



NVARC

Signal



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WWW.N1NC.ORG

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Next Meeting

April's meeting will be held 7:30 PM on April 17, 2025 at the Pepperell Community Center at 4 Hollis Street in Pepperell Massachusetts.

Our guest speaker will be Tom Frenaye K1KI, who will provide a "current events" talk about the goings-on at ARRL headquarters.

Elections

April is Election Month for NVARC.

Make sure to come to the meeting to vote!

Weekly 2-meter Net

The NVARC Information Net is held Monday nights at 7:30PM local time on the 2m N1MNX repeater – 147.345MHz+100pL. An informal net on 28.400(+/-) may follow the VHF net.

President's Corner
Bruce K1BG

Well, spring may be right around the corner, but the weather is not cooperating. I have a lot of projects to do, mostly with my antennas, and there's nothing like a little cooperation from the weather to help!

As expected, we had a terrific meeting in March. Dale Clement, AF1T, gave his talk on antennas, which is always interesting. NVARC had the largest meeting turnout that I can remember. Every chair and table upstairs in the community center was taken, and we had to resort to taking chairs from the room downstairs. A combination of club members, new hams, students in our current license class, and guests made it a rousing success. I hope this level of activity continues.

April's guest speaker is none other than Tom Frenaye, K1KI, who is the American Radio Relay League (ARRL) New England Director. Tom will give us an update on ARRL activities and what is going on regarding important issues affecting Amateur Radio.

NVARC's board of directors has decided to recommend that the club takes responsibility for the N1MNX repeater system. The recommendation is that a "repeater committee" be appointed by the president, and that financial support continue to be provided through donations. Plans are currently underway to update the repeaters, add functionality, and improve the antennas this spring. Stay tuned.

I'm excited to announce that I've appointed Zack, KC1VUY, to be NVARC's Public Information Officer, or PIO, a position held in the past by Dave Peabody N1MNX (SK). Zack will focus on the club's social media presence, and work with Eliot, W1MJ (our webmaster) and Jim, N8VIM (who has developed our YouTube channel) to promote the club to the local public. Be on the lookout for NVARC in the various social media outlets. Have ideas regarding our public image? Let Zack know.

This week, NVARC is finishing up another technician licensing class. It looks like at least three new hams will come out of the class, and possibly more. Thanks again to Les, N1SV, Bob, N1DVC, and Bill, KC1WTR, whose efforts have really paid off. And please take the time to welcome the new hams to the amateur ranks and do what you can to help them get on the air and get active!

John - KK1X, John – K1JEB, Matt – KC1TUV, and I (the “Nominations Committee”) have been hard at work contacting club members and seeing who will volunteer to run for office at our next meeting. If one of us has left you a message, please return the call even if you have no desire to run for office. And if you do have an interest in running for an office, please let one of us know. We hope to have a slate of candidates (or more!) at the April elections.

Speaking of elections, April's meeting is a “special meeting” because of the elections. “Absentee Ballots” will be emailed to all paid club members a week or so before the meeting night. If you vote by absentee ballot, please do not vote again at the club meeting.

For many years, NVARC members have helped provide communications for the annual Groton Road Race (<http://grotonroadrace.com/>). Ralph, KD1SM, coordinates this, and if you are interested, please contact him. The event takes place on the first weekend in May, which this year is Sunday May 4th. Please mark it in your calendar if you would like to help. See page 4 for more information.

Field Day is just around the corner (June 24th and 25th), and we are still looking for a Field Day Chair. If there are no volunteers then a group of us will essentially do what we always do – set up a few stations and demonstrated Amateur Radio, just like we would do in a “real” emergency. We need a chairperson to coordinate these activities, get publicity out, etc. Whoever volunteers will have the full support of the club membership. Any volunteers?

I want to thank everyone who has contributed to making NVARC successful over the last year – Our 2024 – 25 officers and board members: Les N1SV (vice president), John, K1JEB (secretary), Ralph, KD1SM (treasurer), and board members Jim, N8VIM, John, KK1X, and Fred, KB1RGT.

I personally feel that NVARC is on the upswing, with more members taking leadership roles. I started writing a “thank you” paragraph, but it was getting too long for a short article. Between license classes, the Signal, the repeater, our social media presence, our public service commitments, Field Day and a variety of other activities, these volunteers are help make NVARC a great club. Thank you.

As I mentioned at the last meeting, I will not be seeking re-election. NVARC needs fresh ideas! It's been a great year and a lot of fun. Please support our next president, whoever that person is. Thank you again for all your support. I appreciate it very much. - 73.

Bruce K1BG

Groton Road Race
Ralph KD1SM

**** Groton Road Race scheduled for Sunday May 4, 2025 ****

Greetings all,

The Groton Road Race Committee has requested the assistance of the Amateur Radio community for the Race on May 4. NVARC and the ham community have been providing situational awareness, health and safety communication for this event for over three decades.

The course circles Groton Hill, starting and ending at the Groton Hill Music Center. This is the third year the Race has followed this course. The planned event schedule this year is similar to 2024; the two main races start shortly after 10am. The communications support that we provide is expected to start around 9am and we should be done shortly after 1pm.

The Groton Road Race continues to be a major event for Amateur Radio in North Central Massachusetts. Those of you who have joined us in previous years know that the runners sincerely appreciate our presence. Many say so as they run past. This event is so large that Police Departments and other public safety organizations from several communities come to assist the Groton PD. Part of our role is to provide the communications from the Groton Police to these out-of-town officers who come to help with this event.

Contributing to the public good is one of the reasons Amateur Radio exists. Our public service events are a key opportunity for us to show our colors, volunteer our skills and equipment, and demonstrate why it is in the public's interest to continue to allocate precious RF spectrum to our the Amateur Radio Service. The Groton Road Race is a low-stress event and a great way to gain more experience with the public service aspect of amateur radio. Please consider joining us on the 4th.

If you are a new Ham or know of another Ham who is interested in helping at these events but unsure of what is expected or what equipment may be needed, please do not hesitate to introduce yourself (or them) to me.

The Groton Road Race Committee and the Groton Police Department repeatedly praise and express their appreciation for our assistance in providing communications for this event for many years. I do hope you will be able to join us this year; please let me know.

Thanks and 73,
-Ralph

[1] <http://www.n1nc.org/Events/>

[2] <http://grotonroadrace.com/>

[3] <https://grotonhill.org/>

Board Meeting Report

John K1JEB

Eliot W1MJ is currently working/coordinating on the new NVARC website. Needs to work on a process for content editing and administrative website maintenance.

Zack KC1VUY will be coordinating with Bruce K1BG, Jim N8VIM and Eliot W1MJ to be the club's Public Information Spokesman for the club's Website and YouTube.

Les N1SV has a guest speaker for the club's April Meeting. Tom K1KI will be speaking on new happenings at ARRL. Les is looking for a guest speaker for the club's May meeting.

John K1JEB indicated that the 2-meter NET on Monday nights is going well with 4 to 8 check-ins.

The 10-meter gathering after the 2-meter NET on 28.410 Mhz is also going well with 2 to 4 check-ins.

A lot of different topics are covered on both events.

Jim N8VIM is continuously improving the Repeater station. He is requesting donations both monetary and time from members to help with the maintenance of the entire repeater facility. The club is working on the process of assuming operational control of the repeater after the passing of the past control operator Dave Peabody N1MNX (SK).

Bruce K1BG is wrapping up the Licensing Class with approximately 4 graduates. There is one session left and the topic will be building dipole antennas.

Les N1SV will be working on a draft for the NVARC Special Service Club submission. And John K1JEB will be submitting the submission request into the ARRL system.

Bruce K1BG indicated that there were 4 winners for the Bromfield School Science Fair. However, the winners are currently difficult to reach so giving them their rewards is a challenge.

Progress of the Nominating Committee was discussed. Elections are in just a week.

A discussion was made to simplify the club annual dues collection. It was decided that further discussion is needed.

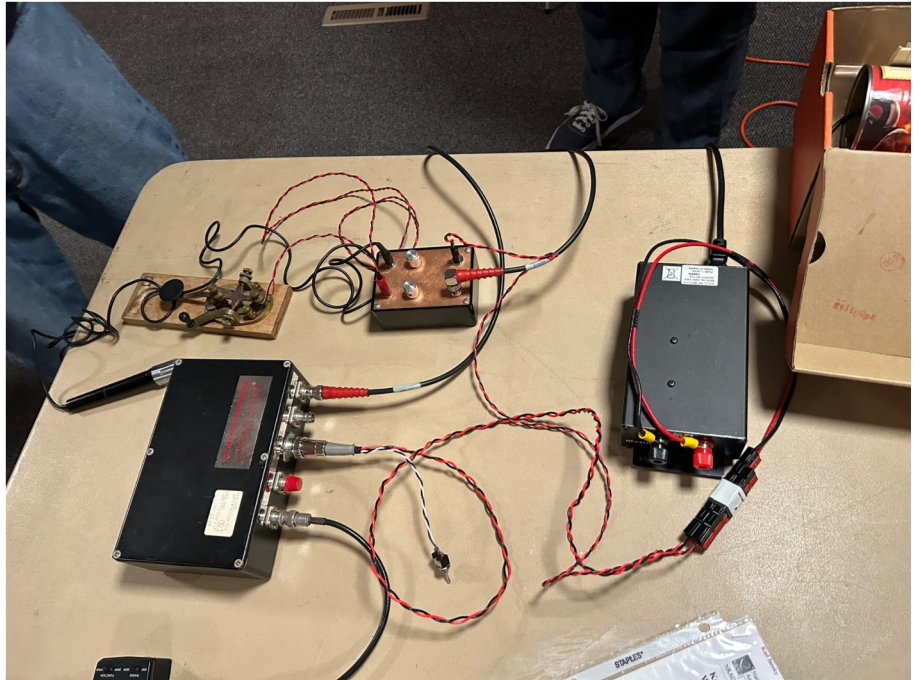
Les N1SV will be setting up a table at the [NEAR-Fest](#) for any Club members interested in selling off any spare gear. NEAR-Fest will be held May 2-3 at the Hillsborough County 4h Fairgrounds, 17 Hilldale Lane in New Boston NH.

Monster Attendance for AF1T Antenna Show!

Dale Clement, AF1T joined our meeting to give his antenna presentation. Dale's explanations and visual aids promote understanding of antennas as no book reading can. The attendance for the meeting was the largest I've seen. We needed to bring chairs up from the basement, and we ran out of tables! Dale was assisted by Mickie K1MKY and



Bruce K1BG presenting club mug to Dale AF1T



Dale's 70cm transmitter



Dale drew quite a crowd for his antenna show! Many new hams attended the meeting.



Dale's world-famous 70 cm pickle antenna

Photos this page courtesy Les N1SV

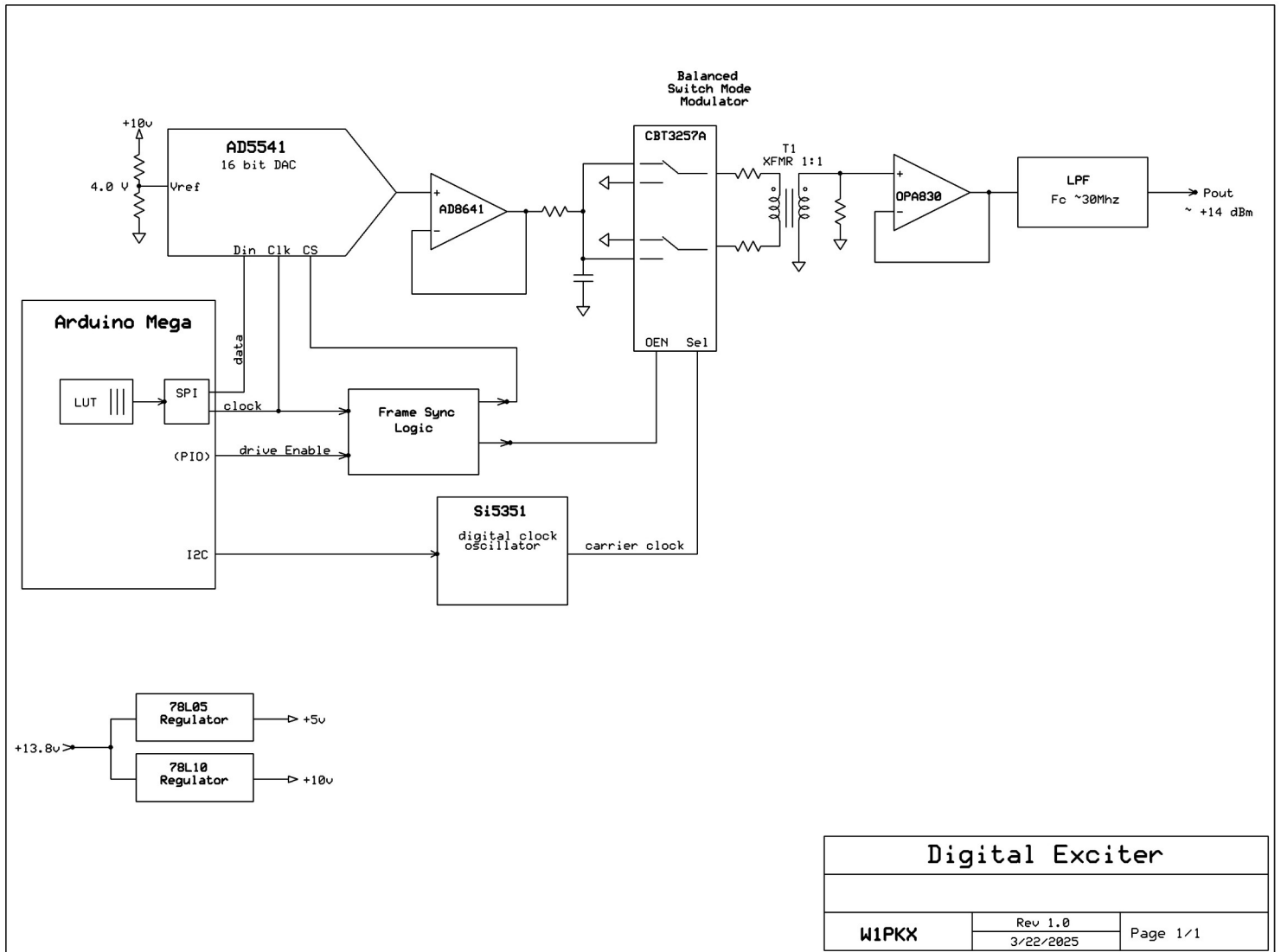
Digital Exciter Module Tom Baillio W1PKX

Today's high end DSP based transceivers all utilize some form of DSP windowing function to create a CW waveform. A windowing function has the advantage of optimizing waveform rise/fall times against bandwidth and side lobe suppression to minimize keyclicks. Achieving this balance requires precise numerical implementation - difficult to achieve by analog means but, not a problem in a DSP based radio.

I've wanted to implement this function in my home brew CW transceiver, the PKX40, since completing the design a few years ago. All the signal paths in the PKX40 are analog. I implemented waveform shaping by analog means at carrier frequency, requiring 3 PIN diodes, R/C time constants, biasing networks and countless hours of tweaking. I achieved decent waveforms but, rise/fall times were on the order of 5 to 6 mSec and results were frequency dependent - not ideal. So, this winter I spent some time developing a digital exciter module to replace the analog circuits which can precisely implement a digital windowing function without introducing the complexities of a DSP processor or FPGA.

The design is fairly straight forward requiring a minimum of components since the PKX40's existing Arduino (Mega) processor and Si5351 digital clock oscillator do a good part of the heavy lifting. A block diagram is shown next page:





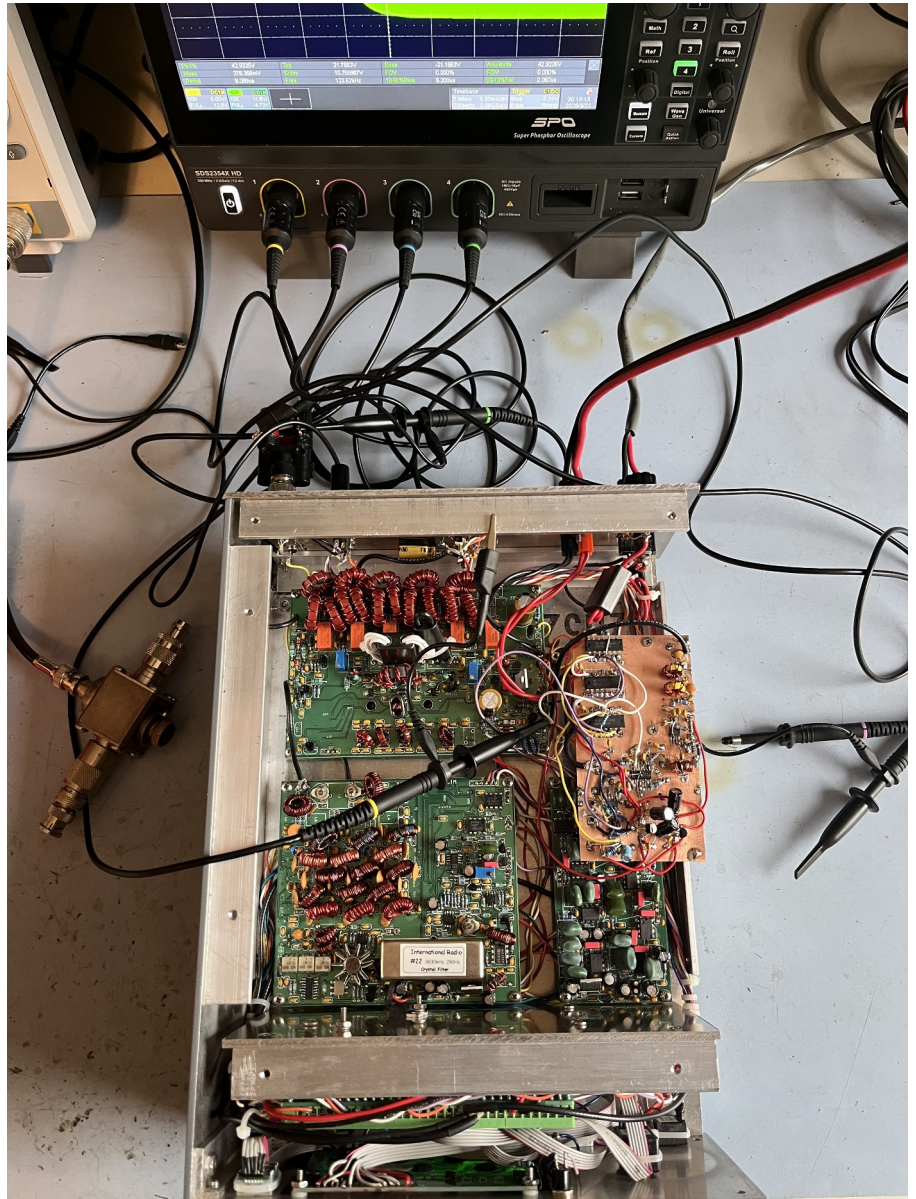
The waveform is pre-calculated by the Mega processor at power up and stored in a Look Up Table (LUT). At key down/up the LUT is serially read and output over SPI to a 16-bit digital-to-analog converter (DAC). The waveform rise/fall time can be varied by changing the number of samples stored in the LUT. The DAC output drives a balanced switch mode modulator toggled at carrier frequency by the Si5351 oscillator. The modulator output is buffered and low pass filtered before driving the PKX40's output PA stages. This approach has the advantage of starting at base band which eliminates frequency dependencies. You get precisely the same waveform on every band. An added advantage is the output power control can be incorporated in the LUT generation -eliminating the step attenuator I had been using to control power settings.

One issue I had to deal with is a result of how the Arduino Mega's processor implemented the SPI interface. With this processor the SPI "Chip Select" (CS) is not hardware based and must be implemented in software via programmed I/O (PIO). Since CS must toggle on every DAC sample, the PIO really slowed down the DAC update rate. With a few "old school logic" devices I generated the CS pulses directly for each sample which brought the DAC update rate down to around 4.5 usec per sample. So, a 1K sample LUT results in ~ 4.5 mSec. waveform edges.

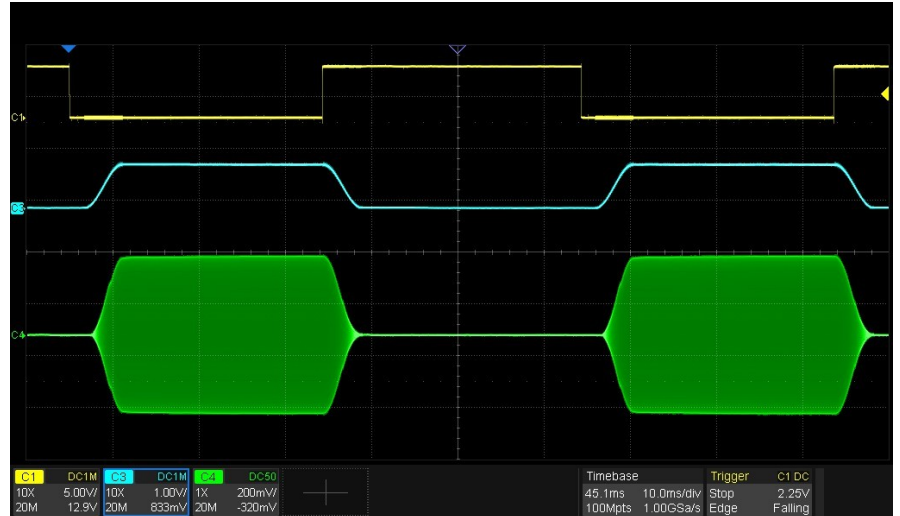
The DSP ecosystem is rich with various waveform functions. In general, these functions trade off the main lobe bandwidth against side lobe suppression. Functions with deeply attenuated side lobes tend to have wider main lobe bandwidth.

I've experimented with several functions and found the basic Hann window function is a good tradeoff between side lobe suppression and bandwidth.

I built a brassboard prototype of the design and inserted it into the PKX40 for testing:



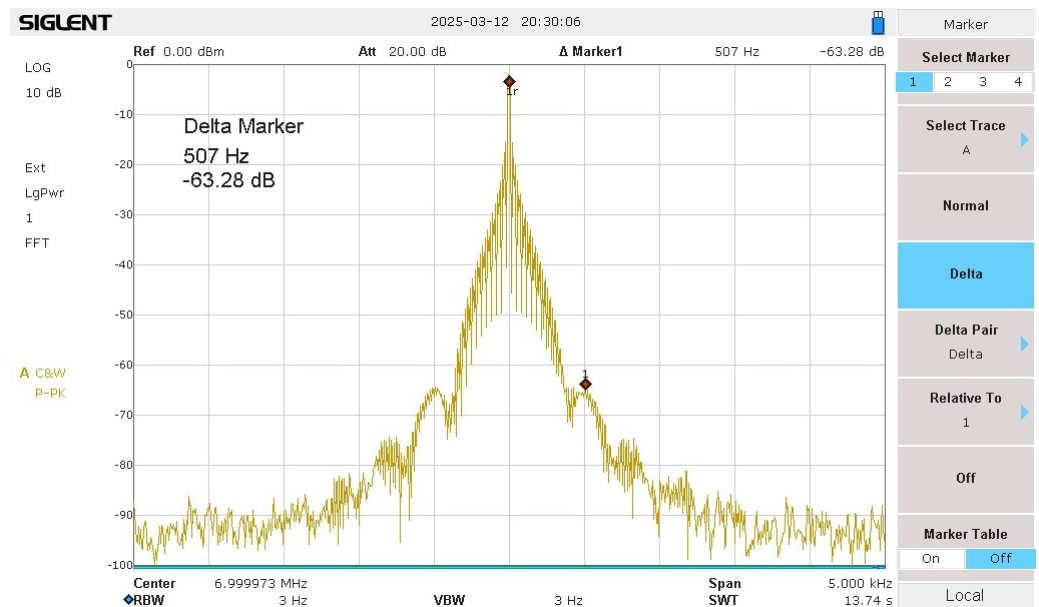
This oscilloscope measurement shows the Keyline input, DAC output and PKX40's output RF waveform:



Spectrum analyzer measurements of the resulting CW pulse train's spectrum shows excellent behavior. With a 4 mSec rise/fall time waveform, the RF power spectrum is below -63 dBc past 400 Hz spacing and rolling off below -90 dBc by 1 KHz:

Output power is +14 dBm at 3.5 MHz dropping to +12 dBm at 30 MHz. Dynamic range (maximum full scale output - minimum output) is around 54 dB. The minimum output floor is limited by

the CB3257's clock to output feed through. The 16-bit DAC is overkill, 10 or 12 bits would suffice.



To wrap this up I completed a PCB design through PCB Express and will have finished testing and integration into the PKX40 by the time you read this.

[Editor's note: I hope this turns into another article for May]

DXer's Notebook

Les N1SV

OK, I've made a DX contact. Now What?

Before we get to this month's DXers Notebook, I'd like to revisit March's discussion on FT8 & FT4. I recently returned from a trip to Bermuda where I operated FT8 Fox & Hound mode (F/H). So, I'd like to give a little more detail on how the F/H mode works. In F/H mode the DX station transmits up to five simultaneous data streams each of which is approximately 60 Hz apart. One undesirable feature I noticed was that when running full power and transmitting three or more streams, I would start to overdrive the transmitters PA causing intermittent high VSWR and current indications. This required me to reduce my output power from 110W to about 90W.

When the DX station responds to a caller, the caller automatically moves down below 1 KHz to the initial frequency that the DX station called him or her on and completes the QSO. Each data stream can finish one QSO and start another at the same time using a semicolon as a delimiter. Here is an example of what this looks like "N1SV RR73; AK4IT <5W1SA> - 14". On the first evening of my recent trip, I was running Japanese stations on 12m. Below is a screenshot from WSJT-X showing the activity. When you double click a call sign in the left window, it moves each to the Queue window. As slots become available the queued call signs move to the Progress window. As contacts are completed call signs disappear from the in-progress window and the process continues until both windows are empty. The number to the right of the callsign in the In Progress Window indicates the number of transmissions (repeats). While in Bermuda prior to the ARRL DX SSB contest, I made about 500 contacts in 24 hrs on 12,17, & 30m.

DXer's Notebook

The screenshot shows the WSJT-X v2.7.0 interface. The top window displays a list of stations calling DXpedition VP9/N1SV. The table below summarizes the visible data:

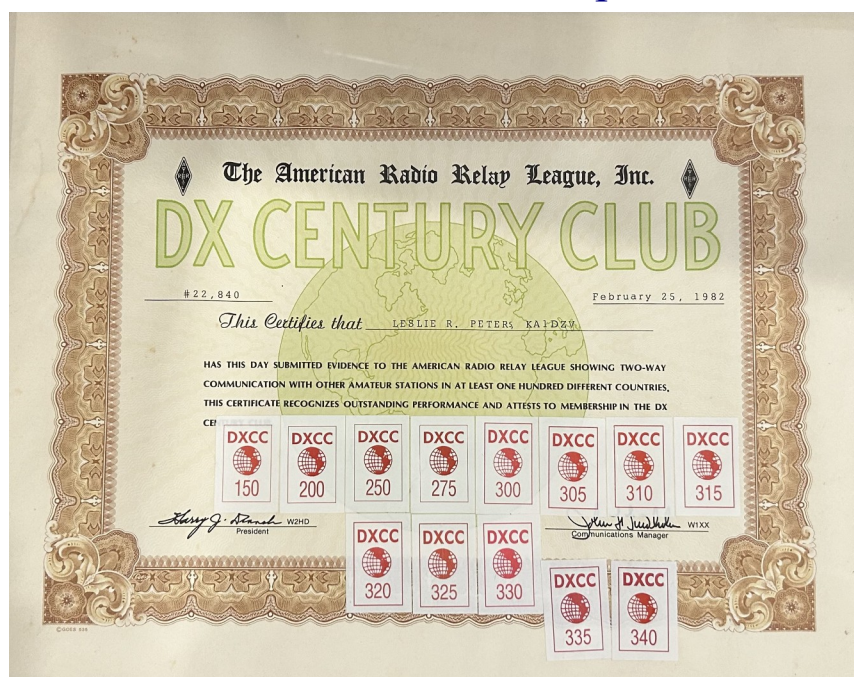
Call	Grid	dB	Freq	Dist	Age	Cont	Score	UTC	dB	DT	Freq	Message	
W3EEE	EL99	17	1004	1562	0	NA	-	223430	Tx	500	~	LU7HF N1SV -10	
JAODIN	PM96	-12	1524	11966	0	AS	-	223430	Tx	560	~	JA2VQF N1SV -06	
								223430	Tx	620	~	JG1ULT N1SV -08	
								223430	Tx	680	~	JA4LXY N1SV -11	
								223445	-4	0.6	1639	~	<VP9/N1SV> JA2VQF R-04
								223500	Tx	500	~	JA2VQF RR73; LU7HF <VP9/N1SV	
								223500	Tx	560	~	JG1ULT N1SV -08	
								223500	Tx	620	~	JA4LXY N1SV -11	
								223500	Tx	680	~	JH1LPZ N1SV -09	
								223500	Tx	740	~	HK5Z N1SV -19	
								223515	-13	0.1	1327	~	<VP9/N1SV> JA4LXY R-16
								223530	Tx	500	~	JA4LXY RR73; LU7HF <VP9/N1SV	
								223530	Tx	560	~	JG1ULT N1SV -08	
								223530	Tx	620	~	JH1LPZ N1SV -09	
								223530	Tx	680	~	HK5Z N1SV -19	
								223530	Tx	740	~	JE1SYN N1SV +03	
								223600	Tx	500	~	JH1LPZ N1SV -09	
								223600	Tx	560	~	HK5Z N1SV -19	
								223600	Tx	620	~	JE1SYN N1SV +03	
								223600	Tx	680	~	JH1VPB N1SV -06	
								223600	Tx	740	~	WK10 N1SV -09	

The bottom window shows the transmission controls. The current frequency is 24.909 000 MHz. The mode is FT8. The date and time are 2025 Feb 27, 22:36:01. The queue contains JA4DND, JA1WSK, and KA3ZLS. The in-progress list includes LU7HF, JG1ULT, JH1LPZ, HK5Z, JE1SYN, JH1VPB, and WK10. The interface also shows a 'Fox' button and various settings like 'Tx 500 Hz', 'Report 18', and 'Auto Seq'.

Running DX stations as VP9/N1SV

OK now back to this month's topic. Rag chewing with a DX station can be a lot of fun. I've had some really good conversations and met some wonderful people on the air. I can remember as a teenager one conversation in particular with a South African station on 15m SSB. His signal was so clear it was like he was sitting right next to me. We talked for maybe an hour where he indulged my adolescent questions including whether there were really animals like Lions, Elephants, & Giraffes there. Yet another facet of DXing is designing and assembling a station and seeing how many different and rare countries you can contact. Some countries with a large ham population, like many in Western Europe, may be easy to contact. While others like North Korea where amateur radio is currently illegal, are impossible. There is a certain challenge to see how many different countries you can work. For me I've always been driven by the hunt for that new country.

The ARRL has a number of operating awards designed to promote on air activity. The ARRL's premier award is the DX Century Club (DXCC). The DXCC award dates back to 1935 with Clinton Desoto, see <https://www.arrl.org/desoto> for the history lesson. The basic mixed DXCC award is given out for confirming two-way contacts with at least 100 DXCC entities. What's a DXCC entity you say? It's a distinct geographical and political entity as defined by the ARRL. As an example, Alaska and Hawaii while US states, are considered separate entities (I know it's a little complicated). Here is a link to a complete set of rules including the current list of DXCC entities <https://www.arrl.org/dxcc-rules>



N1SV (KA1DZV) MIXED DXCC Award From 1982

Contacts for DXCC credit can be made on virtually any band or mode except for those through a terrestrial repeater or on 60m. Contacts can be confirmed either through the use of Logbook of the World (LOTW) or written confirmations like traditional QSL cards. When I started DXing in the 80s, LOTW wasn't even a thought back then, so I've been a little late to adopt it and as such have more than 20K QSL cards. While I still like QSL cards, I would strongly recommend using LOTW, it's faster and cheaper to confirm contacts. After I returned from my trip to Bermuda, I uploaded my 500 contacts I made to LOTW and almost immediately had 365 confirmations. For those wanting more information on LOTW, here is a useful link <https://www.arrl.org/logbook-of-the-world>.

LOG IN to your Logbook Account

Log in to your LoTW account!
Go Now



Trying to work your first 100 countries can seem like a real challenge. But along the way you'll learn a lot about propagation, antennas, and different operating techniques. Besides the basic mixed DXCC award, the ARRL also offers DXCC awards for most single bands and as well as single modes like CW, SSB, & Digital modes. Endorsements are available for all DXCC awards see <https://www.arrl.org/dxcc-rules> for the complete rules. When you decide to start collecting countries, everything is new and your country count increases quickly as you work many of the countries with a large ham population that are geographically close. But the more you work, the fewer there are and then it begins to take longer to find a new one. This is where the challenge begins, hunting for that new elusive country. When this occurs consider adding a new band, it can be helpful because you never know what band or mode that new country may show up on.

DATE	STATION CALLED	CALLED	MY SIGNAL	YOUR SIGNAL	FREQ	MODE	POWER	TIME OF CONTACT	OTHER DATA	NAME	Q	P
2/7/80												
20:57	KA1DQO	KA1DZV	589	599	3.72	A2	65	21:35	Groby, MA.	BOCK	✓	✓
3/7/80												
20:40	KA1DSX	"	599	599	3.73	"	"	22:02	Mansfield Center, Ct.	ALICE	✓	✓
3/9/80												
21:00	WAWOD	"	599	599	3.70	"	"	21:52	Middlebury, VT.	RED	✓	✓
3/10/80												
19:34	WASSEN	"	589	599	3.73	"	"	20:23	E. Frostown, MA.	LOV	✓	✓
20:54	WASWV	"	589	589	3.73	"	"	21:10	Methuen, Ct.	LARRY	✓	✓
3/11/80												
21:12	W2ADQI	"	579	599	3.73	"	"	21:31	Albany, N.Y.	JOE	✓	✓
21:49	KA2DJI	"	599	599	3.74	"	"	22:06	Warwick, N.Y.	GARY	✓	✓
3/18/80												
21:25	KA1EKG	"	579	589	3.73	"	"	21:52	Wells, VT.	SKIP	✓	✓
3/12/80												
21:41	KA1BBT	"	589	599	3.73	"	"	22:00	Ashbury, MA. (false CONTACT)	BILL	✓	✓
3/14/80												
12:40	KA1BJ6	"	569	589	3.74	"	"	12:59	Hardwick, VT.	ART	✓	✓
3/16/80												
20:35	AD1N	"	5760	579	3.73	"	"	21:15	N. Stonington, Ct.	TED	✓	✓
3/21/80												
22:56	KA1DTG	"	537	579	3.73	"	"	23:02	Tolland, Ct.	JOHN	✓	✓
3/27/80												
23:44	KA1DTG	"	579	579	7.15	"	-65	23:55	Tolland, Ct.	JOHN	✓	✓
3/29/80												
19:56	KA3BDN	"	449	569	7.15	"	20 ±	20:29	Pottstown, PA.	HARRY	✓	✓
4/17/80												
00:30	W222G	"	599	599	7.16	"	180	-	W2ADQI's QTH Canastota, N.Y.	ART	✓	✓

KA1DZV Log Book from 1980

When I was first licensed, I logged all my contacts in a paper logbook. At the time it was a requirement by the FCC. Here is my original logbook with my first entries from 1980. These days there is no FCC requirement to keep a logbook however, many stations still do. When computers became popular, software was developed to create logs, keep track of QSLs, and interface with radios to record your operating frequency and mode automatically. These days there a lot of choices in general logging software including but not limited to:

Ham Radio Deluxe - <https://www.hamradiodeluxe.com/>
DX4WIN - <https://dx4win.com/>
Log4OM - <https://www.log4om.com/>
Logger32 - <https://www.logger32.net/>
DXLab - <http://www.dxlabsuite.com/>

And there probably are a few more that I just haven't heard of. Here are reviews for some of these <https://www.eham.net/reviews/view-category?id=27> . Some may be outdated and may not be for general logging. When I first started using logging software, somewhere around 2000 plus or minus, I used DX4WIN and loved it for many years. But with the advent of LOTW and FT8, development with DX4WIN stagnated, so I turned to Ham Radio Deluxe. It works pretty well but, in the end, you really need to choose what's right for you. Some of the logging software options above are free some are not. You really need to do your own research on this.

QSL Gallery – This is ONE QSL card on four panels!



DXer's Notebook

Scarborough Reef, at the time of this activation was the number one most needed entity. It has proven to be one of the most difficult entities ever to operate from. This DXpedition has been in the making some five years and was presented with challenges that changed literally from day to day. After sailing from Hong Kong for almost 80 hours in bad weather on the motor vessel "Deep Blue", the team arrived at the reef. The building of the support structures required time and intense effort and one station on Rock 2 was fully operational the first night by AA4NN and I8NHJ. Rock 4 became operational on day 2, rock 1 on day 3 with rock 3 soon thereafter. When the operation was fully operational, four separate rocks were utilized allowing around the clock operation. The need to operate around the clock proved to be quite a challenge with the night shift lasting more than thirteen hours. Each operating position was completely self-contained with radio equipment, generator and antenna. Only one rock could hold two operators while the three remaining rocks operated with a single operator. Once darkness came there was no way to reach any of the rocks.

In 7 days of operating 45,830 QSOs were made on 160 through 10 meters in 145 DXCC countries using three modes. 20 meters was the most productive band producing 21,880 QSOs. 80 and 160 meters proved to be difficult because of limited space for the antennas required for those bands. Because our goal was to give a new entity to as many DXers as possible, two stations were kept on twenty meters twenty-four hours a day. This resulted in an extremely high number of unique stations worked: BS7H worked 17,884 uniques or 39% of the total QSOs.

Each rock was equipped with an ICOM IC7000, Acom 1010 amplifier and SteppIR vertical. Heil headsets were used on SSB. The 80 and 160 meter operation used a Butternut HF2V and computer logging was accomplished using CT. ICOM 2 meter handhelds provided around the clock local communications.

The team wishes to thank the CRSA for their efforts in obtaining authorization to land and operate. We also thank our off-site support team and web master for their continuing support. We thank BV6HJ who built the platforms and maintained the entire infrastructure. We also want to express our sincere thanks to NCDXF, The Colvin Foundation (ARRL), ICOM, INDEXA, Carolina DX Association, GDXF, W5BXX, K4BVQ, W5IZ, K3DI, W4VHF and AC8G who were principal sponsors by providing equipment and financial support. In addition we wish to thank those many clubs and associations worldwide for their generous financial support. We also wish to thank the Philippine Amateur Radio Association for their sponsorship. And a special thanks to the thousands of DXers who had confidence in our operation and willingly sent financial support. Above all, without the support of all involved this DXpedition could not have taken place.

Last but not least, we wish to express our sincere appreciation and heartfelt thanks to Captain Desmond Woo and his crew of the "Deep Blue" who without hesitation provided 24 hour support in every way imaginable. Captain Woo and his crew had no knowledge of our hobby or what was to come but once the team arrived in Hong Kong and began the operation and all that it entailed they quickly adapted to every requirement with efficiency, enthusiasm and professionalism... and we hear they are ready to go again!

Operators: Front - AA4NN, DL3MBG, I8NHJ, ND2T, BV6HJ, W6RGG
 Middle - OH2BH, K9AJ, K4UJ, BA1HAM, N6MZ
 Rear - 9V1YC, BA1RB, BA1AAX, BA4RC, BA4RF

Off Site Support Team: N4XP, N1DG, K5YY, BV4FH, DU1JMG, DU9RG, DU1EV, NR2B6, W6XA, BV4DP, BM4HS6, N4GN

Web Master: N1DG

QSL Manager: KU9C

IOTA AS-116

Grid Square Ok85

WWW.SCARBOROUGHREEF.COM



These DXers supported this DXpedition with a donation of \$100 or more:

W5BXX	K4BVQ	K3DI	W4VHF	AC8G/J37K
K7HC	N8TT	W0BW	AA8EY	XE1EK
W4YCH	W4JO	K4MBO	W6BO	SM3DMP
N4HH	VK5WO	W9GIG	WD5COV	AB9H
N6GM	W8LRL	WB5DNT	SM5AQD	W5CN
NN6EE	K7VC	K9CT	W2RS	W8GC
N2NS	ON4UN	W8TN	W3UR	W5SL
K9VAL	N4AA	W4JTL	BA4TB	W8LWU
WA1S	N5PA	DJ0QN	W0FK	DL2OE
W8UV	W4JS	WOGJ	DK3CU	W8GG
BM6EAB	WF4W	W4DK	NN5O	K8RD
W4NL	KE5PO	N4AH	W2NRA	W0NB
W7ACD	K5YG	N6OC	E8BYR	NF4A
K0BS	I4MKN	KB7UB	N6OX	K0GY
W4UBC	W3YY	K2HK	HA5WA	G4BWP
EA7TV	N3KS	W0BV	K4XR	OK1RD
DL8CMM	K0DEQ	W0KW	W4QB	K4IQJ
VE3IQ	HL1VAU	KV4T	KS4YT	K8SL
K9XJ	W4ZRZ	W4AVY	WB5JID	IK8CNT
W1AO	K1PL	N6XI	W0ZT	N6QI
K1NOK	W2CR	EA8JF	WD5COV	KY5I
G3NOH	OK1FM	W8ILC	JO3EVM	N4PJ
K4XH	K4JD	K4HGX	M0ADG	OK2SK
PY2OCG	WA4DDH	WA5IPS	W4GF	JH2BNL
K4XG	K3UL	XE1V	K6NR	N7TR
VA3YX	K0PC	WX2K	K2FF	OE1TKW
K5GH	K5AB	KA5M	AA1ON	HB9DHG
A10O	N2OO	N6BU	K9IR	N5AU
W4ZCB	N4TD	K2MUB	DL9RCF	DL6AU
K3WGR	WA2OAX	K2ZD	K2TE	K6MBY
W7HUY	N4NX	K4UEE	VA7XX	KM7PT
W1GDQ	W5IZ			



Oklahoma DX Association



Minnesota



N1SV

Date	UTC	Band	RST	2X
01-May-2007	12:13	20m	59	SSB
04-May-2007	11:13	20m	599	CW





Scarborough Reef is an area in the South China sea. The reef is a disputed territory between China, Taiwan, and the Philippines. It's basically a bunch of rocks sticking out of the ocean with the highest point at about 5-feet above sea level. It continues to rank as the #2 most wanted DXCC entity behind only North Korea. 2007 was the last time this rare DXCC entity was activated, yes 18 years ago! Back then the DXpedition was characterized as the most difficult entity ever to operate from. The team had to build platforms on the rocks large enough to completely support each station, including all equipment, antennas, and generators.

Geographically the East Coast of North America is the most difficult path to reach Scarborough Reef. I was extremely fortunate on two different mornings to be able to work them, thanks to their excellent operators and their directed calls for North American East Coast stations. This continues to be coveted QSL of mine.

Nashoba Valley Amateur Radio Club
PO Box 900
Pepperell MA 01463-0900
<https://n1nc.org>

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editor@n1nc.org
to reach the newsletter editor.

Editor: John Griswold KK1X
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