



January 2022

Feedback

Newsletter of the Georgian Bay Amateur Radio Club



Contributions or comments? Send me an email:
va3kot at gbarc dot ca



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President's Report

John Corby VA3KOT
2021/22 GBARC President



PHOTO BY BRAD LOCKHART
Cullen Amateur Radio Society member John Corby, VA3KOT, operating a 20-hour session held at Island Park in Gravenhurst. Members of the organization visited the public to learn what they could do about the hobby, and other radio operators from around the world.

Do We Still Need a Club?

It's a provocative question isn't it? What is the purpose of the Georgian Bay Amateur Radio Club? Every member will have their own answer to that question. If we refer to the club's website there is a mission statement on the homepage:

Our goal is to improve our knowledge in electromagnetic communication, make our expertise available to our community and to encourage and assist others to enter the world of amateur radio.

Let's break that down and analyze each phrase individually.

Our goal is to:

- ◆ improve our knowledge in electromagnetic communication
- ◆ make our expertise available to our community
- ◆ assist others to enter the world of amateur radio

1. Improve our knowledge in electromagnetic communication

How are we doing on that front? Is that even of any interest to everybody? If somebody's interest in amateur radio extends only to checking into a couple of nets and shooting the breeze with friends on the air, they aren't going to get too excited about stretching the bounds of electromagnetic communication.

Incidentally, "electromagnetic communication" encompasses a whole lot more than radio. The electromagnetic spectrum extends from "DC to Daylight". Strictly speaking, our remit runs from DC to Microwave, although X-rays and Gamma-rays do play their part in our ability to use the

limited segments of the spectrum covered by our licences.

If we go back in history, to the origins of the amateur radio service, it was perceived that amateurs would actually assist in the development of radio communications. Radio communications was an experimental science. Amateurs were self-motivated experts in their field who helped pioneer new technologies and invent innovative ways of using the medium for the benefit of all.

And many amateurs did just that. If we look at who founded the main amateur radio equipment suppliers we find they were hams! There is an example of that in this newsletter – see "The Last Word" on the back page. But, in the beginning, there was no commercial amateur radio equipment. When I first developed an interest in radio and attended my first club meeting (as an unlicensed SWL in 1965) the members were sharing information on how to convert surplus World War II military radio sets – like the No. 19 Set – to work on the ham bands.

Nowadays, many hams are "appliance operators" who would rather pay hundreds of dollars for a coil of wire and a couple of insulators instead of learning the basics of how to build a simple dipole.

So how does GBARC help our members "improve our knowledge in electromagnetic communication"? We can do it if enough of us are willing to share our expertise with others. We had a good year in 2021 with our TechTalks program BUT, we ran out of steam when only 3 or 4 members were willing to come forward and share

their knowledge. Mission statements are fine and dandy but it's action that counts!

Are you willing to help us "improve our knowledge in electromagnetic communication"? Every monthly club meeting will now have a mini TechTalk on a technical topic. You can speak for as little as 10 minutes if you wish. Whether GBARC succeeds in fulfilling its mission statement depends on YOU, so get in touch with me and schedule your contribution.

2. The second objective of our mission statement is "to make our expertise available to our community". I can think of no better example of that than ARES/ACS. I have been actively involved in what was formally known as the Amateur Radio Emergency Service (ARES) for over twenty years. My own opinions of the service have been framed by pragmatism and that is why I have serious reservations about the direction the service is heading under its new banner of "Auxiliary Communications Service (ACS)".

Nonetheless, there is an implied obligation for every amateur radio operator to contribute to public service. That is the reason we have been given slices of the scarce electromagnetic spectrum (for which commercial organizations pay staggering amounts of money). If we don't continuously demonstrate our willingness and ability to act for the benefit of our community our cosy hobby could come under threat from powerful commercial forces.

Going forward into 2022 the executive has made the 2nd Tuesday of each month (formally used for TechTalks) available to our two ARES/ACS Emergency Coordinators. Frank, VA3GUF, our EC for Grey County, gave us a valuable start in January. The rest of the year's program is still awaiting clarification.

3. The third element of our mission statement is to "assist others to enter the world of amateur radio".

We are doing a pretty good job of that within the confines of what is currently allowed by our caring, benevolent masters in government. Tom VA3TS is a certified examiner and has helped a lot of new hams enter the hobby. Tom VA3TVA frequently responds to inquiries from interested parties.

There is a fourth, unwritten, component of our mission statement and it is to "to enjoy the camaraderie of associating with others who have the same interests". Let's call it the social element. We should all have fun and enjoy each other's company while getting on with the business of what makes this club viable.

If we don't fulfill our mission statement because too many members stare down at their shoes when we ask for volunteers then I ask again, "do we still need a club"? GBARC is almost 50 years old. My vote is to keep it going for another 50; I hope enough other members feel the same way and are willing to take action to make it so. For the rest – nice shoes!

GBARC Executive 2021/22

John Corby VA3KOT
Tom van Aalst VA3TVA
Rob Walker VE3RWY
Doug McDougall VE3VCG

President | Newsletter Editor | Net Manager
Vice-President
Secretary (Acting Sec: Marvin Double VE3VCG)
Treasurer





Meeting Minutes

Marvin Double VE3VCG

Acting Secretary



Georgian Bay Amateur Radio Club Meeting Minutes

7:00 (19:00) EST December 28th 2021

Attendees:

John VA3KOT, Rob VE3RWY, Janet VA3EAC, Marvin VE3VCG, Janet VA3EAC, Tom VA3TS, Dave VE3WI, Doug VE3DGY, Jim VE3JMD

Meeting was conducted via Zoom and was called to order by John VA3KOT, President of GBARC, at 7:00 (19:00) EST.

President's Report

John opened the meeting by sharing a personal note. It was 40 years ago on December 28th that he and his family landed in Canada from Britain. John expressed his gratitude that Canada had been "good to him and his family over these many years."

John VA3KOT read out a note from Maureen VE3MIO in which she expressed her sincere appreciation for having been selected as HAM of the Year in 2021. She offered good wishes to all club members for the coming year. John VA3KOT noted that there is a history of the GBARC HAM of the year in the current edition of the club newsletter.

John VA3KOT displayed a semi-automatic CW key, also known as a "Bug" that was manufactured for the RCAF by the Wilson Manufacturing Company of Toronto. It was part of the package of radios and accessories donated to GBARC and PEARC by Eric Carre VE3BYZ.

Secretary's Report

The minutes from the November Meeting have been published in the December newsletter and

everybody has had a chance to read them so John VA3KOT asked for a motion to accept the minutes as published.

Motion: Doug VE3DGY

Second: Adam VE3FP

Motion: Carried

Treasurer's Report

Doug VE3DGY read the Treasurer's report into the record. No vote was taken to accept the report.

John VA3KOT noted that club membership renewals have been slow to come in and suggested that this may be any indication that we may lose some members in 2022. He further suggested that some club members enjoy the social activities of the club, many of which have been impossible owing to COVID restrictions. This he felt may be one reason members might not renew membership. Tom VA3TS suggested that we undertake a group mailing to remind members to renew memberships. Tom also accepted to undertake this mailing to the membership.

New Business

No new business was introduced

Adjournment

Motion: Adam VE3FP

Second: Doug VE3DGY

Motion Carried

Meeting declared adjourned

Next Meeting

GBARC General Club Meeting

Date: Tuesday 25th January 2021 at 7:00pm

Location: Zoom:

<https://zoom.us/j/97117108572?pwd=U1BMRkMveFBQaWhacHJLbXc2RDJJZz09>

Meeting ID: 971 1710 8572

Passcode: 202450

Draft Agenda:

Call to Order, John VA3KOT

Presidents Report, John VA3KOT

Secretary's Report - approval of minutes of last meeting, Rob VE3RWY pp Marvin VE3VCG

Treasurers Report - Doug VE3DGY

New Business – club

Short Technical Presentation – volunteer requested, contact John VA3KOT

Discussion - club

Motion to adjourn - club



How to Install Windows 11 on Unsupported CPUs

h/t GBARC Webmaster Tom VA3TS

If you're currently seeing "This PC doesn't currently meet Windows 11 system requirements" or "The processor isn't currently supported for Windows 11," there's a Microsoft-approved registry hack that should instantly make it better.

To learn more visit:

<https://www.theverge.com/22715331/how-to-install-windows-11-unsupported-cpu-intel-amd-registry-regedit>





Net Reports

John Corby VA3KOT Net Manager



Georgian Bay Amateur Radio Club meets on-the-air each Wednesday evening at 7:30pm on repeaters VE3OSR (146.94 – CTCSS 97.4) in Owen Sound, VE3GBT (146.73 – CTCSS 97.4) in Paisley, Ontario and immediately afterwards on 3783KHz +/- VE3OSR can also be accessed on Echolink (node #333014).

01 Dec 2021

NCS: Tom VA3TS

Topic of discussion, What are your opinions on the Hobby of Radio and its future

VHF

Bob KO4DXQ Tennessee
Larry VE3GIO Woodstock
Doug VE3DGY Annan
Paul VE3EFQ Owen Sound
James VA3MFO Mount Forest
Maureen VE3MIO Wiarton
John VA3KOT Owen Sound
Bernie VE3BQM Owen Sound
Rob VE3RWY Owen Sound
Marvin VE3VCG Paisley
Janet VA3EAC Paisley
Dave VE3WI Port Elgin
Richard VE3OZW Mildmay
Greg VE3RQY Owen Sound
Adam VE3FP West Grey

HF

Adam VE3FP West Grey
Marvin VE3VCG Paisley
Larry VE3GIO Woodstock
Maureen VE3MIO Wiarton
Dave VE3WI Port Elgin
John VA3KOT Owen Sound
Bernie VE3BQM Owen Sound
Richard VE3OZW Mildmay
Rob VE3RWY Owen Sound

08 Dec 2021

NCS: John VA3KOT

Topic: GBARC Winter Challenge

Check-ins:

VHF

VA3TS Tom Shallow Lake
VE3VCG Marvin Paisley
VE3BQM Bernie Owen Sound
VE3WI Dave Port Elgin
VE3RQY Greg Owen Sound
VE3RWY Rob Owen Sound
VE3FP Adam Elmwood
VA3EAC Janet Paisley

HF 3777KHz

VA3TS Tom Shallow Lake
VE3BQM Bernie Owen Sound
VE3RWY Rob Owen Sound

15 Dec 2021

NCS: Richard VE3OZW

Topic for discussion -

1. Do you have noise on HF? If so, how did you remove it? If not, are you able to share any tips and tricks with the group?
2. Do you have a favourite holiday drink or treat that you enjoy at this time of the year?

VHF (no echolink stations tonight due to computer requiring a reboot after power outage)
VA3MFO Jim
VA3KOT John

VE3WI Dave
VE3DGY Doug
VE3FP Adam
VE3RQY Greg
VE3BQM Bernie
VE3MIO Maureen
VE3VCG Marvin
VA3EAC Janet

HF

VE3BQM Bernie (net controller due to long band
and heavy static crashes)
VE3RQY Greg
VA3KOT John
VE3DGY Doug

22 Dec 2021

NCS: Bernie VE3BQM

Topic: Xmas Tradition
2 MT net

Callsign Given Names
KO4DXQ Bob
VE3MIO Maureen
VE3GIO LARRY
VE3EFQ Paul
VE3FP Adam
VA3KOT John
VE3RQY Greg
VA3TS Tom
VE3WI Dave
VE3OZW Richard
VE3FGG James
VA3MFO Jim
9Z4DX Bertrand
VE3FAS Philip John

HF 73 round
VE3FGG James
VA3MFO James
VE3FP Adam
VE3OZW Richard

VA3KOT John
VE3FJN Colin
VE3WI Dave
VA3TS Tom
VE3RQY Greg

29 Dec 2021

NCS: Marvin VE3VCG

Question for the net: "On what date, year and
month, as PC-DOS released?" Answer: August,
1981

Topic for discussion: Comet Leonard (The
Christmas Comet), and/or any other celestial
event participants wish to mention or discuss.

Check-in's 2 meters

KO4DXQ / Robert / Tennessee via Echolink
9Z4DX / Bertrand / Trinidad & Tobago via
Echolink

VA3KOT John
VE3EAC Janet
VE3BQM Bernie
VE3DGY Doug
VE3RQY Greg
VE3OZW Richard
VE3RWY Rob
VE3WI David
VE3MIO Maureen

Check-in's 80 meters

VA3KOT John
VE3BQM Bernie
VE3RWY Rob
VA3FJN Colin
VE3MFO Jim
VE3RQY Greg
VE3OZW Richard

This was the last GBARC net for 2021





GBARC Membership

h/t Doug McDougall VE3DGY Treasurer

The current GBARC membership is listed in the table below, based on dues received as of publication date. **Remember the next year's dues are payable between October and December each year.**

NoCall	Doug Ryan	Warton	VE3JMD	Jim Reeves	Port Elgin
VA3DFL	Daphne Lorch	Teeswater	VA3KOT	John Corby	Owen Sound
VE3FP	Adam Karasinski	Elmwood	VE3VCG	Marvin Double	Paisley
VE3BQM	Bernie Monderie	Owen Sound	VE3MIO	Maureen Nightingale	Warton
VE3MPG	Bob Baillargeon	Sauble Beach	VE3PQ	Paul Edgley	Georgian Bluffs
VE3LKD	Bob Droine	Owen Sound	VE3BBN	Peter Richards	Port Elgin
VE3APY	Carl Wall	Durham	VE3QVC	Phillip De Kat	Owen Sound
VA3DNY	Dan Mills	Owen Sound	VE3OZW	Richard Osborne	Mildmay
VE3WI	David Newcombe	Port Elgin	VE3RWY	Rob Walker	Owen Sound
VE3BAK	David Rosenfeld	Owen Sound	VA3TS	Tom St.Amand	Shallow Lake
VA3NBP	Don Hall	Lions Head	VA3AFD	Brent Latimer	Port Elgin
VE3DGY	Doug McDougall	Owen Sound	VE3UOK	Dwight Dyson	Thornbury
VE3WDZ	Douglas Freeborn	Teeswater	VA3FYB	Eric Rouse	Tobermory
VA3GUF	Frank Gufler	Owen Sound	VE3NX	Jim McLaren	Sauble Beach
VA3STG	Fred Lorch	Teeswater	VE3NBJ	Norm Pratt	Owen Sound
VA3EAC	Janet Double	Paisley	VA3TV	Tom VanAalst	Owen Sound

We have a total of 32 paid-up members but I understand that some more renewals are pending. If your name/call is not on the list and you believe it may have been omitted in error, please contact Treasurer Doug VE3DGY (treasurer@gbarc.ca) and let him know.

Our club membership is in decline but that is not unusual among amateur radio clubs lately. We can point to government restrictions on in-person gathering limits, closures of indoor restaurant dining, lockdowns etc as a primary cause. We had all hoped that the situation would have improved by now, as it has in other countries and some US states. Unfortunately that is not the case so far. So it looks as though we may have to adapt to a continuing curtailment of our social activities.

Social activities are a key component of club life but we must remember that what brings us together is our passion for the radio hobby itself. I also belong to several online ham radio clubs whose membership is GROWING. We NEVER meet in-person, only on-the-air. So let's come to terms with the new reality of ham radio club life.

If you are reading this newsletter and have been hesitant about whether to renew your membership this year because you miss the Saturday breakfasts, the Christmas lunch, the in-person meetings and the camaraderie of Field Day, please reconsider. We are approaching the 50th anniversary of our club and that is something to be very proud of; stay on board and help us prepare to celebrate!





New GBARC Member Eric VA3FYB

John Corby VA3KOT 2021/22 GBARC President

Please join me in welcoming a new member to GBARC. Eric Rouse VA3FYB lives in Tobermory. He kindly gave me permission to use his biography from QRZ.com for the newsletter.

Obtained my Licence in February of 2021. I come from the small town of Tobermory, Ontario and am thoroughly enjoying my experience in the Ham radio world. Some of my other interests/hobbies include hiking, hunting, camping, fishing, and generally all outdoor activities. Within Ham radio I'm interested in topics such as shortwave listening, emergency power/off-grid preparedness, solar powered systems, and general HF/VHF/UHF nets and round tables. I like attending weekly nets within my range, joining various digital/VoIP talk groups, and just meeting new people and making friends within the Ham community. Hope to talk with you on the air one day.

Equipment:

SDR Receiver: SDRplay RSPdx

QTH Transceiver: Yaesu FTM-300DR

QTH Antenna: Diamond X300A

HT: Yaesu FT3DR

HT: BTECH UV-5x3

Mobile: Yaesu FTM-400XDR

Mobile Antenna: Diamond SG7500NMO



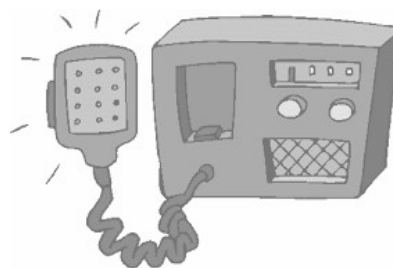
Volunteers who helped out at the Bruce Peninsula Multisport Race in 2021 may, like myself, have had the chance to meet Eric. Eric was stationed at the entrance to Bruce's Caves Conservation Area. He is very keen to get involved with the club although his current work schedule prevents him from attending evening events like our Zoom meetings and nets. Welcome to GBARC Eric!





On the Air

John Corby VA3KOT



SST - The "Slow Speed" Test



There is an international group of rather elite CW operators called "CWops". What makes this group elite is that they have all demonstrated their ability to hold conversations in Morse Code at a speed of at least 25 words per minute. It is not possible to simply join this group; you have to be sponsored and prove that you can operate at the required speed. 25wpm can be quite challenging for the average CW operator but it is considered a little on the slow side by CWops members. They hold regular weekly contests in which speeds of over 30wpm are common.

You might be tempted to think that CWops is an elitist group that likes to demonstrate its superiority over us mere mortals, but nothing could be further from the truth! CWops is dedicated to promoting the use of Morse Code among amateur radio operators and provides free assistance to those who wish to join them. They operate the CW Academy which is a free series of courses that take a ham from beginner to advanced CW operator.

Twice a week CWops members hold a one hour "Slow Speed Test" ("test" is not an exam; it's a short form of "contest"). There is a speed limit during the SST: 20 words per minute! Even 20wpm can be challenging for some, but the

contest exchanges are short and predictable. Each station sends just their first name and SPC (State, Province or Country). I have been participating in the Friday afternoon SSTs for a few months and thoroughly enjoy them.

My log for the January 7th 2022 SST is posted below. 22 QSOs was a record for my humble 100 watts into a simple wire antenna. The contest involves a scoring system that can be used to monitor progress. Your score is the total number of QSOs multiplied by the total number of unique SPCs contacted. Although my January 7th SST resulted in the most QSOs so far, my score was only my second highest. My 22 QSOs were with 11 unique SPCs for a score of 242 points. Back in November I managed 20 QSOs with 17 unique SPCs for a total of 340 points.

"S&P (Search and Pounce)" operators (like myself) are at a disadvantage compared to the more experienced operators who "run" a frequency; i.e. call CQ on a fixed frequency and deal with pile-ups. It's all a matter of experience and practice, practice, practice. One of those more experienced CW operators can be seen in my log - our own Adam VE3FP. Adam is a member of CWops. Well done Adam, proud to have you on board.

Time c	Call	Freq	Mode	RSTs	RSTr	Name	State
21:00	K1USN	7.0317	CW	599	599	Watson	MA
20:54	W4UT	7.0296	CW	599	599	Ron	TN
20:52	KD8ZM	7.0287	CW	599	599	Brady	OH
20:47	K1EBY	7.0446	CW	599	599	Frank	CT
20:45	WD4CFN	7.0439	CW	599	599	Steve	TN
20:44	W4CMG	7.0435	CW	599	599	Cathy	TN
20:40	N8DNA	7.0424	CW	599	599	Mike	OH
20:39	AD8J	7.0416	CW	599	599	John	NC
20:37	N3GE	7.041	CW	599	599	Roger	PA
20:32	VA3IK	7.0386	CW	599	599	Brian	ON
20:31	W1MJ	7.0378	CW	599	599	Eliot	MA
20:29	N7US	7.0361	CW	599	599	Jim	IL
20:26	N2MA	7.0356	CW	599	599	Al	PA
20:24	K4TZ	7.035	CW	599	599	Tom	KY
20:21	VE3RIA	7.0342	CW	599	599	Drew	ON
20:18	N4BA	7.034	CW	599	599	Fred	VA
20:16	N1YL	7.0335	CW	599	599	Anne	MA
20:14	K4RUM	7.032	CW	599	599	Mike	NY
20:12	VE3FP	7.0315	CW	599	599	Adam	ON
20:10	K1DW	7.031	CW	599	599	Dallas	CT
20:07	K1RF	7.0295	CW	599	599	Steve	CT
20:05	W8WZ	7.028	CW	599	599	Carl	NC

When All Else Fails ... there is Morse Code!

No computer required (except for logging, but a pencil and paper will do)

No microphone required

Much less bandwidth required than SSB

Much less power required than SSB

You don't even need a radio! In 1966 US North Vietnamese POW Jeremiah Denton blinked the word "torture" during a forced TV interview. The message reached the US but wasn't understood by his captors. Wanna learn Morse Code now?





On the Bench

GBARC Technical Specialist Ben Choneth



An Audio Frequency Tone Generator

An audio frequency tone generator is a very useful piece of kit to keep around the shack. It has many uses. Here at *On the Bench*, one was needed recently to check the frequency response of various extension speakers, seeking to find one that would best serve as a CW monitor. HiFi speakers are generally unsuitable for that purpose - or even for monitoring SSB - because they have too wide a frequency response. A typical HiFi speaker reproduces sounds from 20Hz to 20KHz, but SSB signals from your transceiver generally follow the 300Hz to 3.4KHz band adopted as a standard for telephony because it makes speech as intelligible as possible. For CW operations, a speaker need only reproduce the best sound on a very narrow band of frequencies, typically 400Hz to 1KHz.

Of course, an audio frequency tone generator has many other uses such as checking the audio frequency stages of a receiver. or as a Morse Code practice oscillator.



This particular AF tone generator is built around the popular 555 timer chip. The 555 will operate

over a wide supply voltage range, typically 5-15 volts. It can be powered from a USB port, a 9V battery or even the shack 13.8V supply.

For the schematic visit: <https://www.homemade-circuits.com/ic-555-oscillator-alarm-and-siren-circuits/>. Look for the heading: Variable Frequency Oscillator using IC 555. This simple circuit has only six components. However one additional component - an electrolytic capacitor - is needed to isolate the output from DC.



The circuit can be built on a small piece of perfboard, as shown, which fits nicely inside a small plastic project box, along with a 9 volt battery. The frequency is adjusted using a tiny variable resistor. There is no room for a speaker so the output comes through a 3.5mm stereo jack wired for mono. For circuit tracing it is strongly advised to add an attenuator at the output. A fixed resistor in series with a variable resistor to limit the output voltage down to the millivolt range would be a simple way to do that.

This project can be built in an hour or less and has lots of potential applications in the typical ham shack.





How to Install (or Not to Install!) a PL-259

h/t Tom VA3TS

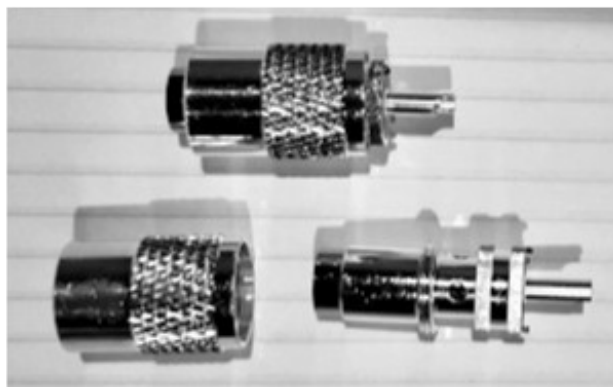
Installing a PL-259 plug on a coax cable can be a challenge. Here on the VA3KOT shack bench it is done the old-fashioned way – with good quality, silver-plated PL-259s, a VERY HOT soldering iron and lots of patience.

If it is done right the results can be very satisfactory and will give a good connection that will last for years. Unfortunately, there are many ways to do it wrong and then frustration will set in.

The solder method requires a lot of heat to make sure the braid is securely soldered to the body of the PL-259 before the insulation around the central conductor starts to melt.

Dave VE3WI has another way of doing it:

< 2¢ > I've given up fighting with the old solder type PL259s. I tried the Amphenol crimp-type, but after you crimp the center conductor there is only a very small contact area left, & I don't like that. I've switched to the DX Engineering patented "crimp-solder" type (crimp the braid, solder the center connector). DXE sells them for RG8 & RG8X size coax. They're not cheap and the larger one needs real strong hands on the crimper. They're still the best out there.



<https://www.dxengineering.com/parts/dxe-pl259cs8x-6> < /2¢ >

Dave also recommends the non-standard method used by Tim Duffy K3LR. “We've all seen Tim's station so the method must work! <http://www.k3lr.com/engineering/pl259/> “ [Tim K3LR was GBARC's guest speaker at a recent TechTalk].

There is another method promoted by Paul K4AVU – The K4AVU PL-259 Coax Crimper.

The crimper crimps a good quality standard PL-259. You do not have to purchase a special connector. It will crimp all 1/2" cables i.e. RG-8U, RG-213U, RG-11U, LMR-400 and others. It also will crimp the smaller cables with the proper adaptor/reducer. RG-8X, RG-58U, RG-59U and LMR-240. The crimper is stainless steel as well as the bolts and nuts.

Your newsletter editor will not be ordering this crimper!





Why a Battery Weighs More When It's Charged

By Sparky Coyle

It is the middle of December as I write this. My backpack radio kit hasn't had a good workout since I last took it out in the field for a Parks On The Air (POTA) session a couple of months ago. But, we got lucky with the weather one day this past week. The temperature got up to 14 degrees Celsius before strong winds brought in a Colorado low and took the mercury back down to the freezing zone.

I got a chance to set up as a "Backyard On The Air" station to test a new portable antenna I had built for next summer's outdoor operating season (a T2LT - see elsewhere in this newsletter for details). My Bioenno LiFePO4 battery was freshly charged for the occasion and I was eager to get out on the deck and fire up the rig to see how well the new antenna would perform.

The Common Cold virus had invaded my bloodstream and I was feeling a little weak as I picked up the backpack containing my Yaesu FT-891 radio, a homebrew L-match tuner, the Bioenno battery and various cables and accessories that I like to carry with me on a field trip. "Strange" I thought, "this backpack feels a little heavier than usual".

Maybe it was just the debilitating effects of my mild illness that was affecting me, but I wasn't sure. Then suddenly I had one of those "light bulb moments". "Of course" I thought, as my university Physics training began kicking my brain into high gear, "I just charged the battery, so that is obviously the reason the backpack feels heavier than usual".

Now most people have probably heard of Albert Einstein's famous energy/mass equivalence equation, $E=mc^2$. It may not have much relevance to most people's everyday lives. Not so

for me. From my teenage years I was on a path toward a lifetime of science awareness. I vividly recall my high school physics teacher's erudite response to a student who complained that his pen had disappeared. "Don't be silly boy; if your pen had disappeared the whole city would be lying in ruins".

Do the math yourself. Take the mass of an average pen and multiply it by the square of the speed of light. By Loki, the ancient Norse god of mischief, that's one heck of a lot of Joules to unleash on an unsuspecting city. Old Albert had hit the nail squarely on the head with his famous equation.

Einstein's genius was further driven home to me when I started my freshman year in college. A bunch of long-haired 1970s yahoos had to be indoctrinated into the wonderful world of Physics. And the faculty staff had a cunning trick to do just that. Teach those long-haired kids how to make an atomic bomb! In fact, teach them all of the different ways to build an atomic bomb. Just keep those long-haired weirdos away from any source of Uranium or Plutonium.

We did have a radio-isotopes laboratory in which we could indulge our fantasies of playing god with the World. Special clothing had to be worn when we entered the lab. When we left the lab we had to undergo a full-body scan with a Geiger counter to ensure we were not sneaking any dangerous isotopes out with which to create criminal mischief. The local police were familiar with our penchant for mischief so every caution was very well advised.

And so it dawned on me; at last I understood why my backpack radio kit seemed heavier than usual - I had just charged the battery! I know; you

are getting a bit skeptical around about now. "This idiot must be enjoying a little bit too much of the old 'Scottish Champagne'" you may be thinking. You may be right, but trust an old Physics grad; the mathematical proof is in old Albert Einstein's equation.

My Bioenno battery is rated at 12Ah and although it puts out over 13 volts most of the time, let's call it a 12V battery. Whatever we calculate for the increased weight can then quite honestly be claimed to be a conservative number.

A 12V battery with a storage capacity of 12Ah holds 144Wh of energy.

1 Watt = 1 Joule per second

$$\begin{aligned}\text{So } 144\text{Wh} &= 144 \times 60 \times 60 \text{ Joules} \\ &= 5.184 \times 10^5 \text{ Joules}\end{aligned}$$

Using Einstein's mass/energy equivalence equation, $E=mc^2$

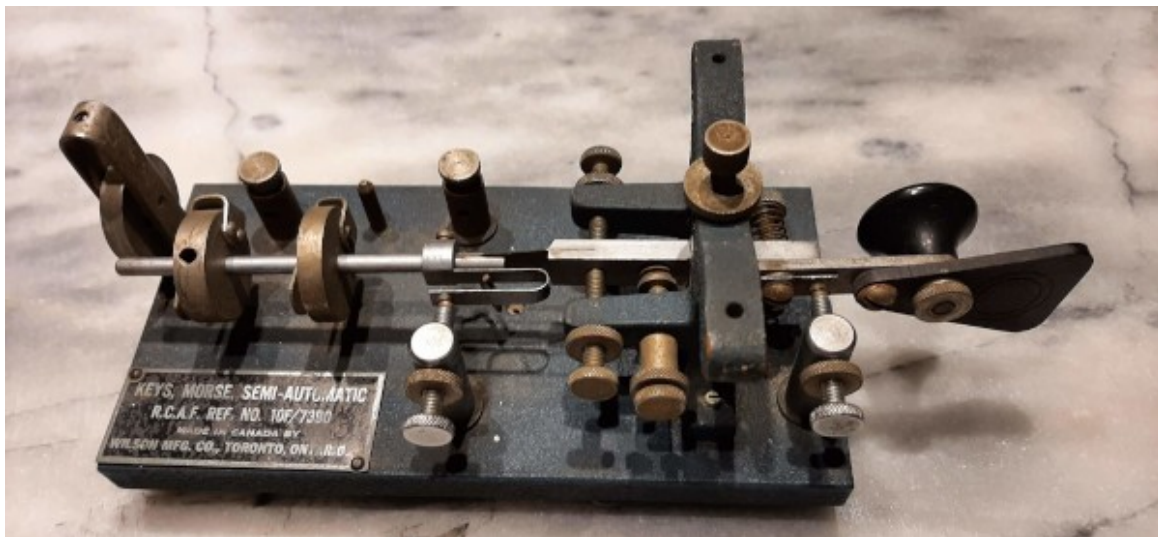
$$\begin{aligned}E/c^2 &= 5.184 \times 10^5 / (3 \times 10^8)^2 \\ &= 5.184 \times 10^5 / 9 \times 10^{16} \\ &= 5.76 \times 10^{-12} \text{ Kg} \\ &= 5.76 \text{ nanograms}\end{aligned}$$

Alright, a handful of nanograms isn't a whole lot, but when you're out hiking to a radio spot at the top of a steep hill on a hot humid day, where do you draw the line?

Quod Erat Scientificum Demonstrandum!

Canadian Radio History

A Royal Canadian Air Force Semi-Automatic Morse Key





QRP Labs QDX Digital Modes Transceiver

h/t Carl VE3APY via Tom VA3TS

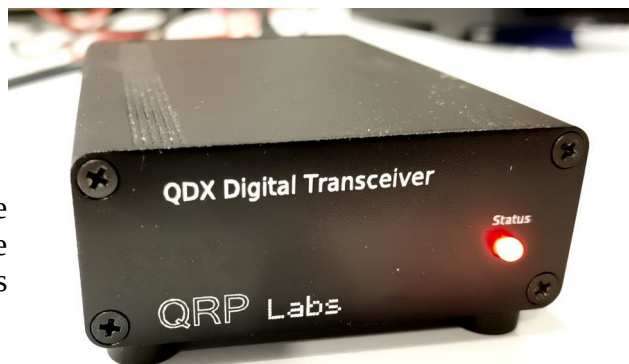
Announcement from QRP Labs

QDX batch #2 sales will commence at 1800Z on Friday 17-Dec-2021, at <http://shop.qrp-labs.com/qdx>

QDX batch #2 is 375 kits. Some of these have to be allocated to batch 1 leftovers due to the QRP Labs shop over-selling in last few seconds of the frantic 14 minutes on 11-Oct-2021.

There are also several promises to be fulfilled and various other special cases. So the actual number that will be available for general sale will be a bit less than 375. The QRP Labs server has been upgraded to a higher performance machine and so maybe we won't see the same overload issues as last time.

Regrettably, I have to announce a price increase from \$60 to \$65. The original batch 1 QDX kits were manufactured in January 2020, a whole different world ago. Unfortunately many aspects of the manufacturing and logistics have increased in price. Even the main microcontroller chip STM32F401RBT6 procurement cost me in excess of \$5 extra now, compared to the price in January



2020 before the global semiconductor shortage crisis hit. Just check Digikey, Mouser, Arrow etc., and

you'll begin to understand the difficulty of finding these at all, at any price. And this is just ONE part of the QDX. So I have no choice, but to pass some part of the cost increase on, by increasing the price of the kit; \$65 is the best I can do at this time. The price of Aluminium has also seen large increases since batch 1 and this has affected the manufacturing cost of the enclosure too; however at this time I am not increasing the price of the QDX enclosure. I ask for your understanding on this small increase and let's all hope for better days in the not too distant future.

What is the QDX?

Visit qrp-labs.com/qdx for more information

QDX: a feature-packed, high performance, four-band (80, 40, 30, 20m) 5W Digi-modes transceiver kit, including embedded SDR, 24-bit 48 kbps USB sound card, CAT control, synthesized VFO with TCXO reference.





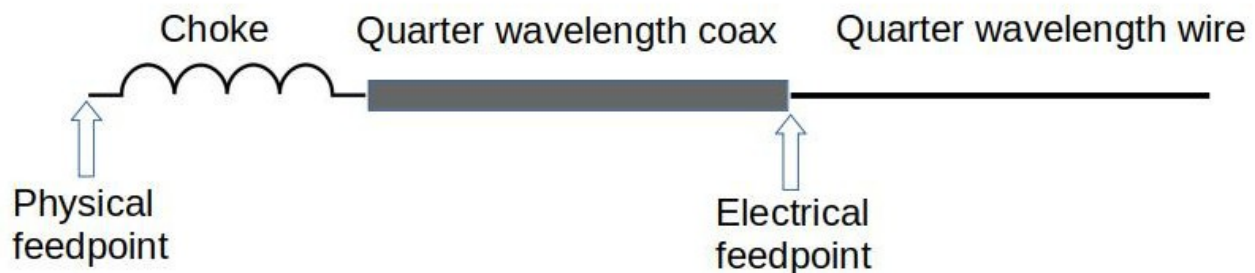
An Easy to Build T2LT Antenna

John Corby VA3KOT

Let's start by explaining what T2LT means. I visited several sites online that use the term without explaining it. T2LT or TTLT is an abbreviation of Tuned Transmission Line Trap. It sounds complicated but it really couldn't be simpler to build, erect and use.

It can be compared to a regular dipole in that it is one half wavelength long. Even though most reports suggest it should be used as a vertical antenna it requires no radials or counterpoise wires. Just like a regular dipole it can be erected vertically, horizontally, as a sloper or even an inverted-V.

The T2LT is fed in the centre but the feedline actually connects to one end! How does that work? Let's look at a diagram of the antenna to see.



As the diagram shows, there are three components to the T2LT: a quarter wave wire, a quarter wave section of coax and a choke. Some sources suggest building the T2LT from a single length of coax but I found that approach to be undesirable due to the need to remove the sheath and braid from a quarter wavelength of coax.

The quarter wavelength of wire forms one leg of the dipole. The other leg of the dipole is the outer skin of the braid of the coax. The trap (choke) terminates the coax braid at the quarter wavelength point. The whole antenna can be fed with any length of coax.

My build of the T2LT antenna for the 20m band used an air core choke that I had previously built as a Common Mode Current choke. It was tested using a nanoVNA and found to have significant

choking effect on 20m. It is 30 turns of RG-58 coax wound on a plastic tube with a diameter of two and a quarter inches and has a PL-259 plug on each end.

I had a length of coax that is 16.5 feet long and it already had a PL-259 connector on one end. An 18ft length of 18ga wire was soldered to the far end of the coax. A length of 18 feet was recommended to allow for adjustment for minimum SWR and for attachment of an insulator and support rope.

To assemble the antenna a barrel connector is attached to each end of the choke. The feedline attaches to one side of the choke and the antenna coax/wire attaches to the other side.

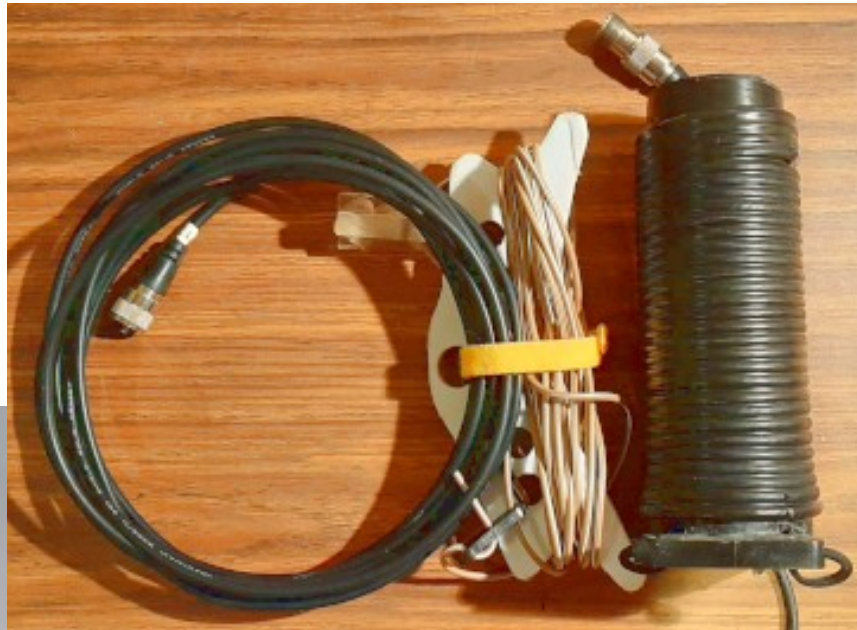
Initial testing reveals that the antenna has a fairly flat SWR of around 1.5:1 from 14.000 to 14.350 MHz and it is very easy to tune. Setting it up as a sloper hanging from a tree and using only 35W, I made my first T2LT QSO with a station in Texas from my home QTH in Ontario.

During the QSO serious, distracting key clicks were coming from the radio's speaker. A sure sign of RFI due to the feedline braid picking up some of the radiated signal. Moving the feedline so it was oriented perpendicular to the antenna cleared that problem.

Looking at how the antenna works it can be seen that it is important to keep both arms of the dipole equal in length. The wire was trimmed to exactly match the coax half of the antenna. Now the antenna is balanced. The SWR improved to 1.3:1.

Another method of supporting the antenna was also devised. The antenna was loosely coiled around a 31ft fibreglass telescopic pole. The pole can be ground mounted with a suitable guying arrangement, or truck hitch mounted.

This antenna is going to be fun to use. It is fast and easy to erect and uses very little space making it perfect for POTA deployments.





Tiny Radio Signals

Bobby Boffin BSc

You could almost call it a miracle. Big radio signals quickly turn into tiny radio signals as they are propagated through the space-time continuum.

There is a universal law of Physics called the Inverse Square Law. It states that the energy from a source is inversely proportional to the distance from the source.

Let's call the energy source a ham radio repeater with an output power of 50 watts. The Inverse Square Law tells us that the signal coming from the repeater is inversely proportional to the square of the distance between the repeater and a receiver.

We are going to simplify things considerably here. Radio energy coming from a transmitting antenna is spread across the radiation pattern of the antenna. That pattern could be a lobe which expands as it travels away from the antenna. The math gets very complex, very quickly.

So let's assume the transmitting antenna has a unidirectional, collimated radiation pattern. 10km away from the repeater the radiated power is $50/(10^4)^2$ watts = 0.5 microwatts!

So how can the repeater ever be heard? Well, if the receiver has a sensitivity of, say, 1 microvolt into 50 ohms, then using the formula $P=V^2/R$ we can calculate the minimum power the radio can receive:
 $P=(10^{-6})^2/50 = 0.00000000000002$ watts. Easy!

So, how good does your radio have to be to pick up a DX signal? What about a QRP signal from the Voyager 2 spacecraft currently over 14 billion kilometers away from Earth?

The science has been grossly simplified and may therefore contain errors, but isn't it fun?





The 73 Page

Submission Guidelines

If you have an idea for an article you would like to see published in the newsletter, send me an email. One of my talented alter ego staff writers may be able to write it up for you. Even better, write it up yourself and send it to me. Here are the guidelines for article submissions from readers:

- You don't have to be a talented writer. If you have an idea just write it up to the best of your ability. Newsletter staff (ok, it's just me really) can tighten up the composition and correct the grammar. You will still get the credit.
- For heaven's sake, please use a spell checker! We all make typing errors and that is why word processors have spell

checkers. Don't use fancy formatting. The format of your article will be changed to match the format of the newsletter anyway so why waste effort?

- Plain text files are preferred but you can send articles written in MS-Word, LibreOffice Open Document format, or even just write your article in the body of an email.

Do not embed images in the document. Send them as separate files. If you have a graphics editor and you know how to use it, please scale your images down to no more than 600 pixels wide. Even cellphone cameras take remarkably high definition images that result in huge files.



The Final Word ...

What is Yaesu?

What a strange question!

Yaesu is a district in the city of Tokyo, Japan. It was here, in 1959, that Japanese amateur radio operator Saku Hasegawa JA1MP founded the Yaesu Musen company. Now known as simply Yaesu, the company makes some of the finest Amateur Radio products available.