club's email reflector on Google groups.

Point your web browser to: <http://groups.google.com/group/sarc-all>

Click on the Join this group link. You can use your current email account to sign up or create a free Gmail account.

You can elect to receive individual messages, a daily digest, or just read the messages on the Google Groups webpage.

Club Nets

Technical information net - Every Tuesday night at 7:30 pm. on the SARC Repeater 145.23 MHz.-600 kHz WITH 107.2 Hz PL. Bring your Q&A's

Thursday nights are the 2 meter general information net on the SARC Repeater 145.23 MHz.-600 kHz with 107.2 Hz PL. at 8:00 PM (except meeting nights.)

Club Meetings

Club meetings are held at the Schaumburg Recreation Center (CRC) on the southeast corner of Springinsguth and Bode roads. Our nets are held every Thursday (except Meeting nights) at 8pm on the K9IIK repeater; 145.23 MHz -600 kHz with 107.2 Hz PL.

Club Officers – 2014

President:	Leo Ribordy	N9NBH	Director:	Rob Glowacki	N9MVO	(2017)
Vice Pres.	Steve Karson	AC9EM	Director:	Anthony Willard	AB9YC	(2016)
Secretary:	Mike Clodfelter	AC9CG	Director:	Kevin Willard	KB9QVX	(2017)
Treasurer:	Chris Brewer	AC9GN	Director:	Ted Lexter	AB9SZ	(2017)
			Director:	Gary Bernstein	N9VU	(2015)

Club Committees

Programs	Open	RHG	Anthony Willard, AB9YC
Social Activities	Roger Ryan, W9RDR	Publicity	Open
Membership	Leo Ribordy, N9NBH	Net	Jim Brink, W9JFB
Education	Open	Technical Assistance	Ted Lester, AB9SZ
Public Service	Rob Glowacki, N9MVO	Fund Raising	Open
Emergency Communications	Bob Langsfeld,	Fox Hunt Coordinator	Steve Karson, AC9EM
WB9TZC		Repeater	Rob Glowacki, N9MVO
Special Events/Field Day	Open		



Schaumburg Amateur Radio Club

Thursday Night 8:00 Net
S.A.R.C. Repeater
145.230 MHz- 600 kHz PL=107.2
442.275 MHz +5 MHz PL=114.8
Hz

Don't forget to check into the net! It will only take a minute and will let other club members know how you sound on the club repeater. The net features current club news, weekly NEWSLINE, news from other clubs and (of course) the swap-and-shop. Encourage your friends who are not yet members to check in with as well. Keep in mind that this is an open net and we encourage everyone to check in. See you Thursday at 8p.m.

The Schaumburg Amateur Radio Club, Inc. is organized as a general not-for-profit corporation in the State of Illinois to render public service whenever applicable to the needs of the community and further various pursuits of amateur radio as a hobby. Meetings are generally held on the third Thursday of each

month. Visitors are always welcome.

Please send all submissions for the Radio Hill Gazette to the following address:

Schaumburg Amateur Radio Club,
Inc.
790 Washington Blvd.
Hoffman Estates, IL 60169-3077

Or you can send by email to rhg@n9rjv.org.

We solicit letters, articles, news items, quizzes, advertisements, suggestions, and criticism – plus anything else you can think of, including ideas to improve the RHG! Please make submissions by the 20th of the month for inclusion in the next issue.

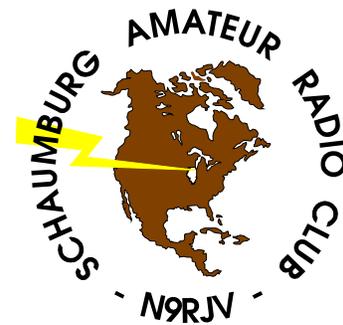
The editor reserves the right to edit submissions due to size or formatting limitations. S.A.R.C. shares newsletters with a number of other clubs. We scrutinize their publications very closely to make sure that we do not infringe on any copyrights. As a matter of form, we try to acknowledge all prior sources.

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Visit the SARC Home Page at <http://n9rjv.org>