www.wvara.org March 2015

The Heterodyne

Newsletter of the West Valley Amateur Radio Association

March Meeting

A Visual Introduction to Digital Signal Processing for SDR by Kevin Reid, AG6YO

Wednesday March 11
Meeting Starts at 7pm

Meeting Location:
American Red Cross,
Silicon Valley Chapter
2731 N. First Street at Plumeria Dr
(southwest corner) in San Jose
Map at www.wvara.org/meetings.html

WVARA Repeaters (W6PIY)		
Band	**Frequency**	**PL**
6 Meters	52.580- MHz	151.4 Hz
2 Meters	147.39+ MHz	151.4 Hz
1.25 Meters	223.96- MHz	156.7 Hz
0.70 Meter	441.35+ MHz	88.5 Hz
0.23 Meter	1286.2- MHz	100 Hz

Club Net

WVARA's club net is on the W6PIY repeaters each Tuesday at 8:30 pm. All repeaters are linked together during the net. The net script can be found at www.wvara.org/net.html .

Visitors Are Welcome!

President's Letter

Working Through Pileups

Having just enjoyed trying to contact the K1N Navassa Island expedition, my experience with deep, wide pileups is fresh. What I've learned about working pileups isn't original, but adding a panadapter makes following a lot of the general advice easier.

The first step in working a pileup is to make sure your radio is operating as well as it can. If you are running voice or digital modes, make sure your audio is clean. It is a lot easier to copy your call sign if there is no significant distortion. As K1N team member Glenn Johnson, W0GJ, said, "It seems like everyone tries to turn up their microphone gain and speech processors to overdrive and it creates splatter and makes it almost impossible and if we could somehow magically eliminate all speech processors, we could probably double or triple our rate."[1]

The same issue applies to sound card digital modes. An increase of 10% in power isn't going to help if your signal can't be decoded. In CW, you also want a clean signal because it is a lot easier to copy. In all modes, a clean signal makes you a better neighbor.

There is one place where speech processors can help and that is in tailoring your audio to put power in the part of the audio spectrum which carries the information in speech. As audio engineer Jim Brown, K9YC says, “The frequencies that carry nearly all of the intelligibility of human speech are between 400 Hz and 5 kHz, and the range between about 700 Hz and 3 kHz is the most critical. From an intelligibility point of view, everything below 400 Hz is noise.” So set up your speech processor to roll off the frequencies below 700 Hz and above 3 KHz. Note that many DX operators will cut everything above 1.9 to 2.2 KHz in their receivers just to limit the QRM.

Once our radios are adjusted to give us the best chance of being heard through the pileup, we can start looking for where to transmit. In any mode, large amounts of power, at his receive antenna, will help. Think big antennas and bit amps. But it is possible for a QRP operator to make contacts in pileups, and that is some of the fun of QRP. My first W1AW portable centennial contact was SSB with Utah on 160 meters. After I had completed the contact, I noticed my radio was still set for 5 watts.

The first question to ask, is the operator running split? If the DX is not running split, as is common during contests, we want to nail his frequency in voice and data modes to maximize the chance he can copy our call sign. In CW, we have a bit of flexibility, perhaps ±50 Hz to help our signal stand out.

When not running split, it is imperative not to transmit when the DX is transmitting. Keeping calls to just your call sign, sent only once, will help achieve this goal.

When the operator is running split is when the panadapter really shows its stuff. You can set the panadapter to look at the pileup and see where there might be space for another signal. With luck, you can also find the station the DX is contacting, and try to find a place nearby to call. If the pileup is small, transmitting on the exact frequency of the DS’s last QSO can be quite effective, particularly in SSB and digital modes. If it is a big pileup, then many people will be transmitting on that frequency, and none of them will be readable. In that case, move to where you think the DX will be tuning. There is nothing like the satisfaction of contacting the DX on your first call.

In figure 1, the K1N CW pileup is about 10KHz wide. The DX frequency is under the green vertical bar on the far left, and the frequency I have chosen for transmission is under the red vertical bar. There were so many people who weren’t listening to K1N and transmitting when he was trying to complete a QSO that I had great difficulty in locating his listening frequency. The K1N people said that transmitting on the last QSO frequency was useless, as they had already tuned to a different part of the pileup. The best strategy they could recommend was to pick a relatively open place and transmit there. They would come to you.

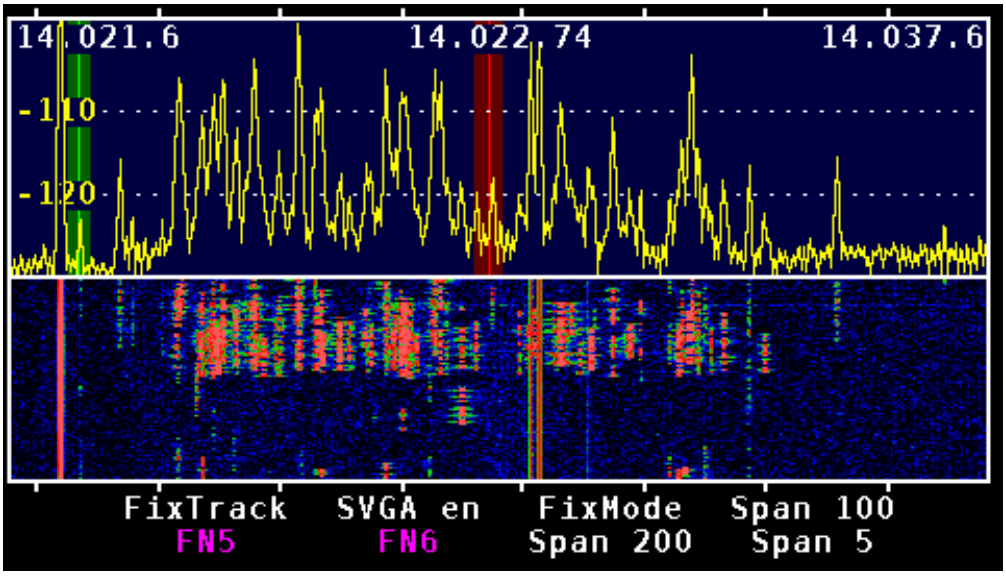


Figure 1: K1N CW Pileup

In figure 2, the W1AW/7 (Wyoming) RTTY pileup is about 4 KHz wide. W1AW is working the stations that are relatively clear, as digital signals are much harder to read than either CW or SSB when they overlap. I was able to make this contact by transmitting on the last QSO frequency, using the “reverse” feature of the radio to quickly listen on my transmit frequency. In this pileup, the calling operators were not transmitting during QSOs with other stations, the strongly recommended procedure.

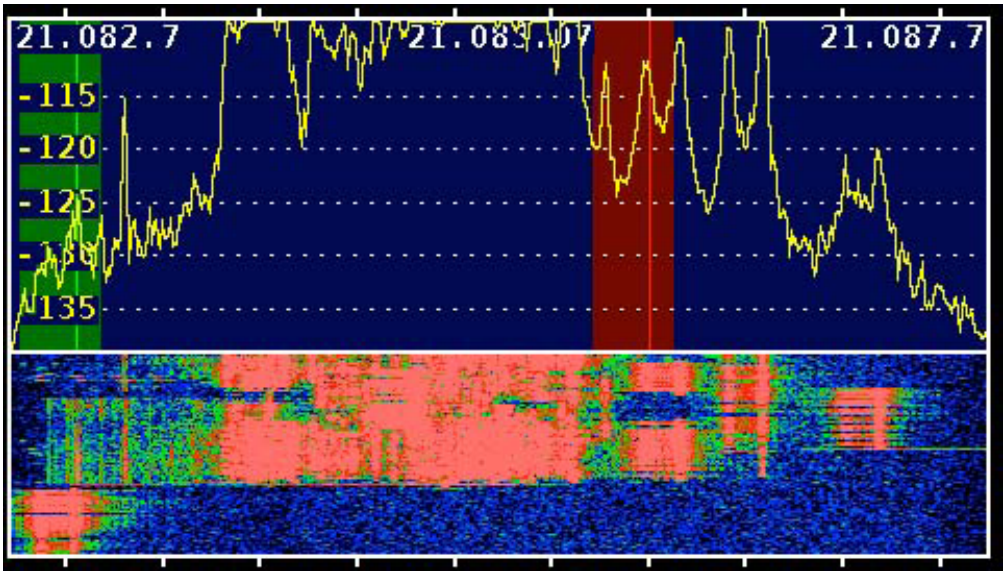


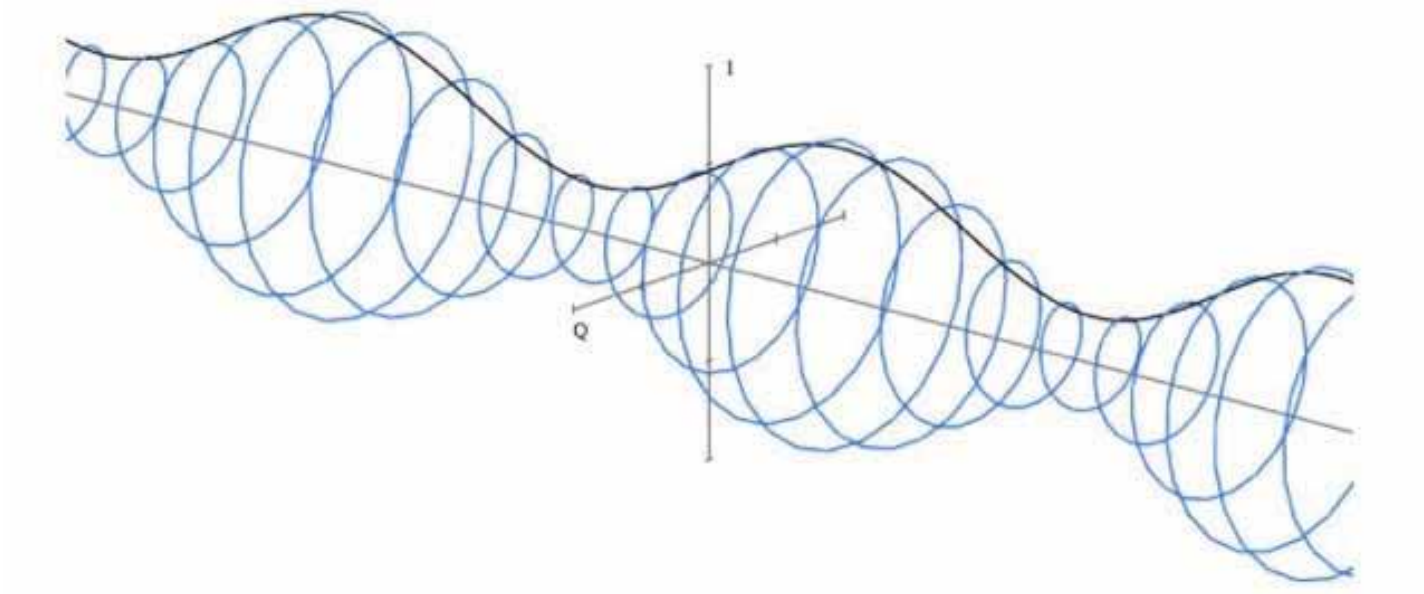
Figure 2: W1AW/7 (Wyoming) RTTY Pileup

[1] Interview with Glenn Johnson WØGJ , K1N co-team leader by Wolf Harranth, OE1WHC of Dokumentationsarchiv Funk, a history of radio site <http://audioboom.com/boos/2875970-satphone-interview-with-glenn-johnson-w0gj-on-navassa-9-february-2015-13-00z>.

73, Bill - AE6JV

About the Meeting

A Visual Introduction to Digital Signal Processing for SDR
by Kevin Reid, AG6YO

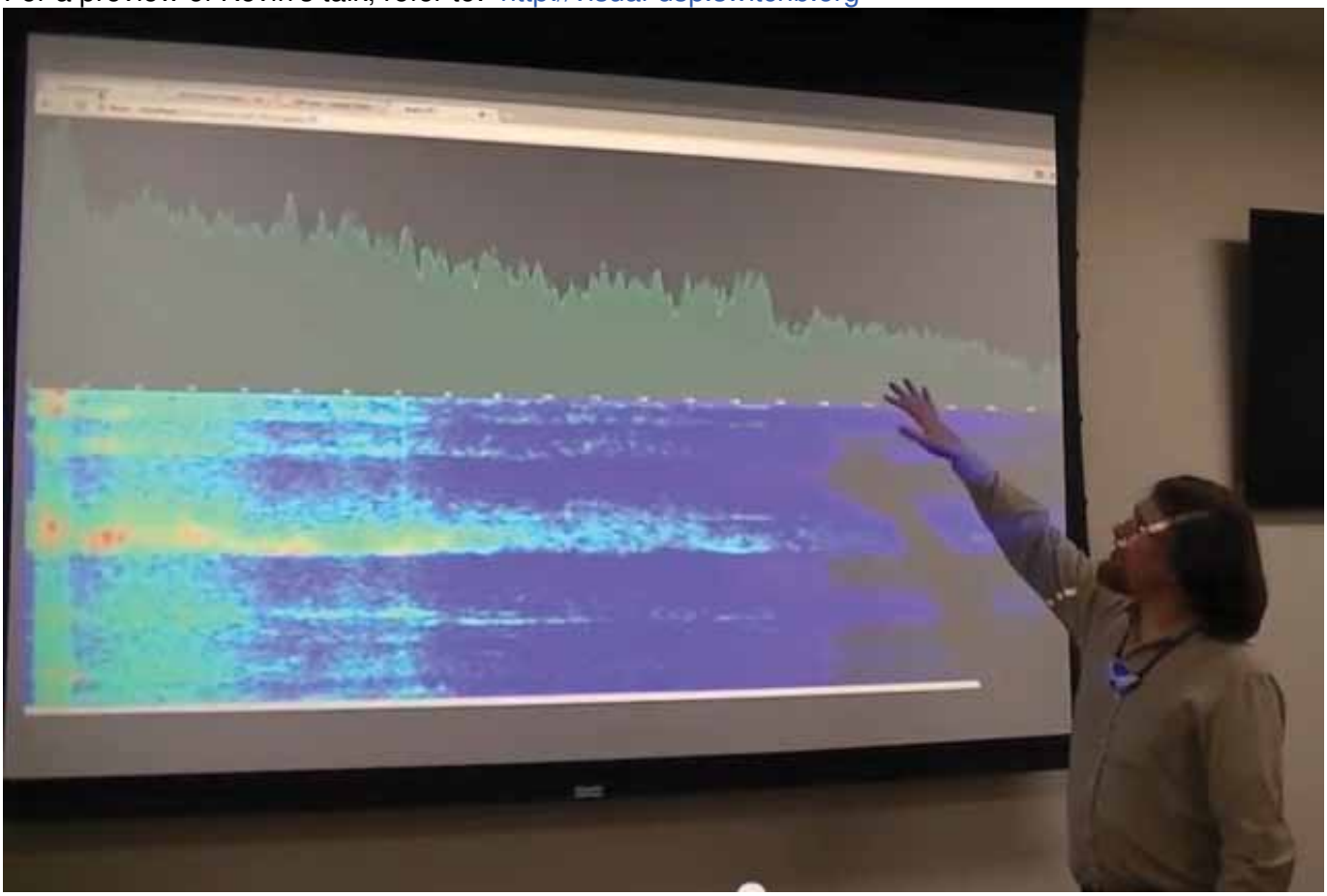


The next WVARA meeting will be on Wednesday, March 11, at 7pm. Our speaker, Kevin Reid, will give us a tour of digital signal processing topics relevant to implementation of software-defined radios, focusing on building visual/geometric intuition for signals. Topics covered will incude:

- Complex (IQ) and analytic signals.
- Filtering (FIR and IIR).
- Frequency shifting.
- Sampling rates and the Nyquist limit.
- The discrete Fourier transform (DFT) and fast Fourier transform (FFT)

Kevin, AG6YO, got interested in software-defined radio on a whim in 2012, got his amateur radio license in 2014, and has been working on his open-source SDR receiver software, ShinySDR, while allowing his microphone to collect dust.

For a preview of Kevin's talk, refer to: http://visual-dsp.switchb.org



Meeting Location: Silicon Valley Chapter of the American Red Cross, 2731 N. First Street at Plumeria Drive (southwest corner) in San Jose. Visitors are welcome, and of course there will be chocolate chip cookies.

If you haven't been to the Red Cross, "talk-in" is usually available on the Association's repeaters. Best choice would be 2m/220.

And for those who are hungry, several of us will be eating dinner prior to the meeting at the Burger King at 2532 Channing Avenue, just off Seaboard Avenue and near the corner of Trimble Road and De La Cruz Boulevard.

http://mapq.st/3-I0rpFmro

WVARA MUGS

Since our previous WVARA mug was so popular, we've decided to get made a batch of new WVARA mugs. Please let Jim Peterson, K6EI, know if you would like for us to include a mug for you in our bulk order. He can be reached via k6ei-at-wvara.org

We will probably place the order in late March, so there's plenty of time to decide. We anticipate the cost per mug will be about $16. (No need to pay our treasurer, Jon Kelley, until the order arrives.)

And if you've lost your previous WVARA mug (see below) and would like to replace it, we can include some of those in next month's order for the same price.

November 1, 2014

Dear Amateur Radio & DX Enthusiast,

Next year is the 66th consecutive year for the International DX Convention. The meeting, sponsored by the Northern California DX Club, will be held at the beautiful Visalia Convention Center in downtown Visalia, CA. IDXC, the premier DX Convention in the United States, is attended by over 800 serious DX'ers and contesters looking to improve their skills, their stations and see the latest equipment.

Convention Highlights:

- Full day of training on Friday, April 17, 2015: Contesting and DXing Techniques
- Friday Evening Dinner Options: TopBand, IOTA, and Contesting
- Open DX Forum
- 15-20 DX & Technical Seminars
- 35-40 Exhibitors in large Exhibit Hall
- QSL Card Checking
- Great Raffle Prizes
- Eyeball QSOs w/DX Friends
- Excellent Keynote Speakers
- Access to great California vacation destinations (see description on website)
- Registration Starts: 12-08-2014
- Website: dxconvention.org

We intend to make IDXC 2015 the best DX Convention ever, and hope you'll be able to join us.

Sincerely,

John Miller, K6MM
Kevin Rowett, K6TD
Rich Seifert, KE1B
IDXC 2015 Co-Chairmen

Saturday, April 18th, 2015 – Mountain View, CA

AMATEUR RADIO

LICENSE TESTING

This session is produced by the Bay Area Educational Amateur Radio Society – Member W5YI VEC

Study Session, Followed by Exam

When: *Saturday, April 18th, 2015*
8:00am – 5:00pm

Where: *Mountain View, CA*

Fee: *$30.00 at the Door*

Questions: *Ross Peterson* ***wb6zbu@arrl.net*** *or 650-349-5349*

Register: *www.baears.com*

Sponsored by:

SPECS, Southern Peninsula Emergency Communication System
http://specsnet.org/

Special thanks to Google for providing the venue

Class size is limited, reservations are required.

Prospective Hams should have an active Ham as a mentor to assist in the familiarization with amateur operation

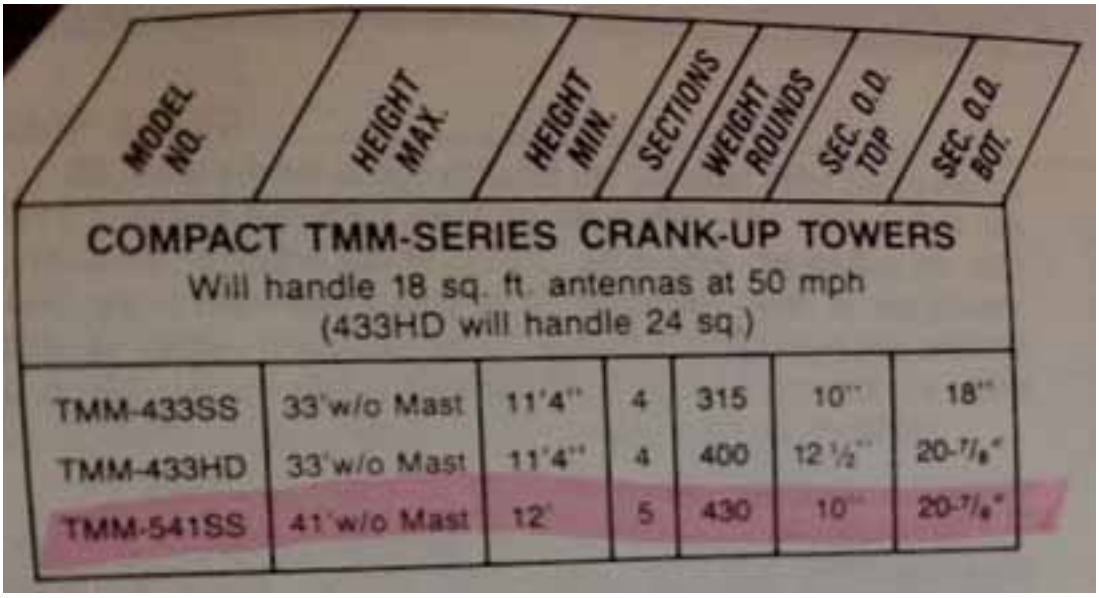
Reserve Your Space - Be a Ham!

Can't make this class? We can notify you of the next date and location...contact us.

Free 41-Foot Antenna Tower in Sunnyvale:

US Towers TMM-541SS: Free if you dismantle and take it away!

Contact Jeanie: jeanieramos at gmail dot com



COMPACT TMM-SERIES CRANK-UP TOWERS

Will handle 18 sq. ft. antennas at 50 mph
(433HD will handle 24 sq.)

MODEL NO.	HEIGHT MAX.	HEIGHT MIN.	SECTIONS	WEIGHT ROUNDS	SEC. O.D. TOP	SEC. O.D. BOT.
TMM-433SS	33' w/o Mast	11'4"	4	315	10"	18"
TMM-433HD	33' w/o Mast	11'4"	4	400	12 ½"	20-7/8"
TMM-541SS	41' w/o Mast	12'	5	430	10"	20-7/8"

WVARA Net Check-Ins (W6PIY)					
Each Tuesday at 8:30 PM					
All Repeaters Linked Together During Net					
Call Sign	**Name**	**02/10/15**	**02/17/15**	**02/24/15**	**03/03/15**
AA6RB	Roy	X		X	X
AB6XS	Kevin	X	X	X	
AE6JV	Bill	X	X		X
AF6AE	Bill	X			
K6BRF	Bert	X	X		X
K6QFO	Mike			X	
K6WAR	Bill	X	X	X	
KA6AMB	Mark	X	X	X	X
KD6DIF	Terry	X			
KD6VOR	Marv				X
KF6EMB	Svend	X	X		X
KF6OTD	Gwen	X			
KI6SLX	Peri	X	X		X
KJ6ZZI	Michael	X		X	X
KK6VF	Kevin	NET	NET	NET	NET
NU6P	John			X	X
W6ESL	Tom				X
W6HOC	Howard	X	X	X	X
WA6QYS	Lou	X			
WB6KHP	Dave	X	X	X	X
Total		16	10	10	13

Items For Sale By George, N6NKT:

Hy-Gain TH-7DX, 7 Element, Tri-Band, 10/15/20M $150

Manual available at http://www.hy-gain.com/support.php?productid=TH-7DX

Down from Palo Alto ARC office, disassembled and located in Cupertino

KLM KT-34, 4 Element, Tri-Band, 10/15/20M $200

Booton 92EA RF Voltmeter $200

Contact George Williams, N6NKT, n6nkt at yahoo dot com

Send Buy and Sell information to: het_editor at wvara dot org

2015 West Valley Amateur Radio Association Board

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The Heterodyne is published monthly by the West Valley Amateur Radio Association and sent to all club members via the web.

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Hope To See You At The Meeting!