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September | October 2026

BREAK IN

The Official Journal of the New Zealand Association of Radio Transmitters (Inc.)

Volume 99 Number 5

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BREAK-IN

The Official Journal of the New Zealand Association of Radio Transmitters (Inc.) *Volume 99 Number 5*

(The term break-in refers to a system in CW whereby the transmitting station can hear the other station's signal during "key up" periods).

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CLOSING DATE FOR COPY

10th of preceding month.

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Vice President
Don Wallace ZL2TLL

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Phil Garside ZL2RO
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NZART Education Trust

Grants available for Education in Radio science at all levels.

NZART Radioscience Trust

- Prizes for School Science Fair.
- Grants in Aid for School projects.
- Course fees for Students studying Radioscience related subjects.
- Study grants for Radioscience education projects.
- Support for open radio "Buildathons" or similar youth radio programs.
- Scout or similar youth group educational radio projects.

(see http://www.nzart.org.nz/nzart/trust/)

The NZART RADIOSCIENCE EDUCATION TRUST
c/- NZART Trust, 33 Ryeland Ave, Christchurch 8041
Email: <nzart.trust@gmail.com>

From The Editor

Ross Boswell ZL1DRB
<editor@nzart.org.nz>

Hello Readers

Doug promised in *"From the Editor"* in the last issue that I would introduce myself, so I guess I'd better do that. My history in amateur radio starts with fascination at the electronic hobby of my older sister's boyfriend, later husband, beginning when I was an eight-year-old. At about 11 years of age I persuaded my parents to fund a subscription to Radio, TV and Hobbies (later to be renamed Electronics Australia) and I devoured its monthy content. I longed for an FRG7, but had to content myself with a series of crystal sets and a Hiker's One regenerative receiver built with the help of (in truth, largely built by) my brother-in-law. He was not then a licensed ham, but later became one.

Life, university, work, marriage and parenthood got in the way, and it wasn't until about 1982 that I got around to sitting the amateur licensing exam. I built a direct-conversion receiver and played a little, but life again supervened and we soon took our family off to the UK for about 5 years, leaving with three children and returning in 1987 with four. It was not until about 2015 that I took a week's leave from work to attend Linux.conf.au in Auckland, discovered software-defined radio, reactivated my licence, and began actively taking part in amateur radio. We had a lifestyle property near Mangawhai, and as a result I joined the Rodney branch of NZART as well as the Auckland VHF group. When I retired after more than 50 years working in the public hospital system my wife and I moved to Christchurch where we had previously lived for about 15 years, and I became involved in the Christchurch Branch and AREC. To my slight disappointment, none of my four children and twelve grandchildren shows any interest in radio, electronics or computing, but there are still a couple who are not yet too old to be susceptible to indoctrination by their grandfather.

I have enjoyed reading *Break-In* over the last 10 years or so, and I was aware that John Walker ZL3IB, whom I knew through our university contact, had been its editor for some years. I have greatly appreciated the journal's technical content, some of which takes me back to the R,TV&H days. Amongst the columns, I was particularly fascinated by Murray Greenman's "Digital Modes" column, and found it very educational. I have also enjoyed the posers that Gary Bold ZL1AN used to include in his later Morseman columns. If there are any readers who would like to contribute a column along those lines, I'd be delighted to hear from you.

I am new to this editing business, and Doug has kindly offered to break me in gently. I observed the process of producing the last issue, but it has been my conviction over the years that a passenger doesn't learn the route as quickly or as thoroughly as a driver, so the work on this one has been mine with Doug as navigator providing advice and guidance. Henceforth I'm on my own. I would like to ensure we have increasing technical content, and I have already been contacting

Next deadline for copy is
10 November 2026

The editorial team welcome identified Letters to the Editor.

Letters can be emailed to <editor@nzart.org.nz>

potential authors. If you mention a project in your branch newsletter or in conversation, then expect to hear from me.

I should offer explanation for some of the features of this, the first issue of my time as editor. I would like to increase the technical content of *Break-In*, and for that reason I have been looking for articles from other amateur radio publications that may be of interest to NZ hams. The article on the HF Glove Antenna appeared in QST earlier this year, and it struck me as an interesting and flexible concept for portable and emergency communication. Margie Bourgoin W1MRG of the editorial staff at ARRL has kindly given permission to republish, and Jim Grebey N4KCT has gone to considerable trouble to send me original high-resolution copies of the figures.

With the retirement of Geoff Clark ZL3GA whose last column was in the May-June issue this year, we do not have a Contests Manager and Columnist. The Council and I have been trying without success to find a replacement. In the meantime, Bruce Horn WA7BNM has kindly given permission for me to publish the listings from his ContestCalendar website. Those of you who read *Break-In* as a PDF will find that the PDF version links to Bruce's website for the details of listed contests. I am profoundly ignorant of contesting, so I was not intending to be at all selective in producing the published listings. Bruce was not happy with that, and went to some efforts to produce a selected listing of interest to NZ hams. I hope his example may spur on someone, or some group, to take up the vacant role and produce a Contests column for NZ contesters, both current practitioners and potential future recruits to the pastime.

I am very grateful to Doug ZL3DUG for his help and guidance, to Kelvin ZL3KB for his assistance, to those who have given permission for re-publishing, and to all of the columnists and article authors, for the content of this issue. I've embarked on an interesting journey, and I hope to prove that old dogs *can* learn new tricks. Please wish me luck, and let me know of any suggestions or criticisms you have.

And PLEASE submit articles. Without authors we won't have a *Break-In*. *Ross Boswell ZL1DRB*

From The President

Warren Harris ZL2AJ
<president@nzart.org.nz>

Welcome to another edition of *Break-In*.

Council have been busy recently working on a few projects aimed at reducing the overall running costs of the association once implemented. Firstly we are looking at replacing our membership software with CRM (Customer Relationship Management) software to enable integration with Xero and with other business tools. The aim here is to streamline processes and take away some of the manual tasks that take time and have the opportunity for error. While the final solution has not yet been set, we are excited to see progress being made and looking forward to what the future may hold in this space.

Late last year we entered into a trial in the 10 MHz or 30 metre band to allow SSB in this band. We received a little feedback in the early months, but since then the feedback has gone quiet. The trial is due to expire and before council makes a decision we would like to ask those that use this band (whether voice, CW or digital modes) whether you would like to share with council your experience with using voice on 30 metres, or if you have seen adverse issues with respect to voice being allowed on 30 metres. Council needs to hear your views before we make a decision on what the future bandplan should represent on 30 metres. Have your say to <president@nzart.org.nz>

Recently you would have received an invoice for your membership subscriptions. For most (not all) subscription categories you may deduct $10 for early payment (on or before 30th November) and a further $20 if you are happy receiving only an electronic version of *Break-In*. We have received a few other oddball sums for subscriptions where we have had to make a decision with respect to what options / deductions are being taken. Any balance is an assumed donation. Some members have chosen to pay the full amount without any deduction, this is also gratefully received.

If you are considering not renewing your subscription, I would like to understand why. Please feel free to email me and share your view, I promise I wont judge. But I will try and offer some explanation, and encourage you to remain. Be that as it may, we do need to hear when we fail to meet expectations, to know what matters and how we can do better.

Recently we have had some feedback from new hams and hamcram organisers that the $80 ARX fee is a bit unfair, and there is a belief that it is a cross subsidy for the free membership. We are working on a policy to decouple these two things for greater transparency and potentially reduce the costs for new hams entering the hobby. A decision has not been made yet but the direction has been given that we need to fix this. Look out in Infoline for where this lands. Direct communication will also be sent to exam supervisors.

While on the subject of Infoline, Cam Wood, ZL1DKS is now editing this publication for NZART. I encourage you to subscribe as this has more up-to-date news available to members and non members. If you aren't receiving this please email Debby to subscribe.

I would like to introduce to you two new officers for the association. Deborah Frederick ZL1DY is the association's new treasurer. You may remember her as the winner of the jelly bean jar competition at conference where she confessed to being a bean counter. This statement did not go unnoticed as we were in the need of a treasurer.

Chris Hattan ZL2CJ is the association's marketing and publicity officer. This is a new role so we are still working out what this means, but Chris is an enthusiastic member and I cant think of a better person to push our hobby forward and make it known.

Please join me in welcoming these officers to their roles and offer them your support where appropriate.

Lastly, I would like to encourage you to stand for NZART President or council role. Good governance in NZART is important now more than ever as we move into a digital age, ensuring NZART stays relevant to its members. If you are, or know someone who is motivated to help the association navigate its way through these times, and can work well with a team, please consider standing for council. Nomination forms are available on the website.

That's all for this month. I look forward to talking to you on the air, or receiving your emails.

Warren Harris, ZL2AJ

Streaming emergency services radiocommunications is illegal

Daniel Hockey ZL4VR <daniel.hockey@mbie.govt.nz>

Reports are being made with increasing frequency to Radio Spectrum Management (RSM) about emergency services radiocommunications being streamed on social media platforms or other websites. Not only is this activity illegal, but it can also aid criminal activity and hinder the maintenance of the law.

Any person receiving a radiocommunication, and knowing it is not intended for that person, and uses, reproduces or discloses that radiocommunication, commits an offence against the Radiocommunications Act 1989 (Section 133A: Offence to disclose contents of radiocommunications).

If you have any doubt about what you can or can't do with radiocommunications, then we recommend you contact RSM https://www.rsm.govt.nz/about/contact-us

ELECTORAL

Nomination for President and Executive Council period 2027/2029

To: The Returning Officer – Nomination
New Zealand Association of Radio Transmitters Incorporated
PO Box 40-525
UPPER HUTT 5140

Email for biographies and photos: nzart@nzart.org.nz

I, the undersigned nominator HEREBY NOMINATE

_____(ZL_____)
First name **Surname** **Callsign**

For the office(s) of:

		Tick √ One
President	**Only**	
Councillor	**Only**	
President AND **Councillor**		

Select the island the nominee resides in	
North Island	
South Island	

Select the required alternative and complete as necessary – In the event of the member being elected to both offices the member is deemed to prefer the office of President.

I, the undersigned **seconder HEREBY SECOND** this nomination.

I, the undersigned **nominee HEREBY ACCEPT** this nomination.

This form can be downloaded from
https://nzart.org.nz/wp-content/uploads/2026/08/Nomination-form-2027.pdf

Signature of Nominator

Signed by the **Nominator:**

Details of nominator:

_____**(ZL_____)**

First name **Surname** **Callsign**

Of_____

Address for acknowledgement

Telephone number ( ) or Email:

Signed by the Seconder:

Signature of Seconder

Details of seconder

_____**(ZL_____)**

First name **Surname** **Callsign**

(no acknowledgement is forwarded to the seconder)

Signature of Nominee

Signed by the **Nominee:**

Details of nominee:

_____**(ZL_____)**

First name **Surname** **Callsign**

Of_____

Address for acknowledgement

Telephone number ( ) or Email:

NOTES:

1. Nominations **must** reach the Returning Officer by **31 December 2026.** The Returning Officer has no discretion to receive late nominations even if postmarked prior to that date.

2. Allow ample time for transit by post. Holiday mail is often delayed.

3. **Nominees MUST** submit biographical details and a suitable photo to the Returning Officer at the address above or via email prior to **10 January 2027**, for inclusion in the January/February 2027 issue of *Break In*. Endorse the envelope **"BIOGRAPHY"**. The Returning Officer, (who has the authority to edit details submitted), suggested limit of 200 words.

4. No nomination should be presumed to be in order until acknowledged in writing (or via e-mail) – usually within seven working days.

5. Ensure that addresses/email is clearly shown above for acknowledgements as often in the heat of the moment, this detail is overlooked.

The New Zealand Association of Radio Transmitters
Incorporated

Election of President and the Executive Council
(Voting closes 20 March 2027)

A. Notice of appointment of Returning Officer
(Given in accordance with the Constitution of NZART)

I, Mark Gooding, inform Association members that the Council of NZART have appointed me to be the Returning Officer for the purposes of an election to be held for the office of President and for the Executive Council of NZART in March 2027.

Accordingly, I now issue the following Notice of Election.

B. Notice of Election
(Given in accordance with the Constitution of NZART)

I hereby call for nominations for the office of President and for the Executive Council of NZART

1. Nominations are to be addressed to the Returning Officer NZART Headquarters, sent by post to PO Box 40 525, Upper Hutt 5140 or by email to nzart@nzart.org.nz, and must be received by me by 31 December 2026.

2. Every nomination shall be in writing or electronically (e.g. email) and shall be signed by the person nominating and a seconder and shall be countersigned by the member nominated.

3. A member may be nominated for either or both the office of President and Councillor.

4. In the election for Council **only** members, members must also include whether the nominee normally resides in the North or South Island of New Zealand where applicable.

5. **Nominees MUST** submit biographical details and a suitable photo to the Returning Officer at the address above or via email (nzart@nzart.org.nz) prior to **10 January 2027**, for inclusion in the January/February 2027 issue of *Break In*. Endorse the envelope **"BIOGRAPHY"**. The Returning Officer, (who has the authority to edit details submitted), suggested limit of 200 words.

Mark Gooding ZL2UFI
Returning Officer

A copy of this notice can be downloaded from:
https://nzart.org.nz/wp-content/uploads/2026/08/Elections-Notice-2027.pdf

Tauranga Branches 39 & 88 Combine for Another Successful Portable Field Day

Phil Price ZL1GI <pgpricenz@gmail.com>

Saturday morning, 22 August, saw eleven Tauranga radio amateurs from NZART Branches 39 and 88 swap the comfort of the shack for a rather more scenic operating location beside the Wairoa River.

The combined-club portable field day got under way at 0930 at a riverside reserve in Tauranga, with a selection of portable equipment soon appearing on the picnic tables. Radios included an Icom IC-705, Xiegu G90 and a Yaesu FT-891, with various dipoles and vertical antennas providing plenty of opportunities to compare signals and rigs and antennas on the air. Of note was the performance difference between dipoles and verticals over the same path on 40 meters.

Denis ZL1AKU sets up his "mad dog" antenna

The main objective was, of course, to make contacts — and there was plenty of activity up and down the length of ZL with good reports received from the South Island. But just as important was the opportunity to catch up with fellow amateurs, enjoy the winter sunshine and generally demonstrate that amateur radio doesn't always have to happen in a shack.

Andrew ZL1KN operates while Denis ZL1AKU "gives advice" and others look on

There was also some unexpected competition for space. The reserve is a popular Saturday morning dog-exercise area, and, for a while, it seemed there were more dogs than hams in the park! Fortunately, the canine visitors were well controlled with only one dog mistaking a guy rope winder for a bone. Curious visitors received an explanation on the sport of low powered portable radio communication.

The Group, L to R: Phil ZL1GI, Dave ZL1GQ, Karl ZL1KBC, Ian ZL1JHE, Andrew ZL1KN, Kevin ZL1ETA, John ZL1BVA, Denis ZL1AKU, Jo ZL1JDR, Owen ZL1OG

The event is the second combined Branch 39 and 88 activity this year, following the success of the first gathering in July. With the formula of radio, fresh air, good company and a little healthy rivalry and banter proving popular, plans are being made for more combined activities.

For those who couldn't make it this time, there will hopefully be another chance soon. βi

Eastern Bay of Plenty Radio Club

Annual General Meeting

1.00 pm
Saturday 26 September

Coast Guard Rooms
Whakatane Heads

Secretary: Tom Revington
Phone 022-620 9199

Making *Break-In*

Ross Boswell <editor@nzart.org.nz>

As a novice editor, I have been fascinated by the process of producing an issue of *Break-In*. The journal is issued two-monthly for six issues each year, so the editor sends out an email reminder to regular contributors about the 20th of each even month that copy is needed by 10th of the following month. Of course contributed copy, whether solicited or not, can be received at any time and should be emailed to <editor@nzart.org.nz>. Text files can be in OpenOffice .odt, plain .txt or MSWord .docx format. Images can be in JPEG .jpg, PNG .png, SVG .svg or PDF .pdf format (did you know that JPEG is an acronym for Joint Photographics Expert Group, PNG is an initialism for Portable Network Graphics, SVG an initialism for Scalable Vector Graphics and PDF is an initialism for Portable Document Format?). Illustrations should not be embedded in text, but given as separate files with an indication in the text of where each should go, and a list of captions. Laid-out text and illustrations for advertisements and notices is best provided as PDF.

The editor reads, checks, edits for readability, grammar and spelling, and saves the contributions in a structured directory ready for on-sending. The total size of the issue must be a multiple of four pages because of the way it is printed and assembled. The usual page count is between 24 and 40, the larger issues containing annual reports and accounts. A 28-page issue needs about 20,000 words of copy.

Once the submitted copy has been edited and assembled in order, the text and image files are sent to the layout expert who assembles them into a magazine and sends back a PDF for the editor's comments and approval. I have learned that this process is no longer called "typesetting" but "origination". When the layout is agreed, usually by about the 20th of the month, a PDF which has coloured illustrations is provided to the editor, and one in which the pages other than the cover are rendered in black-and-white to the printer (unless there is a special arrangement and funding for a colour section, as for the pictures from the Centenary Conference). The editor uploads the full-colour PDF to the NZART website. The printer arranges the PDF pages into fours, for printing on large (A2) sheets as shown in the illustration. Each sheet is printed on both sides and guillotined (horizontally, in the illustration) to provide pairs of pages. The issue pages are assembled, stapled, folded and trimmed to produce the completed issue which is bagged with an address sheet provided by a different contractor and posted to you.

You may not have noticed (as I hadn't) that the spine of each year's issues is coloured using the standard resistor colour-coding to represent the final digit of the year. This year ends in "6", so the spines are blue. If you keep your *Break-In*s on a shelf, you can tell at a glance which issues belong to which year within a decade. Having been inducted into this secret, I intend to elaborate it. Henceforth the spines will have a white mark (or for grey, white and yellow a black mark) descending down the spine in order of issue, so that when they are in order on the shelf those marks will form an orderly staircase.

Another innovation is that with help from Rob Wallace ZL2AWL, the NZART WebMaster, I have established a "*Break-In* Companion Files" section [https://nzart.org.nz/news/news-break-in/files/] on the NZART website to provide supplementary information such as program listings or design files for articles in *Break-In*. You will find there the program described in Con Wassilieff's article "A Sound Card SSB Exciter" if you should wish to try it for yourself.

The recent AGM decided to offer a discount of $20 from the annual subscription to members who do not require a printed copy of *Break-In*. That discount was based on the cost of postage for six annual issues, since the other costs of production will be almost unchanged. The advantage of the electronic issue (which of course is also available to those members who continue to receive a printed issue) is that the illustrations in the PDF will be in colour, while the printed version is in B&W. It will also have clickable links for URLs where appropriate.

The NZART website has PDFs of every issue of *Break-In*, back to the first from 1928, available for download. The older PDFs are scanned images, but the more recent ones are original layout PDFs which are of excellent quality and, as mentioned, have colour illustrations. A PDF downloaded from the website is watermarked with the identity of the member who downloaded it, so be assured that if a member distributes that PDF beyond the reasonable use allowed by copyright, then responsibility for that distribution can be sheeted home. βi

SOTA Bingo :: A Challenge for Kiwi Activators & Chasers

Geoff Clark ZL3GA <geoff.clark22@gmail.com>

The 2025–2026 SOTA Bingo Challenge, devised and run by Warren Harris ZL2AJ, brought a challenging new dimension to Summits on the Air activity across New Zealand. Running from 1 November 2025 to 31 May 2026, the challenge encouraged activators to diversify their operating, explore new summits, try modes or bands they might otherwise overlook and travel to other areas.

Instead of focusing on points, the Bingo format rewarded variety, planning, and persistence. Each operator worked to complete a 6×6 grid of tasks–some simple, some quirky, some genuinely demanding.

How the Bingo Grid Worked

Each square on the Bingo card represented a specific achievement–examples included:

- Activating a new summit – First Activation
- Activating summits of all point values (1, 2, 4, 6, 8, 10)
- Making 4 contacts on CW
- Making 4 contacts on UHF
- Using AM mode
- Achieving a "Complete"
- Top of Island
- Activating a summit that was also a Volcano/WWFF/POTA
- Completing an activation in all ZL SOTA Regions

SOTA Bingo Sheet					
Activator Callsign :					Bingo Sheet number: 1
4 x UHF QSOs d s	VOTA d s	2 points d s	4 x AM QSOs d s	6 x S2S QSOs d s	4 x FM QSOs d s
1 point d s	ZLFF d s	ZL1/MW d s	4 x WARC QSOs d s	Top of Island d s	ZL3/WC d s
ZL1/HB d s	ZL3/MB d s	ZL3/TM d s	ZL3/CB d s	First 2 Activate d s	ZL1/WL d s
6 points d s	POTA d s	ZL3/SL d s	ZL1/GI d s	>30 QSOs d s	ZL1/AK d s
8 points d s	ZL3/OT d s	Completed d s	ZL3/FL d s	ZL1/WK d s	4 points d s
ZL1/NL d s	4 x VHF QSOs d s	ZL1/TN d s	ZL1/BP d s	4 x CW QSOs d s	10 points d s

Rules

1) Activation must be with a valid SOTA activation (see general rules on sota.org.uk)
2) Can only claim one square per activation. Point(s) must be received for the summit to qualify.
3) Activations claimed must be logged in Sotadata to be valid
4) Complete squares as follows: d–UTC Date, s–summit reference.
5) Valid dates for contacts between 1/11/2025 and 31/5/2026 inclusive
6) It is acceptable to run multiple bingo sheets at the same time

Square explainations

Top Of Island–Summit is at the highest point on the relevent land mass

Completed–Activate a summit that adds to your completed summit list.

First 2 Activate–be the first to activate a new summit.

Partially or Fully completed sheets to be submitted to <warren@zl2aj.com>
No prizes–but results will be posted on Sota reflector at conclusion of award
Can submit multiple sheets for higher credits.

The design encouraged operators to plan ahead, experiment, and stretch their skills. Participants reported that the challenge pushed them to try new bands and modes, visit other regions and change their normal routine.

Participation

Participation levels were a little disappointing with only a couple of Activators embracing the challenge and submitting their matrix. Other operators certainly did their bit supporting their two slightly crazy mates however there were no Chaser matrixes submitted. The challenge encouraged collaboration, with activators sharing tips, routes, and propagation observations through the SOTA Facebook group and email/messenger. Strong Chaser/S2S (Summit-to-Summit) support for Warren's tour of the South Island was much appreciated by him.

Standout Achievements

Warren ZL2AJ completed the full 36 challenges on the Bingo Activator card, an outstanding achievement. Highlights included:

- Dragging Emma and the kids around the whole South Island, activating at least one summit in each region including a memorable activation of The Monument at Manapouri
- Lots of weekend kilometres in the Hilux around the North Island summits
- Making a great job of getting 4 (actually 6) CW contacts from a summit–sounding like a pro

Warren also ran a couple of Chaser cards (one from home and one for S2S) and achieved a creditable 29 squares in Chaser mode.

What Worked

It was:

Flexible — activators could choose their own path through the grid

Motivating — each square completed felt like a meaningful milestone

What didn't Work

It was:

Daunting — people looked at it, thought "I can't do all of those in that timeframe" and put it aside

Looking ahead

The Bingo card remains valid as an excellent personal challenge – if anyone wants a copy, contact Warren ZL2AJ or Geoff ZL3GA

Thoughts are welcomed on how we expand on the two already successful SOTA event days–New Year's Day (January) and Andrew White Memorial (September). Perhaps by adding events marking the first and last Saturdays of Winter (Bonus points) and Equinoxes (encouraging morning and evening EU DX S2S)?

Please send some feedback, preferably via the ZL-SOTA email <zl-sota@groups.io> or Facebook group. βi

SOTA Bingo Squares

ZL1/NL	ZL1/AK	ZL1/TN	ZL1/WK	ZL1/MW	ZL1/BP	6
ZL1/GI	ZL1/HB	ZL1/WL	ZL3/MB	ZL3/TM	ZL3/WC	12
ZL3/CB	ZL3/OT	ZL3/SL	ZL3/FL	10 point	8 point	18
6 point	4 point	2 point	1 point	>30 QSO	SSB	24
FM	CW	AM	WARC	VHF	UHF	30
>6 S2S	Top of Island	VOTA	ZLFF	POTA		36

A Portable HF Glove Antenna: A lightweight cobweb for the 10-, 15-, 17-, and 20-metre bands

Jim Grebey N4KCT <jim@grebey.com>

Reprinted from QST March 2026 with permission of the ARRL

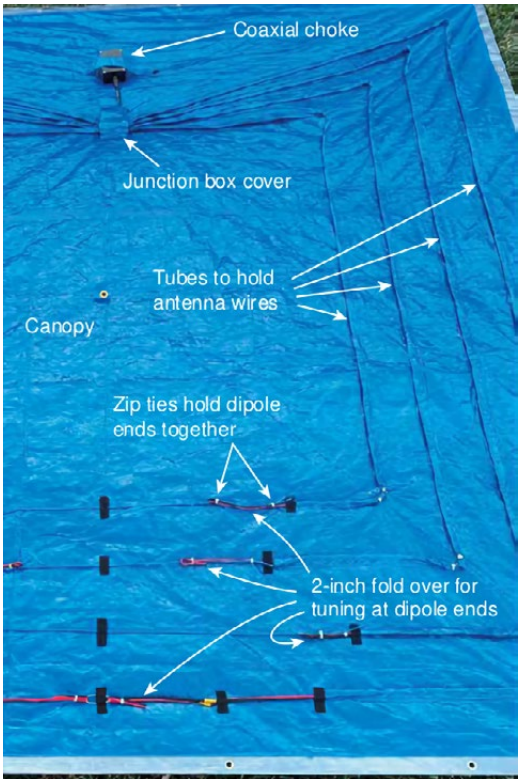
My article "A 2-metre Glove Antenna for Portable Operation," in the January 2023 issue of QST, uses the term "glove" to describe a portable antenna with a fabric enclosure instead of rigid structural components. I presented it to several radio clubs, and each time, I received suggestions to make an HF version.

After reading about the cobweb antenna built by Steve Webb, G3TPW [1], I decided to re-imagine that design as a portable HF glove. A traditional cobweb has structural and mounting hardware that is too heavy for portable use. My solution (see the lead photo) supports 10, 15, 17, and 20 metres and integrates full half-wave folded dipoles for each band. An inexpensive 10 × 10-foot tarp/shade canopy forms the antenna's structural component. Fabric tubes sewn into the canopy hold the elements in place, making it lightweight compared to a typical cobweb. It is both omnidirectional and horizontally polarized, and it doesn't need a counterpoise. It also uses a common- mode choke; you can use either a toroid choke (preferred) or a coaxial choke (six turns of coax, 4 inches in diameter). While it's great for low power, it will handle full legal-limit power limited only by the choke you choose. As with any portable antenna, use ARRL's RF Exposure Calculator (https://arrl.org/rf-exposure-calculator) before use.

The Fabric Glove

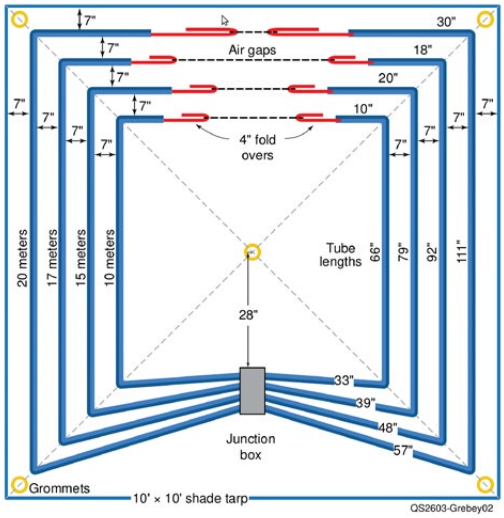
Begin with the fabric component (see Figure 1). I used two shade canopies — one for the base of the glove, and the other for cutting into 3-inch-wide strips to form the tubes through which the wires run. Open the base canopy on a hard surface. Using a dry-erase marker and referring to Figure 2, draw the layout of the entire glove on the canopy. Start with two dashed lines between opposite corners to identify the center. If your canopy does not have a grommet in the middle, add one to help support the antenna later. The top of the junction box should be 28 inches from the center of the canopy. Next, make the tubes that will hold the dipole wires onto the antenna (see Figure 3). You will insert the at each end unsewn; this allows an opening for the antenna wire to turn at each intersection point. Note that no tube is ever sewn across another.

Cut a 6 × 9-inch piece of fabric to cover the junction box, and sew a half-inch border around all four sides. The fabric will be long enough to cover the top and bottom (coaxial end) of the junction box. The end at the top of the junction box should be sewn to the canopy, and the coaxial end should have Velcro®. Add Velcro as needed to hold the fabric in place. Leave the remaining sides open.



ABOVE: *Figure 1 – General placement of the glove antenna's components.*

BELOW: *Figure 2 – The HF Glove's layout.*



The Dipoles

It's best to begin with the 20-metre dipole and then add the other three, working from the outside of the glove toward the center as you progress (see Figure 4). This antenna uses folded dipoles with a common feed point. I used two-conductor #12 AWG copper speaker wire with black-and-red insulation to simplify construction. Cut each of the dipoles to their respective "A" length. Fold the wire in half antenna wires later — do not put them in the tubes while sewing. It's not possible to push

continued on page 11

continued from page 10

the dipole wires around a bend, so there needs to be one tube for each straight wire run (leave them open at each end).

Fold the 3-inch strips in half, and add a seam using nylon thread to each one about half an inch in from the open end. This leaves a half-inch lap, allowing you to sew each 1-inch-diameter tube to the base layer. Use the

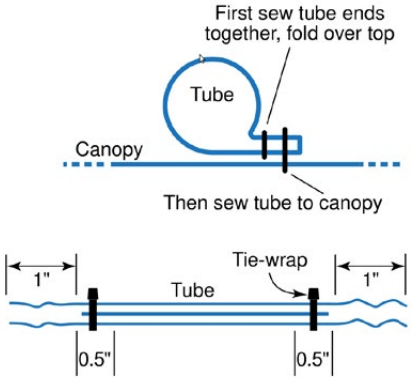


Figure 3 – The fabric tube's dimensions.

lines you drew earlier on the canopy as sewing lines. Sew the tubes to the canopy, leaving 12 inches to identify the center, and at the center point, cut only the red wire. Separate the red wire from the black wire about 12 inches in the center of the dipole.

A folded dipole impedance is 300 W and is usually matched by using a 300 W open-wire feed line or a 4:1 balun as a matching transformer. For portability, I followed the G3TPW approach and used the gamma tee match for each dipole. This created a 50 Ω match between the dipoles and the common coaxial feed line.

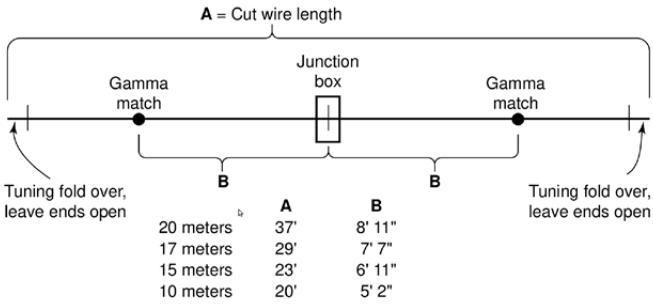


Figure 4 – The dipole dimensions.

To make the gamma tee match, measure the distance from the center of the dipole to its point "B" per Figure 4, strip the insulation from both wires (without cutting the conductor), twist the wires so the red and black make contact, and solder them together (see Figure 5). Run the dipole wires through the tubes for the respective frequencies. Use a stiff #14 AWG wire to pull them through if necessary. On both sides, fold over 4 inches at the ends of the wires of each dipole (do not connect the ends of the wires together). Connect the air gaps between the dipole ends, using zip ties to hold them in place. After assembly, tune each dipole separately by adjusting the amount of wire that is folded over at the ends.

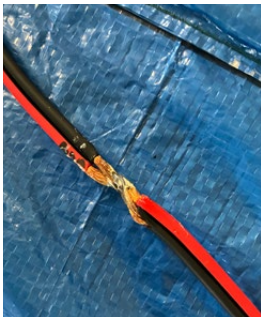


Figure 5 – A photo of the gamma match.

To make the junction box (see Figure 6), I used a 4.5 × 3.5 × 2.2-inch plastic utility box and mounted two electrical utility ground bars side by side within it. Drill four holes on each side of the box for the dipole wires and one at the end for an SO-239 female connector. Connect the terminal bar on one side to the SO-239 center connector and the other to the shield.

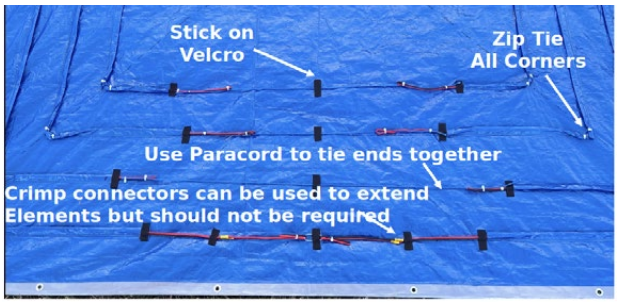


Figure 6 – The junction box.

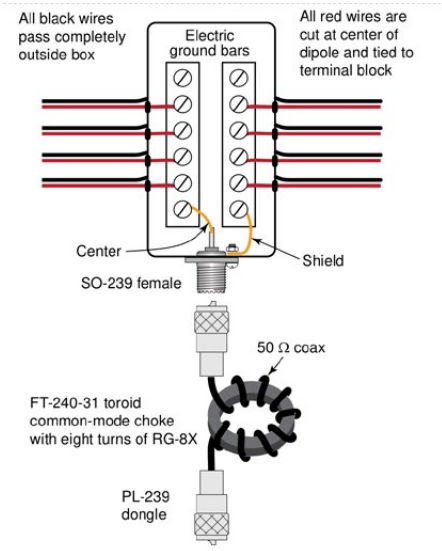


Figure 7 – Tuning the glove antenna.

Do not connect the two strips together. Start with the 20-metre dipole and put it closest to the SO-239 connector. Using the junction box holes closest to the coax, push the red wires through and connect them to the terminal. Run the black wires outside and behind the junction box.

Tune the glove like any dipole; it's best done at the anticipated operating height, which I demonstrate in a photo provided at www.arrl.org/qst-in-depth. I leave the wires long and trim them an inch at a time while monitoring them on a NanoVNA. The standing wave ratios ran from 1.4:1 on 20 metres to 1.1:1 on 10 metres (see Figure 7).

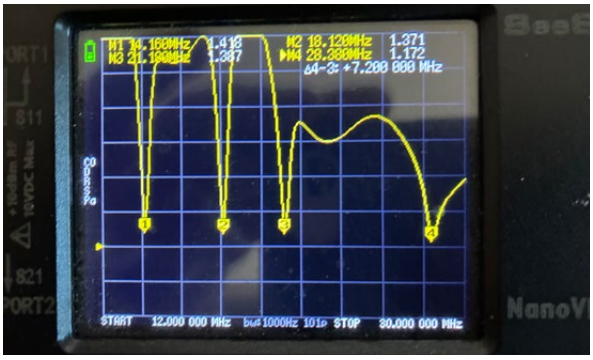


Figure 8 – The glove's standing wave ratio curves.

In the Field

I use 2-inch × 2-inch × 8-foot wood posts to support each corner of the canopy. The components should hang underneath. Connect the choke close to the junction box when in use. Depending on how you set it up, it may droop from the junction box and choke. You can add a tube for a support dowel to prevent sagging, but I've found no performance problems as a result. βi

All photos provided by the author.

1. https://www.kerryamateurradiogroup.com/resources/cobwebb%20design.pdf

A Soundcard SSB Exciter

Con Wassilieff ZL2AFP <zl2afp@xtra.co.nz>

Did you know that you can use your computer and soundcard to generate high quality SSB, without any additional hardware? I hope to show how very simple software can be used to generate SSB, albeit at a low frequency.

Introduction

In the latest generation of amateur radio transceivers (eg. the IC-7300, and its predecessors like the IC-756Pro series) microphone audio is processed by the Digital Signal Processing (DSP) unit, and converted into an Intermediate Frequency (IF) signal at 36 kHz. The DSP unit essentially applies bandpass filtering (nominally 300–3000 Hz) to the microphone audio, and then mixes it with a local oscillator at 36 kHz to produce a double sideband (DSB) signal centred at 36 kHz. Further bandpass filtering extracts one of the sidebands as either lower or upper sideband (LSB or USB). At least that is my guess at what might be going on in the secret world of commercial DSP!

This 36 kHz IF signal is converted into a much higher frequency signal, which is then transmitted. In the latest transceivers such as the Icom IC-7300, this conversion is a single step quadrature mixing process, all performed digitally. But in earlier transceivers such as the IC-756Pro2, the 36 kHz IF is subjected to three further frequency conversions and bandpass filtering at 455 kHz, 64 MHz, and the final transmission frequency, all performed in hardware.

DSP using the computer and soundcard

With the computer and its soundcard, these DSP functions can easily be reproduced in BasicDSP software [1]. BasicDSP is a program that makes it easy to experiment with simple DSP algorithms (eg. oscillators, mixers, and filters) for signals within the frequency range of a soundcard. The soundcard is used as the interface with external hardware (eg. microphone and loudspeaker). Audio from the microphone is sampled, processed, and sent to the loudspeaker. The DSP algorithms are expressed in a high level programming language in which each line of code contains one statement. Each line of code is executed in sequence. Specialist knowledge of programming is not needed.

My old computer's internal soundcard is capable of sample rates of up to 192 kHz, allowing signals of up to the Nyquist limit of 96 kHz (half the sample rate) to be generated. The soundcard is a bit noisy up at these higher frequencies though.

Figure 1 is a screenshot of the BasicDSP program window, showing the general layout of the program, with part of the source code and the various tools and controls.

Figure 1 – BasicDSP program window

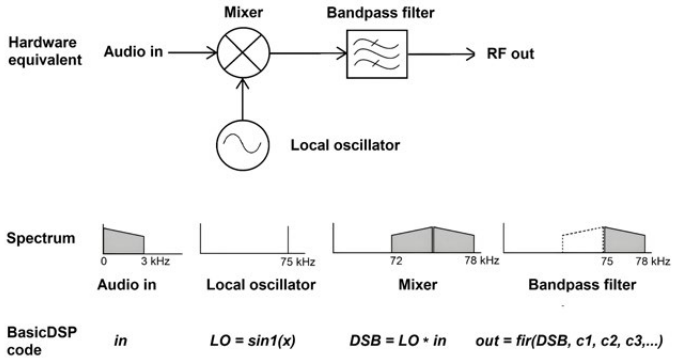


Figure 2 – SSB exciter block diagram with software code equivalents

Figure 2 presents a block diagram of the minimum hardware required to generate an SSB signal at 75 kHz, near the upper limit of the soundcard. This is far enough away from the Nyquist limit to allow the soundcard's anti-alias filter to remove its image at 121 kHz.

Below the block diagram is the signal's spectrum at each step, together with the BasicDSP code implementing the process at that point. In order to be able to separate the upper and lower sidebands, a Finite Impulse Response (FIR) filter with a large number of coefficients c1, c2, c3, etc. is required, in fact too many to list here, over 200. The bandpass filter coefficients can be obtained from online digital filter design programs, such as TFilter [2]. The code, together with explanations at each stage (prefaced by a #), is shown in Figure 3 (below).

Bandpass filter design

The bandpass filter can be designed to work from 75 kHz to 78 kHz to extract the upper sideband, or from 72 kHz to 75 kHz (lower sideband). In fact any bandpass characteristic is possible. It is easy to experiment with different filters, and several filters can be cascaded to improve the filter stop band attenuation and filter slope.

```
# SSB exciter for 75 kHz in five lines of DSP code

# Set samplerate to 192 kHz (the maximum for most soundcards)

  samplerate = 192000

# Generate a sawtooth using the variable 'x'
# mod1(x) = x modulo 1, the fractional part of x

  x = mod1(x + 75/192)

# this fixes the oscillator at 75 kHz

# x is the argument for sin1(x), the local oscillator (LO)
# sin1(x) = sin(x) but with x from 0 to 1
# instead of from 0 to 2 pi radians

  LO = sin1(x)

# Multiply the audio input "in" by the local oscillator to
# generate a double sideband (DSB) signal centred at 75 kHz

  DSB = LO * in

# Apply a bandpass filter to "DSB" to give either LSB or USB

  out = slider1 * fir(DSB, c1, c2, c3, ...... c3, c2, c1)

# The variable "out" goes to the soundcard output
# Note that the filter coefficients are symmetrical
# (slider1 adjusts the output level)
```

Figure 3 – BasicDSP source code for an upper sideband signal at 75kHz

continued on page 13

continued from page 12

BasicDSP allows up to 255 filter coefficients in a single filter and they all have to be in a single line, separated by commas, with no line breaks. The coefficients produced by TFilter are intended for use in C/C++ arrays, and are presented in a vertical column which needs to be transposed into a horizontal line (typically using a spread sheet). A tedious business but you soon get the hang of it. Figure 4 is a screenshot of the TFilter window, modified for clarity, showing the design parameters and the resultant filter characteristic. These parameters are a good starting point for further experimentation.

Figure 4 – TFilter program window

BasicDSP includes a spectrum display of the output signal and various types of internal test signal (impulse, random noise, sinewave) in addition to the soundcard input, so that the bandpass filter shape may be seen and verified. Figure 5 shows the frequency response (bandpass characteristic) of my bandpass filter, using the impulse input. Averaged random noise gives the same result. In this example I have applied the filter twice to increase the stopband attenuation from just under 40 dB to 75 dB. It is worth noting that although the passband design ripple is 5dB, the narrowness of the passband response exploits this to give the filter a "soft" characteristic as opposed to a "brick wall", with low and high audio frequencies within the passband rolling off in a gentle manner.

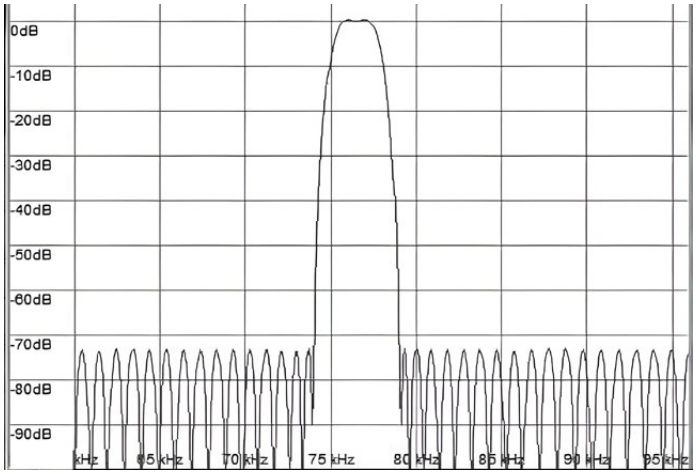


Figure 5 – Bandpass filter frequency response from 60 to 96 kHz

Receiving the 75 kHz SSB signal

The 75 kHz SSB signal should be visible in the spectrum display of a modern transceiver such as the IC-7300 by connecting the soundcard output to the antenna input, preferably via a capacitor to provide electrical isolation. Take care not to inadvertently transmit into the soundcard. It has been known …

Figure 6 shows the transmitted signal as viewed on my ANAN-10 software defined radio spectrum display. Random noise is used as the audio source. Because the soundcard has a moderately high internal noise level, the full extent of the stopband attenuation of the bandpass filter cannot be seen, with only the top 50 dB of the potential 75 dB visible. A studio quality soundcard would have a lower internal noise level, and thus better exploit the filter performance.

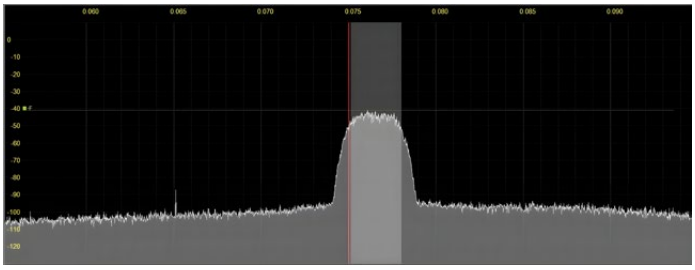


Figure 6 – Transmitted upper sideband signal received on an ANAN-10

Conversion to a higher frequency

Although conversion of the 75 kHz signal to amateur frequencies is beyond the scope of this article, output at a single frequency within an amateur band is easily achieved with an oscillator, double balanced mixer and a crystal filter. The crystal filter only has to be good enough to separate two signals differing by 150 kHz, so a basic Cohn 3-pole crystal filter will be sufficient. An internet search will reveal several crystal filter design programs. An NE612 mixer IC is probably the simplest hardware arrangement as it has an in-built oscillator.

The astute reader will have noticed that the NE612 and crystal filter by itself can generate SSB directly at the transmitted frequency using baseband audio without the 75 kHz conversion, but the sideband suppression will be poor unless a high quality crystal filter is used. A simple 3-pole filter will just not "hack it" whereas the soundcard method can easily give sideband suppression of 60 dB or more.

If your soundcard is limited and has a maximum sample rate of 48 kHz, then the signal frequency is limited to 24 kHz. This means that mixing to a higher frequency will result in signals that are less than 48 kHz apart, making separation of the desired signal increasingly difficult. In this instance the quadrature mixing process used in the IC-7300 would be a better approach, but would require more complex hardware.

The soundcard method is not limited to SSB. You can also generate an amplitude modulated signal (AM) and a frequency modulated signal (FM) just as easily as SSB. For AM just change the code shown in Figure 3 to read AM = LO * (1 + in) instead of DSB = LO * in, and for FM change LO = sin(x) to read FM = sin(x + in). The variables AM and FM can then be sent directly to the output or further processing by a suitable filter. But that is another story. βi

References

[1] http://pa3fwm.nl/software/basicdsp/
[2] http://t-filter.engineerjs.com/

The DSP program can be downloaded from *Break-In* Companion Files

Next deadline for copy is
10 November 2026

Missing QSLs? send a stamped and addressed envelope to your relevant QSL Bureau Manager.

SugarCube VFO Club Project

Ross Boswell ZL1DRB <drb@med.co.nz>

In 2022 the Christchurch Branch of NZART organised a construction project for the "SugarCube VFO". The SugarCube was named by its developer Andrew Woodfield ZL2PD, who is a member of the branch, because its populated circuit board is about the same size as a cube of sugar. [1] The active components are an Si5351 clock generator and an ATtiny85-20 microprocessor; the small size is achieved by placing the Si5351 MSOP-10 package underneath the 8-pin DIP socket in which the ATtiny is mounted. Figure 1 shows a populated SugarCube board.

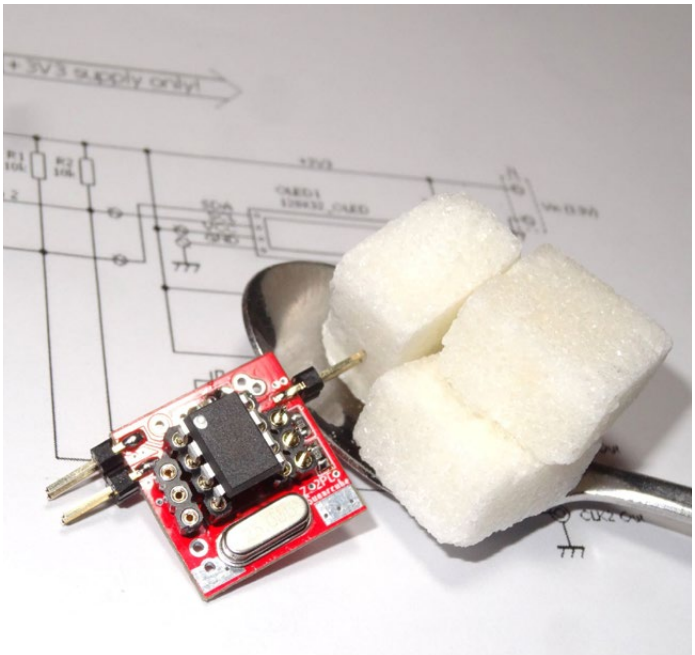


Figure 1 – A SugarCube alongside its namesakes.

The project based on the SugarCube provided three separate oscillator outputs, two in quadrature at one frequency and the other at an independent frequency. The range of frequencies available is the range provided by the Si5351, from about 3.5MHz to about 200MHz for quadrature output, and from about 5kHz to 280MHz if quadrature is not needed. The SugarCube board was mounted in a laser cut acrylic ("Perspex") box about 100 × 60 × 30mm containing an additional "Switchboard" PCB holding the controls – a rotary encoder, push-buttons and an OLED display. Power from a 5v plugpack was provided through a USB-C socket, and a stereo phono socket allowed connection for RSSI (Received Signal Strength Indicator)

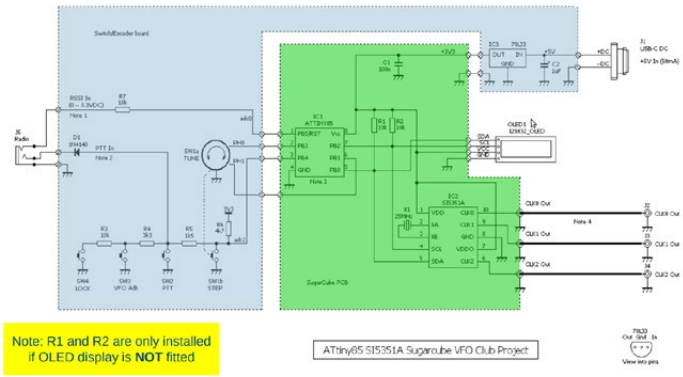


Figure 2 – Circuit diagram of the SugarCube VFO.

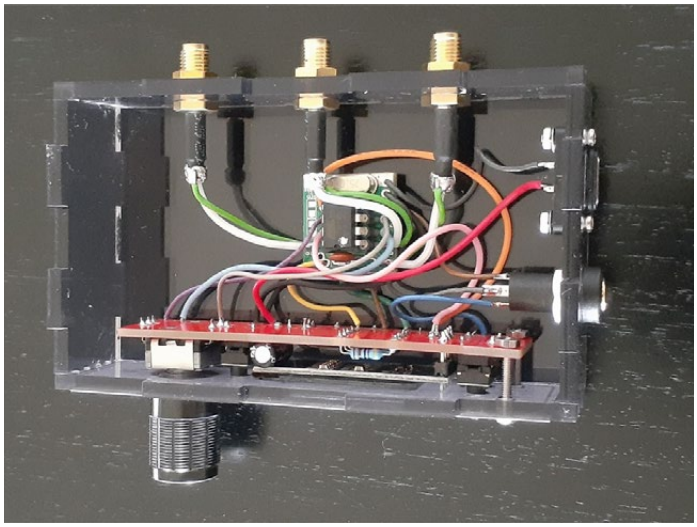


Figure 3 – Internal view of the SugarCube VFO.

and Push-to-Talk. The circuit diagram is shown in Figure 2, the internal wiring of the box in Figure 3, and the completed prototype SugarCube VFO in Figure 4.

The advantage of running this as a club project is that components were ordered in lots of 10, principally from AliExpress, minimising shipping costs. The kitsets were marketed through the club for $40, and a total of about 30 were sold. Three building workshops with experts available to help were organised, and from these only one constructor ended up the morning with a non-working VFO. The time for completion of construction was about 2-3 hours. Because many of the constructors were not confident to solder the MSOP-10 package, these were pre-populated on the boards provided to them.

Figure 4 – The prototype SugarCube VFO.

The full project description and detailed construction notes are available for non-commercial use on Andrew's website [2], and members of the Christchurch branch are able to provide advice to any other branches that wish to replicate the project.

[1] https://zl2pd.com/sugarcube_vfo.html
[2] https://zl2pd.com/sugarcubeplus_clubproject.html

Digital Voice Modes and my experiences with them

Chris Hattan ZL2CJ <ZL2CJ@outlook.com>

I've been a Ham for only 4 years now and initially got myself into digital voice aspects of the Hobby, such modes as D-Star, and DMR. My intention was to try out everything in the hobby that I can.

I started off with EchoLink which is an older style connection but still works quite well with many conferences/Nets available. The beauty of EchoLink is you can connect to analogue repeaters. I then found Droidstar https://droidstar.net/, an app on the phone which does most digital voice modes (DMR in its various flavours; DMR+,YSF, NXDN, REF, XRF, DSC, P25, M17). To be honest, it was quite good at the time but now is dated and the audio has never been very good. There were links to IRLP and links to 2-metre repeaters as well.

First up I purchased an inexpensive handheld DMR radio, the TYT MD-390, which also has analog FM capabilities. There is a DMR repeater here in Hamilton, but you need to programme the radio with a 'code plug'. I initially had help from Doug ZL3DMH, but still struggled to negotiate the art of developing these.

After I bought an Icom ID-52A and Icom IC-7100, I noticed they had D-Star capability which I wanted to use. Now, how to connect to the repeaters and navigate around the system? There was one D-Star repeater in Hamilton which I was able to figure out and started using, however after some time it was removed from service.

Subsequently I came across a SharkRF OpenSPOT4 which meant I could access all of the digital modes and cross-mode as well, see https://www.sharkrf.com/products/openspot4/ This unit was good, as I could go mobile with my Icom 52A and access all the modes. When going on cruises, I could take it and talk to the world without having to connect to repeaters. It's basically a mobile hotspot, with the advantage that I didn't have to configure it with Raspberry Pi and or WPSD software.

Later, I got a SharkRF M1KE VOIP Transceiver which meant I could access these same networks on a small device through Wi-Fi connection, see https://www.sharkrf.com/products/m1ke/ It's a similar interface to the OpenSPOT4-pro but with a PTT button!

Over the past few months several new software options have become available to use on your mobile phone, tablet or PC. These apps are rapidly developing, making it possible to connect to all the voice digital modes without requiring any additional hardware. It has reached the point of not requiring any physical radios or VOIP devices like those described above. This can have advantages as new Hams can use these networks without needing to purchase any new equipment. But then some will say "What is this about — it doesn't use real radios". That is certainly a debate to be had.

I'll focus on two new apps in this article which promise much for versatility and portability.

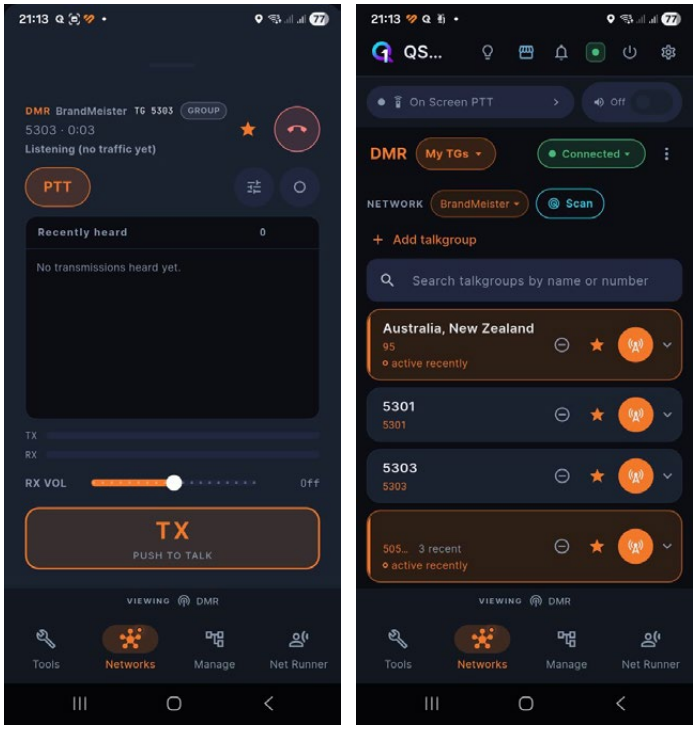
QSO One https://qso1.net/ is a free app written by Frank KD8JKK — "Ham radio without the hardware". Sign up with your callsign, download it for Windows or Android, and you're on the air in about five minutes without needing a Raspberry Pi, a radio interface, or a weekend of Linux.

QSO One currently covers the modes DMR-TGIF, FreeDMR, Brandmeister, YSF, M17, IAX Direct, EchoLink and AllStarLink. As yet no D-Star, but I believe that's coming. Also in the pipeline is IOS support for those with iPhones. I have been using this app for some months now and I'm quite excited about it. I've been one of the beta testers for the Android version.

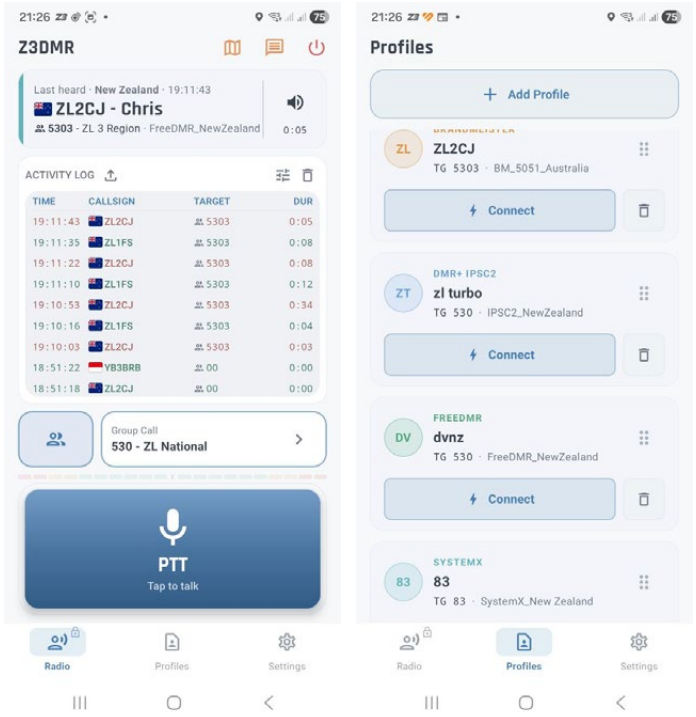
Z3DMR is another new app that was originally set up to cover DMR only but it too is branching out to other networks such as YSF. It's currently available only for the Android platform in the Play Store. Unlike QSO One it includes DMR Plus which for us in New Zealand covers the ZL-TRBO network. With Z3DMR you add the profile of the network then select the Talkgroup. The profile page may benefit from a grouping system to organise the profiles.

I hope this article has shown how far the digital voice world has progressed over the last few months. I may give a presentation on it at the Waikato VHF Group's December meeting in Tauranga.

Feel free to contact me if you want to know more.



QSO-One sample screens



Z3DMR sample screens

GROTA update — a review

Kelvin Barnsdale ZL3KB <kb.ew@gmail.com>

As we are welcoming a new *Break-In* editor, and we probably have quite a few new NZART members too, I thought we might re-visit the raison d'etre of Green Radios On The Air. This is not a formal club, but a group of enthusiasts interested in restoring and operating HF military radios. We have approximately twenty-three 'associates' scattered around the country, but mostly in Christchurch with the port hills or the Canterbury plains as our testing grounds. Before we outline our aims, we must emphasise that we are NOT a military reenactment group – no 'dressing up' here.

Our aims are three-fold –sympathetically restore ex-military sets back to their original specification whilst trying to preserve their historical significance, research their history and test their performance in situations for which they were designed, and learn the skills need to operate the sets such that they give their best performance. i.e. make radio contacts!

The last item can be very challenging to an operator used to only modern radios, as setting the frequency on 1940s army gear requires unfamiliar skills. For instance, one AM 'channel' on the dial of a ZC1 is just 0.2mm wide, and then they drift!

We consider a successful radio contact needs three things, and this can be applied to any radio of any era – be on the correct *Frequency*, listening at the correct *Time*, and have enough *Signal strength* to interpret the information. The first two items are down to scheduling and radio operating, the last is down to experimentation which is the focus of most GROTA trials. We like to experiment with surface wave, NVIS, sea path, hills, forests and many other terrestrial modes of absorption. And all this with sometimes just 15mW of radiated power.

This month we completed our 120th trial; a brief respite in the freezing Christchurch temperatures allowed the team to get back into the Port Hills again. Bryan with his beloved partners (WS48 set AND his wife) setup near Diamond Harbour, whilst Aidan perched on the heights above the harbour. Des found a place near Godley Head, Bruce found a park in Bexley and I set up on hills above Sumner. Everyone had WS48 sets except Des who was giving his ZC1 MK2 a "post-repair" trial run.

Despite Diamond Harbour being surrounded by sea water, some of signals received by Bryan had prominent fading, caused by Near Vertical Incidence Skywave. This indicated the surface wave was very weak, showing how much the thin soil on the surrounding rocky hills absorbs surface wave, despite the path lengths being well withing the normal 8km ground wave range of the radios. There were many other quirky experiences where some ground wave paths were better than expected, so as usual we came away with more questions than answers.

Thanks to Aidan ZL3APB, Des ZL3AK, Bryan ZL3BHS and Bruce ZL3TFM, with Ray ZL3RAM and Peter ZL3LTM on the fringes.

A gathering of the GROTA clan

Kelvin ZL3KB combining GROTA with SOTA on Sugarloaf

Braden with 48 set on Port Hills

Aidan on Mt Vernon pretending it is summer.

Morse With Purpose

Stan Vause ZL3TK <ZL3TK.radio@gmail.com>

This innovative hub for Morse activities was successfully launched on 27 July 2026 at a well-attended Zoom meeting. MWP is designed to encourage a far wider range of on-air CW operations than the average amateur radio operator typically experiences.

Despite the wide range, MWP is a low pressure project designed to run in 12-month cycles, yet is extremely powerful because it caters for everyone from cautious raw beginners to seasoned masters.

By completing the challenges offered in twelve categories over their personalised twelve months, participants earn badges, Boy-Scout style. This structure ensures continuous opportunities for CW activity and encourages the setting and achievement of personal goals. Accumulated badges qualify for proportional awards, Bronze, Silver and Gold. Categories include CWops Academy graduation, keying-skill tests, DX contests, formal traffic handling, RandomGram and even cold war-style transmissions. All options are described at https://groups.io/g/mwp

Future Zoom meetings for registrants will provide training, discussion and question time. To begin your first 12-month cycle, register by email to <mwp+owner@groups.io> βi

Taranaki—The Second NZART Branch

Craig Crawford ZL3TLB <craigrcrawford@hotmail.com>

The 29 September 1926 edition of NZ Radio magazine recorded that a Taranaki branch of the new NZART had been established on 20 September, just five weeks after the formation of NZART (16 August).

At that first meeting of Taranaki amateurs Les Rowson Z2AK proposed that the new group be affiliated with NZART and this motion was seconded by CN Gribbon Z2GB. Rowson was the first President and Jack Lynch (later OZ1BL and ZL2QW) was appointed their first Treasurer.

Regular meetings of the Taranaki group were held in New Plymouth until late 1929, when both Rowson and Lynch moved from the city. However, as the branch consisted of amateurs right across Taranaki, it continued on a virtual basis by holding irregular on-air meetings for a few more years. No minutes of the Taranaki branch have survived.

In 1936 amateurs in New Plymouth decided to form a new branch. On 4 June 1936 Bill Gentles (SWL) organised the meeting which appointed Fred Huggard ZL2CB as President and Jack Girling ZL2OT his Vice-president.

Meetings were held at the 2YB broadcasting studios (North Taranaki Radio Society) until September 1938, when the station increased its operating hours. Meetings continued at various members' homes until April 1941.

In the October 1941 issue of *Break-In* it was reported that "with most of its members serving in the Forces … the New Plymouth branch has decided to close down for the duration".

The branch was reformed on 16 April 1946. It was later donated a small hut on Marsland Hill where monthly meetings were held. A branch station ZL2BDN was established in 1965. Currently the active branch meets monthly at the Taranaki Emergency Management Office (TEMO) in the Marsland Hill Reserve. βi

VHF Scene

Compiled by Simon Watt-Wyness ZL1SWW
<vhfscene@nzart.org.nz>

Hi all, hope you are all surviving the winter weather OK. We've had some quite cold spots for sure! At least there is light at the end of the tunnel for summer! Bring it on! On with the column …

Six Metres

On 27 July, Ross ZL3RJ had quite a few contacts into VK3 & 7 with 14 QSOs as well as working Dave ZL1AKW. Also, a little but unusual for this time of year was his 6 JA contacts on 30 July. He wasn't sure if it was a first for him working JA in the winter period.

Bob ZL1RS has also been experiencing some of those winter openings like Ross. He has been quite busy up in the magic Bay of Islands area as you will see from his quote. "An early evening opening to EU on 13 June saw a few QSOs with HB9, DL and F. The path for this opening was very narrow and the 'true short path' for those entities (about 320–330 degrees). Despite plenty of activity, no signals were seen from the more common 280–300 degree path to the Middle East and southern EU that has been worked from here in the past.

"An opening to NA in mid-June coincided with the ARRL June VHF Contest. 35 stations were worked in VE2, VE3, in the mid-west States, and in W7 with some very good signal strengths.

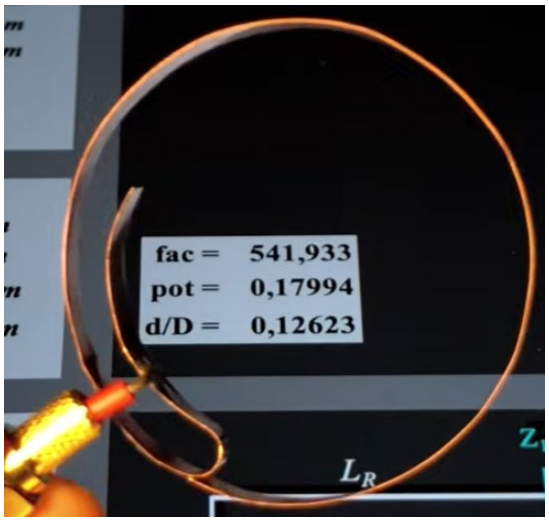
"In mid- July I worked G8BCG via EME using FT8. I've seen FT8 signals from EU via the moon in the past (our moon set coincides with their moon rise), but this was the first time a 2-way FT8 EME QSO was successful.

"The trans-Pacific path to NA again opened in late July and 59 contacts were made mainly with W8/9/0. These included 5 mid-west USA grids which had not been worked before despite working many W's from that area on 6m in the past.

"During our mid-winter months there were occasional sporadic E openings noted to VK, FK8, as well as E's linked TEP to JA. There were probably more openings, but we were away on holiday."

VHF Activity / Things of Interest

Maurice ZL2MF shared a link with me about lambda loop antennas that was quite intriguing. These are like a j pole in a loop formation. They have horizontal and vertical radiation patterns and could be useful as a dish deed perhaps. They have quite narrow bandwidth which is beneficial in that you can get out-of-band frequency rejection. (Could be useful for Meshcore repeaters which are in close proximity to cell sites?). Klaus has some interesting YouTube videos outlining this on his Electronics Unmessed site. Check out his YouTube site.



Lambda loop antenna

continued on page 18

continued from page 17

There may be another WSJT mode currently being developed by the WSJT team. This being JTTY, it will be like RTTY with significant error correction so will provide vastly superior weak-signal performance and a significantly lower error rate compared to standard RTTY. No doubt it will come as an upcoming feature for a future WSJT-X release candidate. WSJT-X 3.0.2 is the latest release supporting FT8, FT4, Q65, JT65, JT9, JT4, FST4, FST4W, MSK144, WSPR and Echo.

It looks like some are going to be active on the next VHF field day on the 5 & 6 December. Some keen ops are going to be active from Simon ZL2FAE's Te Horo site. They are keen to use a few digital modes and will be active from 6 m through to 3 cm. Would be good to try and crack a DX DSTAR contact as well. It could be busier on 2 m SSB / CW as the SOTA ops will want to take advantage of the VHF contest field day. Let's hope!

Microwave Matters

Mike ZL2YW has been looking at panel antennas for 2.4 GHz as a cheap and practical portable option giving moderate gain. Less gain than that of a dish or a larger gridpack, but also much less bulky. A unit acquired through Ali Express looked suitable as it was described as having 18 dBi gain and an SWR of 1.5:1 or less over 2400 MHz–2500 MHz.

However, examination with a vector analyser showed it to be more narrowband than specified and a good match to 50 ohms only in the upper part of the band. This was of little use for the narrowband mode segment at 2400–2401 MHz .

Before long the flat front radome was found to be easily removable, after which each of the array of eight patch antennas inside was brought down to 2400 MHz by judicious loading with approximately 5 mm by 3 mm pieces of adhesive-backed copper foil. The SWR at 2400 MHz was reduced from almost 2.0:1 to below 1.1:1.

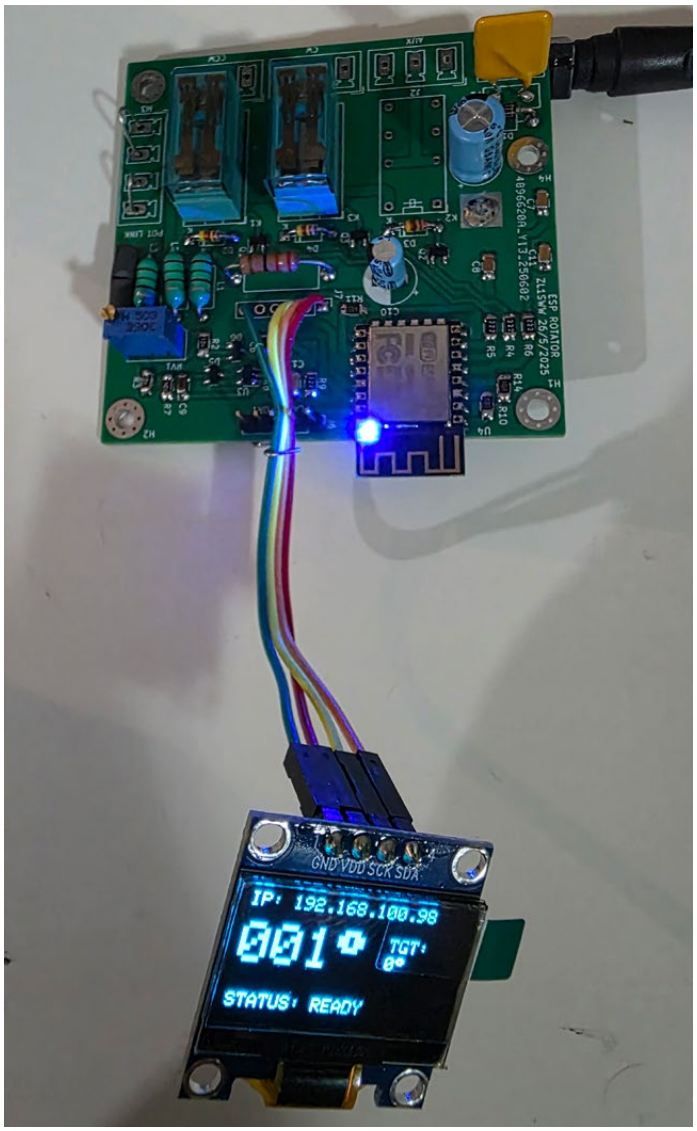
The printed antenna board integrates a phasing and matching harness which needed no modification: it seems that the observed narrow SWR bandwidth is mainly due to the patch antennas themselves. Mike might write this up in another article when he gets the time. Meanwhile he is also looking at 5.7 GHz panels too.

Other Stuff

LoRA APRS. Charles ZL1RKO and Robin ZL1WX have been experimenting with APRS over LoRA WAN. This has stemmed from the interest in Meshcore. Hayden VK7HH has also been experimenting in VK as well. The action is happening on the low end of the 70 cm band near the SRD section. Charles and Robin have been doing limited testing around the Waiheke and Rakino Island area on 433.775 MHz which so far has produced no observable interference to the Local UHF repeaters. LoRA uses short burst data with a low duty cycle. This frequency falls within the allocated 433.050 to 434.790 LIPD / SRD GURL spectrum space. There are discussions happening about whether to allocate a spot in the band plan to cater for LoRA APRS.

The scribe, Simon ZL1SWW in the little spare time he has, has been playing around with a Wi-Fi Rotator Controller as he has a spare rotor unit but no controller. He had already designed a PCB (Simon had done a binary dump of the firmware off the website into a chip to see if it would go) that was based on AF6SA's very good design which works well but the code is locked to the MAC address of the Wi-Fi chip. While it worked, it only ran for 30 minutes and needed a power cycle to work again. (Postage from the USA was a killer and made it less possible to buy his kit directly.) He got it unlocked thanks to Stephan AF6SA after he saw Simon's board design. This has been the basis of his remote 6 m station for the last year. Simon decided to have a go at a new code base that use the same board and ESP-12F chip without being stuck with a firmware lock and is modifiable locally as with the help of Claude AI he has generated the source code. It is running but the acid test will be linking it to a rotator unit. It is a work in progress for a box / transformer and a final test.

It has features like a stall guard – if you want it to turn the antenna but the heading hasn't moved at least 2 degrees within 30 seconds, it declares a stall and will stop the motor drive. Has an OLED Display and WiFi Access point for initial configuration by the inbuilt web server to join your house network and direst rotation. Has calibration / pot reversal etc to customise to your rotator as well as understanding GS-232 protocol over wireless.



Simon's Wifi Rotator Board

He is working on a point and click compass rose on the web page but this is under development as this column is being written.

2026 VHF-UHF-SHF-EHF Contest Calendar

Microwave Contest – 3/4 October
Field Day – 5/6 December

For all contests, the operating periods are 5 pm to 11 pm on Saturday, and 7 am to 1 pm on Sunday, NZ local time. For all contests, the operating periods are 5 pm to 11 pm on Saturday, and 7 am to 1 pm on Sunday, NZ local time. The rules for VHF-UHF-SHF-EHF Contests, as administered by the Auckland VHF Group; on behalf of all VHF groups are available on the NZART website: https://nzart.org.nz/activities/contests/vhf/

Summary

Many thanks go to the contributors who help make this column happen with their input – ZL1RS, ZL2MF, ZL2YW, ZL3RJ, and any others. If you have input and pictures for the columns ahead, such as DX activity reports, repeater installation, branch activities, snippets of interest, technical items etc, please send to Simon ZL1SWW at <zl1sww@nzart.org.nz>, <vhfscene@nzart.org.nz> or *Call Book* addresses. I also accept large picture files sent via email.

Awards

Awards Manager: Stewart Robinson ZL2STR
<awards@nzart.org.nz>

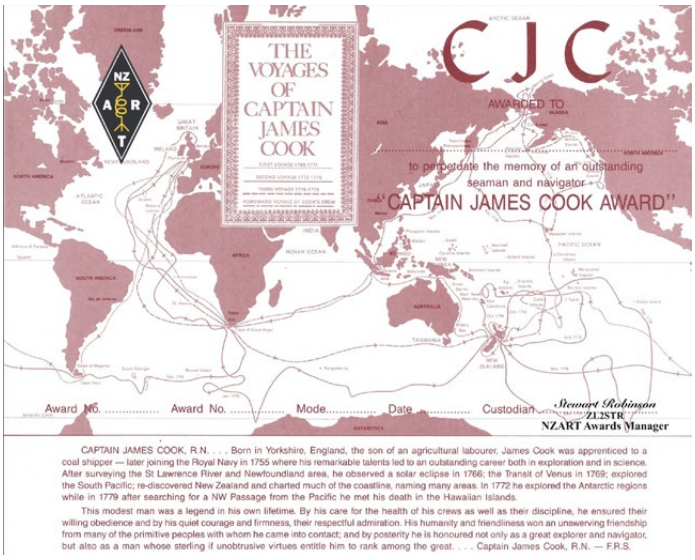
The issuing of certificates for these last two months has been slim with only one being issued to Reg Williams G0OOF for his efforts in Digital modes for Commander in the Captain James Cook Award.

The ZL100 Awards closed at the end of August and as the time given for logs to be presented to me is the 15th of September the results will be presented in the Nov/Dec 26 issue of *Break-In*. Thank you to all the have taken part in this Award.

I would like to present in future issues of *Break-In* the different awards that are available to all Hams and SWLs and in this issue I will start with the Captain James Cook Award aka CJC Award. The contacts required are from locations that James Cook visited in his explorations.

The award was conceived to perpetuate the memory of this world famous navigator and seaman in three classes:-

- *Basic "Sailor Class"* award requires contacts with a G station in Yorkshire along with F0 French Polynesia, ZL2, VK2, and Hawaii KH6
- For *"Officer Class"* requires Sailor Class plus ZL1, ZL3, ZL4, VK3, VK4, P2 New Guinea and an Antarctic Station.
- For *"Commander Class"* as for Officer Class plus any five (5) of the following countries: VE2 Quebec Canada, VO Newfoundland, A35 Tonga, YJ8 Vanuatu, FK8 New Caledonia, CE8 Chile, KL7 Alaska.



Captain James Cook Award Logsheets are available by sending a email to <awards@nzart.org.nz>

Any Band and Any Modes. Endorsements for same band or modes.

No QSL cards are required but a signed Log-sheet confirming that the contacts were made by yourself and being a true and correct record .

As with all NZART Awards your certificate will be supplied as a PDF via email but a printed certificate can be supplied at recipient's cost.

Happy hunting, Stewart ZL2STR

Calling New Zealand

Greg van der Reis ZL1GUD / ZL3THS <ZL1GUD@proton.me>

Calling New Zealand is a new fun HF SSB competition where we try and to contact as many towns and cities across New Zealand as possible during the month of November.

Calling New Zealand runs for the month of November–weekends only, starting each Saturday at 6am NZDT and finishing at midnight on Sunday. This will be the schedule for each weekend for the entire month. The competition is SSB HF only.

The concept is similar to POTA/SOTA:

For the Chasers, call and log as many towns as possible. Log sheets are provided with all the towns, and all you have to do is fill in the contact details.

For the Activators, they can go from town to town and activate as many towns as possible over the four weekends. You need to make 5 contacts in each town to activate the town and you can operate portable or mobile. We suggest making it a road trip each weekend and logas many towns as possible in your region or even the whole island.*

For the VKs there is a special certificate and award which will be made to the Australian that contacts the most New Zealand towns and cities during the event.

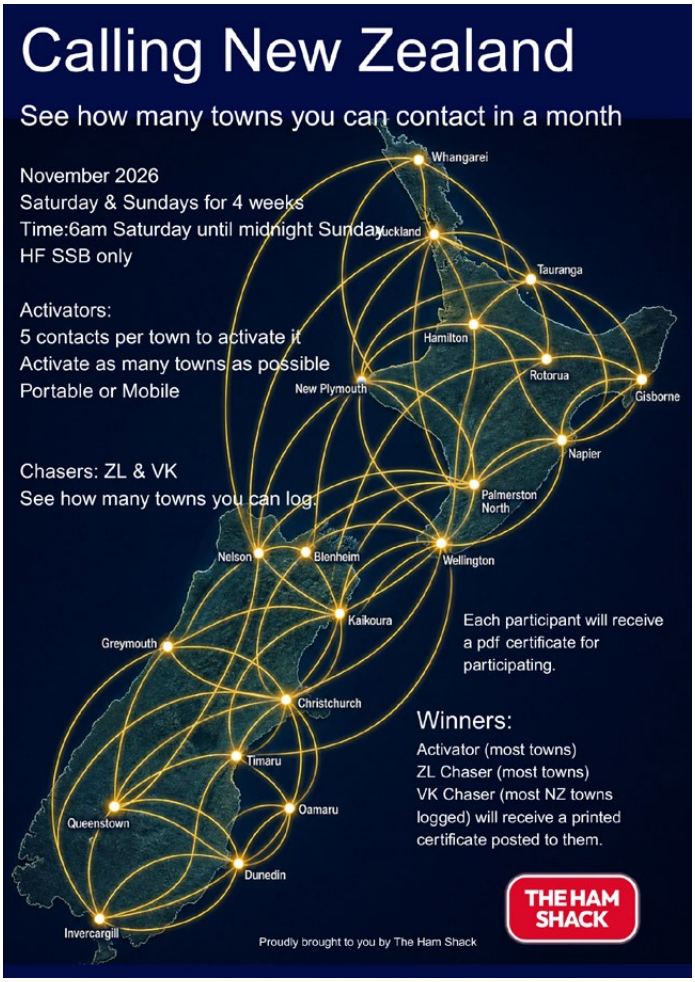
We will provide you with log sheets and a list of towns/cities that are accepted. All the participants that submit logs will get a PDF certificate emailed to them.

The winner of each category (i.e., the most towns chased, the activator with the most towns activated, and the VK station with the most New Zealand towns contacted) will each get a very nice certificate, which will be posted to them.

*Photographs–Activators need to take a selfie in each town that they activate. The photographs needs to show you or your setup with an identifiable building in the background (town hall, medical centre, police station, or something with the town's name on it). The photographs are not optional and will form part of an article covering the competition. Chasers and VKs need to send one photograph of themselves at their radio/station/etc.

The event is proudly brought to you by <www.thehamshack.co.nz>

Rules and log sheets can be found on the website or email me <zl1gud@proton.me> βi



Contests

Contest Manager: Vacant

WA7BNM Contests Calendar – Customised for NZART

Bruce Horn WA7BNM <bhorn@hornucopia.com>

Editor's note: We do not have a Contests Manager/Columnist at present. In the interim, Bruce Horn WA7BNM has given permission to publish his Contests Calendar for the coming months, and he has very kindly gone to some trouble to generate a specific list of interest to NZ hams. If you are reading this as a PDF you will find that it has links to his website https://www.contestcalendar.com *for further details of each contest.*

October 2026	
+ URC DX RTTY Contest	0000Z to 2400Z, Oct 2
+ TRC DX Contest	0600Z, Oct 3 to 1800Z, Oct 4
+ Oceania DX Contest, Phone	0600Z, Oct 3 to 0600Z, Oct 4
+ Worked All Provinces of China DX Contest	0600Z, Oct 3 to 0559Z, Oct 4
+ German Telegraphy Contest	0700Z-1000Z, Oct 3
+ Russian WW Digital Contest	1200Z, Oct 3 to 1159Z, Oct 4
+ California QSO Party	1600Z, Oct 3 to 2200Z, Oct 4
+ International HELL-Contest	1600Z-1800Z, Oct 3 (80m) and 0900Z-1100Z, Oct 4 (40m)
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Oct 6
+ A1Club AWT	1145Z-1300Z, Oct 7
+ UKEICC 80m Contest	2000Z-2100Z, Oct 7
+ Makrothen RTTY Contest	0000Z-0800Z, Oct 10 and 1600Z-2400Z, Oct 10 and 0800Z-1600Z, Oct 11
+ Oceania DX Contest, CW	0600Z, Oct 10 to 0600Z, Oct 11
+ Scandinavian Activity Contest, SSB	1200Z, Oct 10 to 1200Z, Oct 11
+ Arizona QSO Party	1500Z, Oct 10 to 0500Z, Oct 11
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Oct 13
+ A1Club AWT	1145Z-1300Z, Oct 14
+ NTC QSO Party	1900Z-2000Z, Oct 15
+ JARL WW RTTY Contest	0000Z, Oct 17 to 2400Z, Oct 18
+ Worked All Germany Contest	1500Z, Oct 17 to 1459Z, Oct 18
+ Stew Perry Topband Challenge	1500Z, Oct 17 to 1500Z, Oct 18
+ Argentina National 7 MHz Contest	2130Z-2330Z, Oct 17
+ Asia-Pacific Fall Sprint, CW	0000Z-0200Z, Oct 18
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Oct 20
+ A1Club AWT	1145Z-1300Z, Oct 21
+ CQ Worldwide DX Contest, SSB	0000Z, Oct 24 to 2359Z, Oct 25
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Oct 27
+ A1Club AWT	1145Z-1300Z, Oct 28
+ UKEICC 80m Contest	2000Z-2100Z, Oct 28
+ ARRL EME Contest	0000Z, Oct 31 to 2359Z, Nov 1
+ Russian WW MultiMode Contest	1200Z, Oct 31 to 1159Z, Nov 1
November 2026	
+ High Speed Club CW Contest	1400Z-1700Z, Nov 1
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 3
+ A1Club AWT	1145Z-1300Z, Nov 4
+ UKEICC 80m Contest	2000Z-2100Z, Nov 4
+ YBDXPI FT8 Contest	0000Z, Nov 7 to 2359Z, Nov 8
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 10
+ A1Club AWT	1145Z-1300Z, Nov 11
+ WAE DX Contest, RTTY	0000Z, Nov 14 to 2359Z, Nov 15
+ JIDX Phone Contest	0700Z, Nov 14 to 1300Z, Nov 15
+ OK/OM DX Contest, CW	1200Z, Nov 14 to 1200Z, Nov 15
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 17
+ A1Club AWT	1145Z-1300Z, Nov 18
+ NTC QSO Party	1900Z-2000Z, Nov 19
+ LZ DX Contest	1200Z, Nov 21 to 1200Z, Nov 22
+ South American Integration Contest CW	1800Z, Nov 21 to 2100Z, Nov 22
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 24
+ A1Club AWT	1145Z-1300Z, Nov 25
+ UKEICC 80m Contest	2000Z-2100Z, Nov 25
+ ARRL EME Contest	0000Z, Nov 28 to 2359Z, Nov 29
+ CQ Worldwide DX Contest, CW	0000Z, Nov 28 to 2400Z, Nov 29

Sangster Shield Results 2026

Glenn Kingston ZL2KZ <gkingston@xtra.co.nz>

Thanks to all who took part this 99th year of the Sangster Contest.

I have counted a total of 16 participants this year representing 13 Branches. A total of 10 entries across 9 Branches plus a check log for one further Branch were received, leaving just three Branches without any record of contacts. Some were obviously low in contact numbers but I have allowed all since deletions would not have changed placegetters positions. One contact only, recorded and claimed for ZL1ANY Branch 12, appears to be in error and more likely to be for ZL1AJY Branch 29.

Mid Southern and Central regions seemed to have had the best of band conditions this year. While I experienced good band conditions in Wellington, local noise and QSB reports came in from many.

VK2EZF was the lone VK claimed by many entrants, and for some on many occasions. His last report recorded in logs received was his 10th contact at 22:45 so he was a valuable participant. Low band DX is not so common at this point in the sunspot cycle and Bill ZL3VZ also noted Solar disturbance with A-Index of 35.

Open Section Leader board

Congratulations to our Open Section winner Bill Cousins ZL3VZ with Barry Davenport ZL2LN and myself ZL2KZ 2nd equal. This is Bill's 5th Open win, tilting toward the milestone of Paul Slako ZL1PC with 8 past wins. Bill operates from Marlborough Sounds near Portage with his QRP Labs QCX Transceiver & is taking advantage of superior operation, low noise level, nearby salty "ground" and maybe? mains free power.

As Open Section winner, Bill ZL3VZ automatically wins the Arthur Stevens (South Island) Trophy this year with Barry Davenport ZL2LN 2nd Place and Grant Daniel ZL2GD 3rd. This is Bill's 8th win in this section.

It is pleasing to welcome three newcomers on the Transistor Trophy podium this year with ZL1NZ Neil Sanderson 1st, ZL1TSS Tony Barrett 2nd & ZL4UC Neill Cockburn 3rd. Neill (ZL4UC) provided a check log last year but did not register as a Contest entrant.

Only one Branch (Motueka 24) provided 2 entrants and hence once again the Tony Fletcher (ZL2ALJ) Memorial Trophy is not awarded this year.

The 13 qualifying active Branches were:–16, 22, 24, 29, 30, 50, 54, 63, 68, 78, 86, 88 and 89.

Only one undeclared dupe was found, declared and corrected by the station worked. Computer logging has almost eliminated dupes these days.

A number of entrants recorded incorrect Branch numbers based on their first contact copy which was then forever cloned by N1MM. I did not disallow any but an occasional sanity check would be encouraged.

Our check log station thought he sent Branch 93 rather than 63 on occasions and sure enough some logs faithfully recorded this. I counted these all as 63 of course. Impeccable accuracy guys!

Comments received

- ZL1s & 4s remained consistent and good to see VK2EZF taking part
- Thanks to unusually low noise I was finally able to participate in a SS
- Disappointing amount of support for Contest. Conditions OK. Band was nice & quiet
- Band was quite noisy and signals well down on normal. All in all still good fun
- I really missed the 'old' version of two nights as this seemed to encourage the odd extra station from ZL and VK. It also helped with the numbers if propagation was poor on one of the two nights.
- Boring. Not enough activity. Thinks its time this contest is discontinued as shown by the poor number of entrants. ZL Sprint is much better formula!
- A few unhappy moments when paddle took on a life of its own. Overall a very positive experience
- Band conditions in Dunedin were reasonable. Patience shown by experienced operators for a new operator was appreciated
- S1 noise level reported from one location

Publicity

Thanks to Jim (ZL2BHF) for carrying news items in official broadcasts, to the NZART Contest Manager Geoff ZL3GA for his timely support. Also, to HQ for Infoline & NZART Home Page with Contest calendar links reminding Sangster dates, times and rules well in advance.

As per the NZART website Rules PDF Certificates will be emailed to the relevant winners and place getters.

I hope we can get a record turnout for our 100th Sangster Anniversary next year. Mark Saturday 15th May 2027 in the diary.

Sangster Shield - Open Section [* indicates South Island entrant eligible for Arthur Stevens Trophy]									
Place	Station	Name	NZ	DX	Bchs	Pwr	Total	Branch	Equipment
*1	ZL3VZ	Bill Cousins	62	3	12	5w	4080	22	QRP Labs QCX Xcvr, 80m 1/2W Dipole
*2=	ZL2LN	Barry Davenport	55	0	12	5w	3300	24	Yaesu FT847, 80/40 Trapped Dipole
2=	ZL2KZ	Glenn Kingston	54	3	11	5w	3300	50	Yaesu FT1000MP, 5/8w off centre 5-15m up, Super Key2
*4	ZL2GD	Grant Daniel	49	2	11	5w	2915	68	Icom 7300, Inverted Vee up 10m
5	ZL1NZ	Neil Sanderson	52	0	10	5w	2600	86	Icom 7610, Doublet 8m high
7	ZL2F	Tony Marr	46	0	9	5w	2070	54	Icom 7610, Low Inverted Vee
*6	ZL3PAH	Phil Holliday	35	1	11	5w	2035	24	Elecraft K3S, Full size 1/4 wave Vertical, 25 radials
8	ZL2AQL	Mike Spearman	33	0	8	5w	1320	88	Yaesu FT450D, Wire Dipole
9	ZL1TSS	Tony Barrett	27	0	8	5w	1080	89	Xeigu G90m, Aerial 51OCF Inv. Vee Dipole 10m centre
^10	ZL4UC	Neill Cockburn	22	0	6	5w	660	30	QRP Labs QCX Radio, 80m Dipole
Transistor Trophy (first time Sangster contest entrant)									
1	ZL1NZ	Neil Sanderson	52	0	10	5w	2600	86	Icom 7610, Doublet 8m high
2	ZL1TSS	Tony Barrett	27	0	8	5w	1080	89	Xeigu G90m, Aerial 51OCF Inv. Vee Dipole 10m centre
3	ZL4UC	Neil Cockburn	22	0	6	5w	660	30	QRP Labs QCX Radio, 80m Dipole
Arthur Stevens South Island Trophy (Top "3" only)									
1	ZL3VZ	Bill Cousins	62	3	12	5w	4080	22	QRP Labs QCX Xcvr, 80m 1/2W Dipole
2	ZL2LN	Barry Davenport	55	0	12	5w	3300	24	Yaesu FT847, 80/40 Trapped Dipole
3	ZL2GD	Grant Daniel	49	2	11	5w	2915	68	Icom 7300, Inv. Vee up 10m
Tony Fletcher (ZL2ALJ) Memorial Trophy Branch Award (miniature permanent trophy via Branch 50 to winning branch)									
			No Award this year – No Branch listed above had 3 Entrants						
Checklog									
	ZL4BDG	Ben Gilbert	With Thanks					63	Worked 1.5 hrs Icom IC7300, Random wire antenna

Across the airwaves at AREC

Claire Marlow <ARECadmin@arec.nz>

It's been a positive few months for AREC, as we continue to see plenty of volunteer applications coming across, with a number of people being referred through in August via branch member recommendations, which is great to see.

On 1 January 2026, we started taking applications from unlicensed members of the public, and have seen a steady and promising uptake since then, which has bolstered numbers across the country. Many are applying as they have an interest in community support and the CDEM sector, and there are a few who plan to sit their amateur radio licence too, so we look forward to seeing those numbers climb.

Volunteers at a recent Response Leader training in Auckland

It's important that we have a good body of licensed amateurs out in the groups, as the experience and knowledge is valuable to the SAR and CDEM sector – if you are interested in volunteering please apply – https://arec.nz/join-us/

To support with diversifying our funding streams, we are currently seeking a fixed-term Fundraising Lead who will be responsible for the development, implementation, and evaluation of AREC's national fundraising and sponsorship Kaupapa. The listing will be live on Seek until 16 September 2026.

General Operator Training

The rollout of the General Operator competency has begun, with volunteers around the country attending the training sessions and completing assessments. The weekend-long training provides attendees with the opportunity to demonstrate and develop the practical skills, knowledge, and capabilities expected of an AREC General Operator.

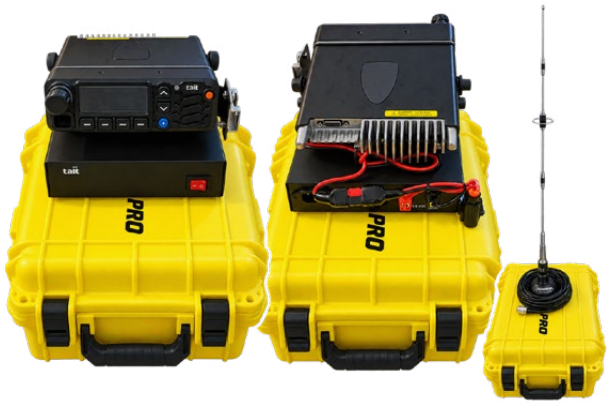
Volunteers at the Kerikeri weekend session L-R: Lindsay Sandilands, Bruce Haswell, Aaron Taitoko, Pascal Steger, Bowden Ashton, Steve Davis (Technology Lead), Steve Main (Upper North Island Regional Manager), Tony Johnstone, Ian Clifford

We expect many of our people will be able to achieve sign-off, as it's the first step in our competency framework – light work for those who have been supporting as an operator for a long time! As we see more people successfully completing the assessment, we will have some solid numbers to show our capability as an organisation.

There's been some fantastic feedback on the sessions so far, and there's plenty more course development in the pipeline for our volunteers to look forward to.

Equipment Rollout

We've got new equipment rolling out to SAR-active groups around the country, including Starlink kits, and TM9700 Dual Band 'transportable' Base Sets. The need for this new gear was identified during our Regional Group Annual Planning (RGAP) last year, and is a welcome addition for



the groups that are responding to events. We are also waiting on a shipment of trailers for our Rapid Deployment Team who have been busy training and working through their response plans. The RDT are a newly formed group of volunteers at AREC, whose purpose is to rapidly deploy to areas impacted by Severe Weather Events, and provide extra capacity in support of the local AREC group.

Rapid Deployment team during a training in Wellington: Back row L-R: Ross Boswell, Sam Cannell, Terry McCarthy, Pieter Schoonraad, Charlie Morris, Don Wallace (RM Central). Front row: Thomas Steel, Grant Batten, Ryan Warner, Daniel Hopkirk, Mark Lungley (Emcomm Lead)

The team are supported by three trailers deployed across the country, equipped with inflatable tents, logistical equipment, HF radios, and much more.

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Lotteries Bid

We have recently submitted a bid to the Lottery Grants Board, with the intention of securing more funding to assist with our work in the CDEM sector.

The submission has been sent through under the project name Supporting Resilient Communities (SRC), and focuses on dedicated resources to support Civil Defence, and volunteer support.

Some of the outcomes of the project include assisting communities to be self-sufficient with communications during disasters, working with CDEM to ensure that communities can contribute and participate in responses, and ensuring we have enough volunteers and resources when connecting with CDEM and communities.

We expect to hear back in the coming months.

What our volunteers have been doing lately

Hawkes Bay volunteers supported at the August 'Rally Hawkes Bay' event

Gisborne and Ruatoria volunteers met with Tairāwhiti Emergency Management office to discuss the creation of a communications plan.

What's in the Pipeline

The coming months will keep our volunteers busy, from the November AREC Commex through to numerous SAREX events around the country, more training weekends and of course supporting at local community events as the weather (hopefully) gets a bit warmer.

We look forward to updating you on all of this and more in the next *Break-In* edition.

Interested in Volunteering with AREC?

There's something for everyone, whether it's helping to train people who are new to the world of radio communications, using your expertise to maintain equipment, or working as an operator during a response.

Want to know more? Send us an email at <enquiries@arec.nz> and we will put you in contact with the local Group Leader so they can talk you through the kind of activities you could support with in your area.

Keep up to date

Website: www.arec.nz/volunteer
Facebook: https://www.facebook.com/arecnz/
Instagram: www.instagram.com/arec_nz
Linkedin: https://nz.linkedin.com/company/arec-nz

Our Westland Group supported our SAR Partners at the Tasman District Police SAREX with radio communications

A number of our South Island volunteers supported the Police SAR Qualifications course at Dip Flat

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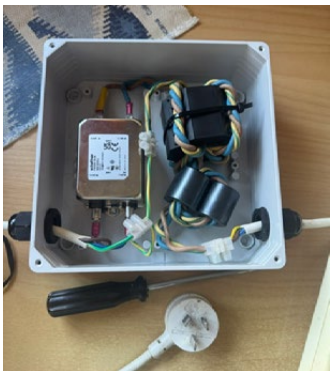
Intruder Watch

Intruder Watch Co-ordinator:
John Martin ZL1GWE <monitoring@nzart.org.nz>

Greetings to all, including short wave listeners and contributors, and welcome to the Intruder Watch Service as we are known now.

I managed to successfully complete the Mains Filter project after assembling it, then running several tests, such as pulling wires to ensure they were securely connected, along with continuity testing, before using a desktop lamp as an initial load – all of which worked successfully. Next steps are to get a registered electrician to check it over, before conducting before-and-after testing within the shack. I will then follow with GM3SEK's advice on ensuring the station earth is correct to reduce the likelihood of noise loops.



Mains filter

During this period, I have had some interesting discussions about the use of automation and the use of Artificial Intelligence (AI) and Agentic AI, within a radio amateur station.

Under the General Users Radio License (GURL) it is very clear:

- **Remote control operation.** The GURL explicitly permits control signals for remotely controlled amateur stations to be encoded (normally, transmissions can't be encoded to obscure their meaning — remote-control signaling is the one carve-out). So, operating your station remotely via internet link, radio control link, etc. is fine.
- **Digital modes and software-driven operation.** FT8, FT4, JS8Call, WSPR, PSK31, packet, APRS trackers, digital voice, contest logging software that keys the rig, computer-controlled rotators/antennas — all fine, because there's still a licensed operator responsible for and in control of the station, even if software is doing the heavy lifting on modulation/timing.
- **WSPR-style low-power beacon-like transmissions run from your own station**, as long as they're operating within the normal GURL /power/ identification rules and you (the licensed operator) are the one running and responsible for the session.
- **True automatic/unattended beacons, repeaters, and fixed links are explicitly excluded from the GURL.** The Radio Spectrum Management (RSM's) own guidance states plainly that this general license "doesn't include the operation of amateur beacons, repeaters or fixed links" — these require a separate paid amateur license (the "Amateur repeater, beacon, or fixed link license").

This distinction matters because a beacon/repeater is, by nature, is transmitting automatically without a human directly initiating each transmission, which is exactly is why the automation scenario RSM has decided needs its own licensing and coordination (frequency, location, technical parameters registered separately), rather than falling under the GURL that ordinary operators use.

In the context of amateur radio, an Agentic AI agent would be a system that doesn't just process a signal or generate a message — it perceives the Radio Frequency (RF) environment, decides what to do, and then actually acts on the station (transmitting, tuning, switching modes, replying) across multiple steps, with a goal, largely on its own initiative.

Explanation

- Using AI/agentic tools **as an assistant while you remain the responsible control operator** — e.g., AI-assisted noise filtering, signal classification, propagation prediction, automated logging, or even an AI drafting a CW/digital message that you review and the software sends while you're actively supervising and able to cut it off.
- **Remote operation** where an AI agent is your interface to control the rig, but you (a licensed human) are still the one directing what happens and can intervene — similar in spirit to the existing allowance for remote-controlled stations.

However, this leaves a grey area: There are no specific written rules yet for "an AI agent as the control operator." Fully autonomous AI-run stations are a real live question in amateur radio globally right now, and regulators have not caught up. If you're seriously considering something like this, I would suggest raising it with NZART's Administration Liaison Officer before building it — because "unattended automatic operation" is the one thing the current framework treats as requiring extra permission, and an Agentic AI would very plausibly be classified that way.

Intruder Watch Table 2026 – up to August 2026

Contributor Name/Callsign	Number of verified reports
John – ZL1GWE	48
Ross – ZL1DRB	5
Bart – ZL4FOX	3
Sutts – ZL4QJ	1

Thank you for all contributors. If you have a signal you cannot identify, please provide an audio sample, and we will attempt to recognise it for you. Please report intruders to me via e-mail to <monitoring@nzart.org.nz> or via the IARUMS Region 1 Intruder Reporting Tool https://iarums.ure.es/doku.php?id=start (just ask me to register you and to give you access). We have a registered NZART entry, so that reports can be collated quickly, along with the rest of the Region 1 reports, far more efficiently than previously. Please include, if possible, the frequency, time in GMT or UTC, transmission mode, strength and direction (if available). A real bonus would be an audio sample, long enough for identification purposes and any observations you have, including a screenshot – this really does help. If you have any questions, please contact me directly.

YL Group

Ngaire Jury ZL2UJT <ngairej66@gmail.com>

I hope the winter has treated you well. Here at our QTH we've enjoyed a fairly mild season so far, although experience tells us that winter often saves its coldest weather for the last couple of months. Time will tell!

Today I decided to join my OM's regular 40-metre net, which he participates in most days. What an enjoyable experience it was. There were ten operators taking part, many of whom I already knew from previous contacts on the air. The conversation was friendly, relaxed and welcoming, and it reminded me just how valuable radio nets can be.

It also got me thinking about the importance of nets in general. They are much more than simply exchanging signal reports or discussing radio equipment. They bring together people with a common interest, encourage friendships, help new operators gain confidence on the microphone, and keep us all connected no matter where we live.

This is why I feel a little disappointed that our Monday evening YL Net on the National System is not being used to its full potential. The net was established to encourage our newer YL operators to get on the air in a relaxed and supportive environment, yet most weeks only our regular group of four or five ladies take part. One of our members has to travel to the club rooms to come on the air each week, that's dedication.

By the way we also welcome any OMs who wish to join us. If you've never joined us, why not give it a try? You certainly don't have to be an

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experienced operator. Everyone is made to feel welcome, and there is never any pressure. We all remember what it was like when we first picked up the microphone, and the YL Net is the perfect place to build confidence and make new friends.

One of the wonderful things about our net is the variety of conversations. While amateur radio is our common interest, we also discover the many other hobbies and activities our members enjoy. Some are actively involved with AREC, others enjoy gardening, photography, travelling, crafts, conservation, or spending time with family. Every week there is something different to learn, and that is what makes the net so enjoyable.

If you haven't checked in for a while—or perhaps have never joined us before—I would love to hear your voice. The National System YL Net meets every Monday evening 7.30pm, and there is always room for one more station. Your experiences, your stories and your friendship all add to what makes our YL community so special.

I hope to hear many more of you on the air in the coming weeks. Until then, keep warm, enjoy your radio, and remember that every call you make could be the beginning of a new friendship.

From Stars to Signals – My Journey into Amateur Radio

Lisa Bromfield VK7SGZ <info@lisabromfield.space>

Lisa VK7SGZ

Like many people in amateur radio, my path into the hobby didn't begin with a microphone or a transceiver. Instead, it began with astronomy. I have long been fascinated by astronomy and spend a lot of time observing and imaging from my home observatory in Southern Tasmania, where I live with my husband, two teenage children, dog, and cat.

Through astronomy I became interested in radio astronomy and started experimenting with software defined radios (SDRs). What began as curiosity quickly turned into a series of small projects. I built a QFH antenna to receive weather satellite images and experimented with tracking aircraft and weather balloons. These early projects opened a whole new world to me.

As I learned more about radio systems and propagation, I realised there was an entire community of people exploring the same invisible landscape, but a different part of the spectrum to visual astronomy. That curiosity eventually led me to pursue my amateur radio licence as a way of furthering my knowledge.

I received my Foundation licence on 30 August 2025 and was assigned the callsign VK7SGZ (the SGZ is for Stargazer). Since then, I have been exploring the hobby in the same way I approached astronomy, by experimenting, learning, and asking lots of questions (I also like to press all the buttons to see what happens).

My station is still very much a work in progress and antenna experiments seem to be a constant part of the journey! Recently I began experimenting with digital modes using WSJT-X and an end-fed half-wave antenna. I was thrilled to make my first contacts, including interstate stations and New Zealand.

What has surprised me most during this journey is just how welcoming the amateur radio community has been to newcomers. As someone still very much in the learning phase, I have received encouragement, and advice. That willingness to help new-comers makes the hobby incredibly approachable and enjoyable.

For me, amateur radio feels like a natural extension of astronomy. Both hobbies involve curiosity, experimentation, and exploring phenomena that we cannot see directly. In astronomy we study the visible spectrum, the light has travelled across space for thousands or even millions of years. In amateur radio we explore signals travelling through our own atmosphere, bouncing off the ionosphere and connecting people across continents.

I still feel very much at the beginning of my radio journey and there is an enormous amount to learn–from antennas and propagation to different operating modes. But that sense of discovery is exactly what makes the hobby so exciting to me. You can check out my astrophotography at Tasmanian Stargazer – Astrophotography (https://lisabromfield.space/).

I look forward to continuing to learn, experiment, and hopefully make many more contacts along the way, as well as meet more of the wonderful people who make amateur radio such a welcoming community.

[reprinted from: p11-12, ALARA Newsletter Issue 197, April 2026]

Topsy's 10 Day Outback Tour Australia Darwin to Cairns

Topsy Scott ZL2LS <scott@tasman.net>

Day 1

We got picked up from our accommodation at 6.20am along with 12 others in the truck. Headed off to the Aboriginal lands of Kakadu National park. First night Ubirr. Pitch your own tent and set up your swag, help cook dinner and then early night as very early start tomorrow. Amazing Aboriginal artwork on rocks here.

The van we travelled in.

Day 2

Up early and away from site by 7.30 and heading to our next camp Gumlom (waterfall creek flats) stopping in Katherine for food and fuel. Stopping several places along the way, seeing more amazing rock art that is thousands of years old. Stunning.

Day 3

Every day up early and away once you pack tents, swags bag and back into the truck and off to Matranka. In the Elsey National Park. Swimming in 34deg hot pools today so lovely didn't want to get out. Camped out in the National Park tonight.

Day 4

Today we plunged into the hot pools of Bitter Springs once again lovely and warm, visited Roper Bar and headed along Savannah Way spotting wildlife and camped again in the National park.

Day 5

Today we visited Butterfly Gorge, yes full of butterflies, and explored the lost city, ancient pillars displaying unique rock formations. Another night in the National Park.

Day 6

Continuing east stopping at outback town Borroloola. Lots of river crossings today. Made our way to Echo Gorge where we camped for the night. Crossed the border into Queensland.

The joys of camping.

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Day 7
Stopped at Hells Gates explored sandstone formations, old Aboriginal sites crossed the Nicholson River, making our way to Adels Grove (campground) stayed two nights here.

Day 8
Explored Lawn Hill Gorge today beautiful. Beautiful rainforest. Did the walk up to Indarri Falls. Just a stunning area.

Day 9
Today we continued to head east exploring along the way. Stopped at Normanton, saw a replica of the largest crocodile ever shot — 8.63 meters, it was big! Onwards to Croydon for the night.

Day 10
Travelled to Georgetown, a nice little outback town. Heading to Undara for the night and see the great lava tubes. Amazing, absolutely amazing. Our final night on tour tomorrow back into Cairns.

Day 11
Last day … visited some amazing waterfalls and tropical rainforest and volcanic areas today. Arrived Cairns about 6pm that night.

What an amazing trip this was. Read a full version in the next issue of the YL Bulletin along with some really great pictures. 3700 km travelled on out back roads.

Give DXing a Try – There Is a Whole World Out There

Ngaire Jury ZL2UJT <ngairej66@gmail.com>

For many of us, one of the most exciting aspects of amateur radio is making contact with someone thousands of kilometres away. Here in New Zealand we are particularly well placed for working stations across the Pacific, Australia and Asia, but with the right band conditions we can also reach Europe, North America and many other parts of the world.

If you have mainly operated locally, why not give DXing a try? You may already have everything you need sitting in your shack.

Which band should I use?

The first thing to remember is that different bands behave differently, and this is one of the fascinating parts of DX. The lower-frequency bands, such as 80 metres and 40 metres, are often useful for longer-distance contacts, particularly at night. On 40 metres you can sometimes hear stations from Australia and the Pacific quite easily, while at the right time of day the band can open much further afield. 20 metres is one of the great DX bands and is often a good place to start. It can provide worldwide contacts during daylight and into the evening, depending on propagation. The higher bands, such as 15, 12 and 10 metres, can be quieter at times, but when conditions are good they can produce some spectacular DX. Don't dismiss a band simply because it sounds quiet — it may just need the right opening.

Listen before you transmit

One of the most useful skills in DXing is learning to listen carefully. Before calling CQ, tune around the band and see what you can hear. If you find a station from another country, listen for a while. Are they calling CQ DX? Are other stations answering them? Are they working stations from one particular part of the world? This can give you a good indication of where the propagation is currently favouring. You may find that a band suddenly becomes very active and, half an hour later, the signals have disappeared. That is all part of propagation.

Watch the time

DX doesn't happen randomly. Time of day makes a big difference. A band that appears dead during the afternoon can suddenly come alive in the evening. Likewise, some higher-frequency bands may be much better during daylight. It is worth experimenting. If you normally operate at 7 pm, try turning the radio on an hour earlier or later and see what changes. Keep notes of what you hear. After a while you will start to recognise patterns. Make your antenna work for you. You don't necessarily need a large beam antenna to work DX. A dipole, trapped dipole, vertical or other simple antenna can produce excellent results. Antenna height, orientation and the type of propagation taking place can all affect the signal. If you have a modest station, don't be discouraged when you hear someone with a huge signal. Your own signal may still be getting through perfectly well.And there is a particular satisfaction in working a distant station with a simple antenna!

Keep a DX record

Part of the enjoyment is keeping track of where you have been. Make a note of the date, time, frequency, mode, callsign and country. You can use a paper logbook or electronic logging software. You might eventually find yourself chasing awards such as DXCC, where the aim is to confirm contacts with a specified number of different DX entities. Try something different If you normally operate SSB, have a listen to the other modes. You might find FT8 particularly interesting for DX. It is a digital mode designed for making contacts when signals are weak and is widely used for chasing DX. Even if digital modes aren't your thing, it can be interesting to watch the activity and see just how far signals are travelling. Most importantly — experiment. DXing isn't about having the biggest antenna, the most expensive radio or the highest power. It is about understanding your equipment, learning how propagation works and being in the right place at the right time.

So the next time you switch on your radio, don't just go to your usual frequency.

- Try another band
- Listen at a different time
- Tune across the band
- Look for a weak signal
- Check what is happening on 10, 15 or 20 metres

And if you hear that distant station calling CQ DX, give it a go! You may be surprised at just how far your signal can travel from your own little corner of New Zealand.

Happy DXing — and good luck with your next new country!
73 Ngaire ZL2UJT

The Society for the Preservation of Amplitude Modulation (SPAM)

Martyn Seay ZL3CK <martyn.seay@gmail.com>

SPAM is alive and well! More accurately, it's alive (just). There is however continuing interest in amplitude modulation on the amateur bands.

S P A M
NEW ZEALAND
SOCIETY FOR THE PRESERVATION OF
AMPLITUDE MODULATION

This is to certify that _____
callsign _____ has fulfilled the requirements
and has been accepted as a member of the above
organisation.

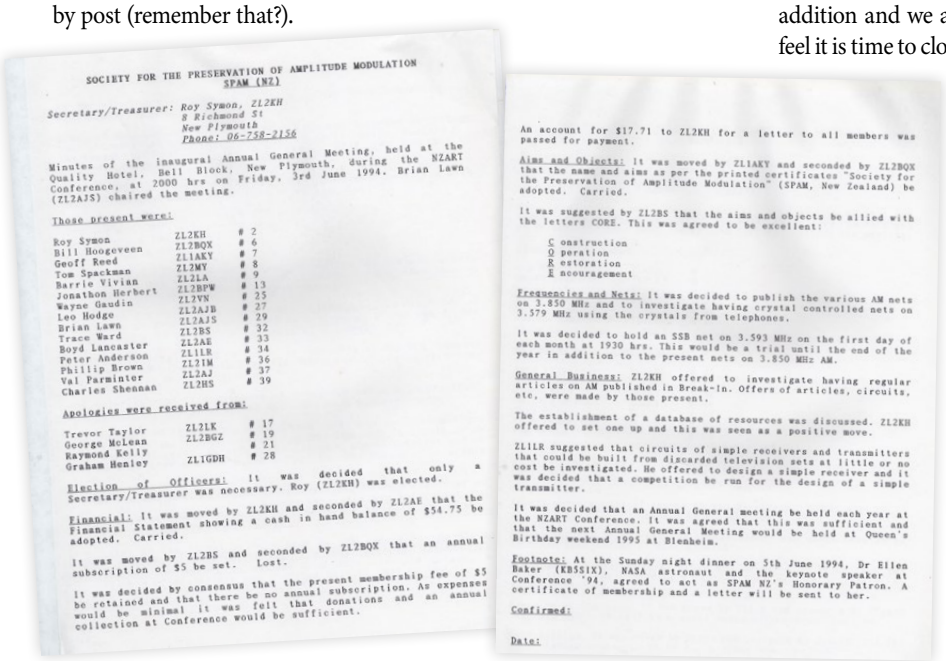
Membership No. _____ Secretary _____ Date _____

"To Promote and Preserve the AM in AMateur Radio"

The SPAM group was established way back in March 1993 by the late Doug Alexander ZL2AWF (Petone) and the late Roy Simon ZL2KH (New Plymouth).

Doug and Roy founded the society when there was still an active AM net, a last survivor from the pre-SSB (duck talk!) era. The first SPAM annual meeting was convened at the NZART conference, held that year in New Plymouth, and attracted around 25 members, according to the membership list.

The society was never made formal, is not incorporated, has no official officers and no constitution. Roy made up the rules! For a $5 note put into the ZL2KH SPAM coffee tin you got the nice printed certificate, (see above) and life membership! Roy sent out regular "bulletins" by email, and some by post (remember that?).


SOCIETY FOR THE PRESERVATION OF AMPLITUDE MODULATION
SPAM (NZ)

Secretary/Treasurer: Roy Symon, ZL2KH
8 Richmond St
New Plymouth
Phone: 06-758-2156

Minutes of the inaugural Annual General Meeting, held at the Quality Hotel, Bell Block, New Plymouth, during the NZART Conference, at 2000 hrs on Friday, 3rd June 1994. Brian Lawn (ZL2AJS) chaired the meeting.

Those present were:

Roy Symon	ZL2KH	# 2
Bill Hoogeveen	ZL2BQX	# 6
Geoff Reed	ZL1AKY	# 7
Tom Spackman	ZL2MY	# 8
Barrie Vivian	ZL2LA	# 9
Jonathon Herbert	ZL2BPW	# 13
Wayne Gaudin	ZL2VN	# 25
Leo Hodge	ZL2AJB	# 27
Brian Lawn	ZL2AJS	# 29
Trace Ward	ZL2BS	# 32
Boyd Lancaster	ZL2AE	# 33
Peter Anderson	ZL1LR	# 34
Phillip Brown	ZL2IM	# 36
Val Parminter	ZL2AJ	# 37
Charles Shennan	ZL2HS	# 39

Apologies were received from:

Trevor Taylor	ZL2LK	# 17
George McLean	ZL2BGZ	# 19
Raymond Kelly		# 21
Graham Henley	ZL1GDH	# 28

Election of Officers: It was decided that only a Secretary/Treasurer was necessary. Roy (ZL2KH) was elected.

Financial: It was moved by ZL2KH and seconded by ZL2AE that the Financial Statement showing a cash in hand balance of $54.75 be adopted. Carried.

It was moved by ZL2BS and seconded by ZL2BQX that an annual subscription of $5 be set. Lost.

It was decided by consensus that the present membership fee of $5 be retained and that there be no annual subscription. As expenses would be minimal it was felt that donations and an annual collection at Conference would be sufficient.

An account for $17.71 to ZL2KH for a letter to all members was passed for payment.

Aims and Objects: It was moved by ZL1AKY and seconded by ZL2BQX that the name and aims as per the printed certificates "Society for the Preservation of Amplitude Modulation" (SPAM, New Zealand) be adopted. Carried.

It was suggested by ZL2BS that the aims and objects be allied with the letters CORE. This was agreed to be excellent:

C onstruction
O peration
R estoration
E ncouragement

Frequencies and Nets: It was decided to publish the various AM nets on 3.850 MHz and to investigate having crystal controlled nets on 3.579 MHz using the crystals from telephones.

It was decided to hold an SSB net on 3.593 MHz on the first day of each month at 1930 hrs. This would be a trial until the end of the year in addition to the present nets on 3.850 MHz AM.

General Business: ZL2KH offered to investigate having regular articles on AM published in Break-In. Offers of articles, circuits, etc, were made by those present.

The establishment of a database of resources was discussed. ZL2KH offered to set one up and this was seen as a positive move.

ZL1LR suggested that circuits of simple receivers and transmitters that could be built from discarded television sets at little or no cost be investigated. He offered to design a simple receiver and it was decided that a competition be run for the design of a simple transmitter.

It was decided that an Annual General meeting be held each year at the NZART Conference. It was agreed that this was sufficient and that the next Annual General Meeting would be held at Queen's Birthday weekend 1995 at Blenheim.

Footnote: At the Sunday night dinner on 5th June 1994, Dr Ellen Baker (KB5SIX), NASA astronaut and the keynote speaker at Conference '94, agreed to act as SPAM NZ's Honorary Patron. A certificate of membership and a letter will be sent to her.

Confirmed:

Date:

Inaugural Society Meeting Minutes from 3rd June 1993.

Since that initial meeting, 337 Radio amateurs have joined SPAM. We have even had a couple of overseas members, although one has recently returned home to ZL.

The SPAM records are presently held by Martyn ZL3CK who inherited these from Roy via Steve ZL1FS. Some time ago ZL3CK transcribed the original membership list (which was on a disc) to an "Excel" format list. We have a full record of all those who were at any time members. Needless to add, many are now SK. We do still have plenty of certificates available.

The Club sponsors one annual contest (not very competitive) called "H Night". This is held on December 8th to commemorate the anniversary of the return of amateurs to the air after WW2, 1945. It is also to remember those amateurs who served in the war, and those who were lost. December 8th is also the anniversary of the Pearl Harbour attack. The rules are on the NZART website under "Activites-SPAM".

In the past, we used to run "Boat Anchor " nights where all were required to use a "boat anchor" i.e. valve-only rigs. There hasn't been one for some years now, but we can run one any time — just ask.

Nowadays, the club does not cost anything, thanks to free email. Any money received is only to post the lifetime certificate. There is a small amount left in the account, most of it having been spent on the KiwiSDR, currently located at Musick Point. The link to this, and the WebSDR are found in the monthly newsletter "The MUSE", which is the Musick Point Radio Group's newsletter. For some years The MUSE has incorporated the SPAM news.

A necessary part of the AM net is the remote receiver. The SPAM WebSDR two band receiver has been located at the Musick Memorial Radio Station for ten years. It covers the AM net frequencies and continues to give good service.

The Web SDR at Musick Point.

The "Kiwi" wide band SDR at Musick Point is a more recent addition and we are considering purchasing another. Steve ZL1FS and I feel it is time to close the bank account and use the remaining funds for the purpose it was intended, i.e. promotion of amplitude modulation among the amateur community.

To a great extent, the AM interest has been taken over now by the Green Radios On The Air group (GROTA). This enthusiastic group of self-described 'doubtfully normal' (!) hams is ably led by Kelvin ZL3KB in Christchurch. The GROTA Group started when Kelvin and some others decided to prove their No.48 WS (wireless sets) could perform according to specifications.

These folk are now known as "GROTArians". They are aided and abetted by many of us all over the country, who enjoy reading their accounts of their activities (antics) in the Port Hills, red zones and some other more desirable parts of Christchurch. A lot of interesting observation, indeed some of an actual scientific nature, has resulted from these activities.

Much has been learnt about ground wave propagation on the short waves which no doubt had already been learnt in the pre 1940s when VHF was not a practical proposition. We are now relearning it and for more information you can do little worse than dig up the "GROTA" columns in previous *Break-Ins*. Recent experiments have been to test the viability of using "ground aerials' i.e. lie the aerial down on the ground. It appears to work! The whole point is that it is invisible to your enemy, and is more directional, reducing the risk of being heard by your enemy.

I hope to have something to put in this column on a regular basis again. However, this will require news, articles, pictures, etc. from **you the reader!** Needless to say I will be very pleased to hear from anyone who would like to contribute on the subject of amplitude modulation — old or new — and I'll be happy to edit anything suitable.

With best 73's in AM βi

AM Nets:
Friday evenings 3.850MHz at 8.30pm.
Wednesday mornings 7.125MHz at 11.30am.
GROTA activity 7.158MHz second Sunday of the month after 11 am.

Magazine Survey

Compiled by Mark Gooding ZL2UFI
<magazinesurvey@nzart.org.nz>

QST July 2026

p.35 Establishing a County-Wide Simplex Emergency Network
p.38 Converting Retired Construction Light Tower Trailers for Radio Use
p.41 Understanding Third-Order Intermodulation Distortion Dynamic Range in HF Receivers
p.44 QST Product Review Lab Measurement Comparison Tool
p.46 Product Review: Venus SW-6B QRP Six-Band CW Transceiver; WA4MCMkits RAAS-4a Remote Antenna Switch; PAR Electronics HF-28 Rectangle 10-Meter Antenna
p.62 Sharing EmComm Knowledge in Curaçao
p.65 Web Resources for Better EmComm Preparation
p.82 2025 ARRL 10-Meter Contest Results
p.85 2026 ARRL January VHF Contest Results
p.88 The 2026 ARRL 222 MHz and Up Distance Contest

QST August 2026

p.30 The HamSCI Personal Space Weather Station HF Receiver
p.34 The Tuna Tin Transmitter Revisited
p.38 Product Review: QRP Labs QMX+ 160 – 6-Meter QRP Transceiver; West Mountain Radio N8XJK Super Booster; Chameleon Antenna CHA FSR System
p.52 Hamvention® 2026: Oh, the People You'll Meet
p.56 Special Section: HamSCI Workshop 2026: The Ham Radio Science Citizen Investigation; HamSCI 2026 — Discovering Science Through Amateur Radio; 2026 HamSCI Workshop: Oral Session Sampler; A Glimpse of the Workshop Poster Session
p.69 Resources for Planning Your Ham Radio Estate
p.70 Future-Proofing ARES: Adding Digital Voice Communications to Your ARES Toolbox
p.76 2026 ARRL International DX CW Contest Results
p.79 2026 ARRL RTTY Roundup Results
p.82 The 2026 ARRL September VHF Contest
p.82 The 2026 ARRL International EME Contest
p.83 The 2026 ARRL 10 GHz and Up Contest

RadCom June 2026

p.14 New products: ShackComms Solar Activity Monitor; ThinkNode M6 Outdoor GPS Enabled Solar Node for Meshtastic, Power by nRF52840 (868 MHz); HyEndFed 49:1 end-feed half-wave eight-band antenna 2KW SSB; TYT-TH8600
p.18 British Science Week
p.22 Checking your feeder with a NanoVNA
p.26 DXpeditions: 3G1P SA-100
p.39 Book reviews: Amateur Radio Contesting Basics; The Radio Today guide to the ICOM IC-7300Mk2
p.42 Pioneering women of British radio
p.50 Signals from captivity: Radio innovation in POW camps
p.54 Review: HackRF Pro
p.57 Royal Signals Museum
p.61 GB2RS Allstar Links
p.74 GQPR 2025 Constructors' Competition
p.83 National Hamfest 2026

RadCom July 2026

p.14 New products: Graziolli Antenne – Italian build HF and VHF range: SWR777 Digital SWR & Power Meter; mAT-1F Dedicated Automatic Tuner of the Yaesu FTX-1; Software-defined antenna (SDA)
p.24 LoRa APRS in the Calder Valley
p.29 Book Review: The Telecom Coast; Satellite Operating for Amateur Radio
p.36 British Science Week
p.42 A leap forward in DV over HF
p.45 WRTC 2026
p.48 SAQ: The world's oldest mechanical transmitter
p.66 QSL cards as social artefacts and soft power
p.70 Review: Discovery 2-700 CCS 2 m linear amplifier
p.72 Communication for the next generation
p.74 The Telecoms Coast

QSL Bureau

Graham Hawtree ZL2AHR
<QSL@nzart.org.nz>

Hello from the QSL Bureau.

Another busy couple of months have come and gone with again a steady flow of cards both coming and going. I received two parcels of cards along with others from the Germany/UK bureau recently (yes that's correct the Germany bureau is now handling the cards for the UK as well). There were approximately 2500 cards in that lot which have been sorted and dispatched to the four sub-bureaus.

I have included a photo this month of the Bureau card-holding area. What you see in the photo is approx. 6500 cards waiting to be dispatched to various countries. Postage to these countries remains an issue but we are doing what we can regarding that.

I am concerned that there are many more cards coming into ZL than I am processing going out! A Big Please: if you have received a card you will know if you have sent one in reply. If you haven't, then can you please do so. To fail to reply to a card received does not do New Zealand hams' reputation much good. We don't wish to be labelled the world's worse QSL senders. If you are a member of NZART it costs you nothing to have your cards processed and dispatched via the Bureau as it's part of your membership fee.

This brings me to the second issue I wish to raise, and it concerns special event callsigns. It is now quite easy to obtain a special event callsign for a particular event. I support this 100% as it creates activity on the bands; these calls are quite sought-after and generally keenly discussed on air. BUT WHOA … hold on a minute, before you do this. What are you doing about providing QSL cards for that call? It's very poor operating procedure to launch a special event callsign and do nothing about replying to incoming QSL cards, not to mention the disappointment for a ham who having sent a card is quite rightly expecting one in return.

This applies particularly to special event callsigns as they are unusual. I fully understand about the cost of having cards printed, but it goes hand in hand with operating on the DX bands and some thought is recommended on this issue, perhaps before you obtain a special event callsign in the future. You can of course list on QRZ.com that you do not wish to QSL, and that's a good place to start, but it's likely to be a disappointment to the DX station you have just worked. EQSLs are overall not really appreciated either. It's just not the same as holding that card.

I had a email from the Sweden QSL Bureau acknowledging that they had received the last lot of cards I had sent and they mentioned in last 12 months they had processed 1000kg of cards — that's 1 ton. Hell, I thought ***I*** was busy, and who said the art of sending QSL cards is dying.

Enjoy the coming warmer months and perhaps some better band openings, and please don't forget to claim your cards from the your sub-bureau.

All the best, good DX and 73s from The QSL Bureau.

HAMADS

HamAds will be published for 2 consecutive issues. Advertisers are able to cancel after 1 issue, or resubmit for a further 2 issues.

FOR SALE: Military Radio Collection. Over 25 WW2 & Vietnam era radio and equipment types. Offers for the lot only. Must sell. Can deliver Nth Island. <zl2it.nz@gmail.com> for list of radios and accessories. (4)

ZL Radio Codecracker 36

Graeme ZL1ANH <codecracker@nzart.org>

Each number in the ZL CODECRACKER grid represents different letters of the alphabet.

For example, today 2 represents the letter M and 3 represents T. They are entered in the control grid to start you off. Enter them in the appropriate squares in the main grid and solve the starter word.

Fill in other squares in the main and control grid with the found letters and look for the next word.

All letters in the alphabet appear, and don't forget this codecracker has nothing to do with CW, but everything to do with amateur radio, and a VK long legged bird (not Elle McPherson)

1	■	10	■	■	12	■	■	25	■	24	1	21
2	1	6	7	3	4	7	1	7	8	4	■	18
1	■	3	■	■	1	■	■	14	■	4	2	4
3	18	1	7	9	2	6	3	3	4	18	■	1
4	■	11	■	■	6	■	22	■	21	■	1	2
5	■	■	15	14	7	4	■	24	14	3	■	21
18	14	10	6	7	13	■	6	■	22	■	26	■
■	10	■	7	■	■	■	7	■	20	■	14	7
8	1	9	8	1	16	4	■	2	■	■	22	■
17	■	8	■	10	■	19	5	1	11	6	3	20
6	■	14	■	4	2	5	■	3	■	■	18	■
21	14	23	4	18	■	1	■	17	■	12	14	22
9	■	11	■	3	■	11	14	9	4	■	3	■

1	2 M	3 T	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Answers to this puzzle can be found on page 31

FOR SALE: ICOM ID-52A (original) V/UHF transceiver. DSTAR dual-band in as new condition. Charges via micro-USB or DC IN port. Download manual at tinyurl.com/ysvmn8ne Price $700. ZL1RZ, Tony Johnstone. email <q85988@gmail.com> (4)

FOR SALE: RF Duplexor; 4 cavity Procom brand–type DPF70/4. Range 406-470 MHz either 9-13 MHz or 5-7 MHz spacing. $50 with TNC connectors, or $100 with BNC. Pick up WGTN or postage at your cost. <crhutch@xtra.co.nz> (5)

FOR SALE: 2 × New 650mm diameter dishes with radome covers and launchers for 1425-1535 MHz. 15dBi Gain–100W Max Power–Beamwidth 22deg–50 ohm–Model TDJ-1500P6 $150.00 the pair–contact Alan ZL4QC 027-666 0949 or <t462603@xtra.co.nz> (5)

WANTED TO BUY: "*The New Zealand Wireless and Broadcasting News*" magazine. Any copies from Vol 1: 1923, Vol 2: 1924 or Vol 3: 1925. <zl4dc@outlook.com>, 022-365-9810.

WANTED TO BUY: Radio Valves: Cash Paid for Estate lots of old valves and old ham radio valve collections, and Valve Testers. Phone Paul 09-528-2022 or email <paul.ssegrub01@gmail.com>

WANTED TO BUY: NZART *Call Books* or other local/international callsign publications with NZ listings or references. Anything ≤1924, 1948-1954 & 1959. <zl4dc@outlook.com>, 022-365-9810.

WANTED TO BUY: WS38 set parts. Any valves ARP12 , ATP4. Canvas harness or any parts would be appreciated. Phone Bruce ZL3TFM 021-113-1802 or email <bkssmith4@gmail.com> (5)

The editorial team welcome identified Letters to the Editor.

Letters can be emailed to <editor@nzart.org.nz>

How high can you go?

Craig Crawford ZL3TLB <craigrcrawford@hotmail.com>

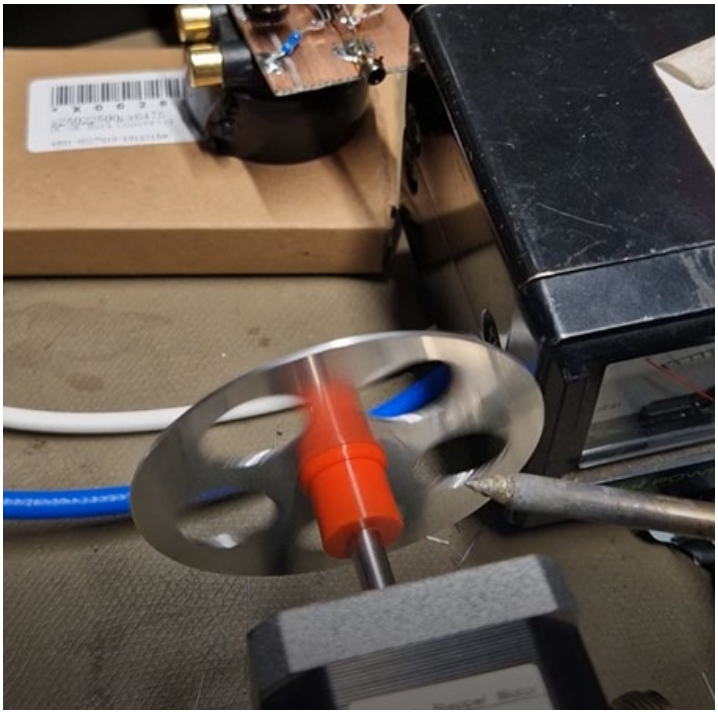
Although the ITU has not made any formal allocation of the sub-millimetre bands above 300 GHz, some national authorities allow amateur radio experimentation using the Terahertz frequencies. However it is difficult to establish comms over any appreciable distance due to high absorption rates at these frequencies.

The first recorded contact was made in 1998 when DB6NT worked DL1JIN over 50 metres on 411 GHz SSB. The current record is 1.42 km set by Brian Dustin WA1ZMS and Peter Lascell W4WWQ on 403 GHz CW in 2004.

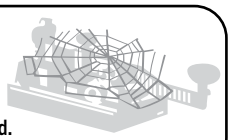
Our Australian neighbours have a record of 60 metres distance on 324 GHz set by Andy Anderson VK3CV and Karl Harbeck VK3LN in 2020.

ZL amateurs are permitted on the spectrum 275 GHz to 1000 GHZ on a temporary non-interference basis but there has been no recorded activity.

Barry Chambers G8AGN has recently published on operating on the 30 THz band over a distance of 523m in QEX (Mar-Apr 2022) and in RadCom Plus (a five-part series from Winter 2022 to Spring 2026). At this frequency, a soldering iron makes a functional transmitter, as seen in the foreground of this picture reproduced from https://m0dts.co.uk/archives/340



Silent Keys



The Association deeply regrets to record the death of the following members and extends its sympathy to the bereaved.

Silent Keys: guidelines to contributors
Contributors are requested to limit their obituaries to between 200-400 words. Content should focus mainly on the amateur radio activities of the deceased. Normally photographs cannot be included.

Mervyn Thomas ZL1SK
Submitted by Ian Sangster ZL1RCA <sangsfam@gmail.com>

Merv Thomas who was a member of our 03 Western Suburbs Branch died on 30 June 2026 aged 94. He had been confined to his house in Avondale for some time due in part to complications from his long-standing medical condition. He was the treasurer of 03 Branch for several terms and loved a good spreadsheet in Excel. He was also a member of Branch 66, the Auckland VHF Group.

Merv originally came from Wanganui, where he had played in a brass band, as his father did. He drove up to Auckland in a Ford model-A pickup he had rebuilt and constructed a camping rear body on. One of his great joys was music. He played trombone and was key figure in Auckland dance bands and jazz bands from the 1950s onward. A good biography of his musical career can be found at https://audioculture.co.nz/profile/merv-thomas

He trained as radio technician, and for some time worked in the radio workshop at Teal in Mechanic's Bay. His later career included filming on 16mm for rebroadcast on early NZ TV. On one occasion he described to us, he was taken out in a RNZAF Sunderland flying boat to film the arrival of a ship. He was very airsick, but still got the required footage of film for rebroadcast on the TV news. Later in life he specialized in making video recordings of family celebrations such as weddings.

Merv was keen motorhome driver and traveled up and down both islands of NZ, carrying HF and VHF amateur mobile transceivers. I can recall him participating from his motorhome when 03 branch provided communications for horse trials in the Muriwai and Woodhill forests.

Rest in peace Merv.

Eastern Bay of Plenty Radio Club

Annual General Meeting

1.00 pm
Saturday 26 September

Coast Guard Rooms
Whakatane Heads

Secretary: Tom Revington
Phone 022-620 9199

New Members

Name	Branch Name	Branch	Callsign
Nicolas Gibbs	Hastings	13	ZL2NG
Andrew Olsen	Hastings	13	ZL2DAD
Zachary Olsen	Hastings	13	ZL1MCL
Sebastian Olsen	Hastings	13	ZL2SEB
Germanicus Malmberg	Hastings	13	ZL4GM
Peter Thomas	Hastings	13	ZL4WA
Anthony Lewis	Hastings	13	ZL2AJL
Shane Cross	Hastings	13	ZL2SJX
Ryan Cathro	Hastings	13	ZL3RFC
Lochlan Coombe	Hastings	13	ZL2LC
Finn Dalgliesh	Hastings	13	ZL2FMD
Christopher MacMillan	Hastings	13	ZL3CM
Robbie McKennie	Manawatu	20	ZL2RTM
Timothy Paice	Manawatu	20	ZL4BIT
Micah Joyce	Manawatu	20	ZL4MJ
Natalie Jergens	Manawatu	20	ZL3NAT
Brian Plummer	Manawatu	20	ZL4BRJ
Chris Dellaway	Manawatu	20	ZL2DEL
Darren Joyce	Manawatu	20	ZL2DJX
David Bassett	Manawatu	20	ZL2DLB
Joshua Hurlimann	Manawatu	20	ZL2UD
Connor Dalgleish	Hastings	13	ZL3CNR
David Scott	Manawatu	20	ZL2DCQ
Zach Brown	Manawatu	20	ZL2TZ
Chad Mitchell	Musick Point	86	ZL1AEQ
Alan Griffith	Taupo	60	ZL1ATN
Percival (Jim) Carroll	REG	89	ZL1YYZ
Brock Seymour-East	Manawatu	20	ZL2BSE
Jacob Ulmer	Auckland	2	ZL1JCB
Mark Lambert	Otago	30	ZL4US
Mark Donaldson	Papakura	65	N/A
Chris Hayes	New Plymouth	27	ZL2HZY
Michael Gannaway	North Shore	29	ZL1JLA
Kellan Forrest	Southland	37	ZL4CK
Ryan Deininger	Central Otago	61	ZL4RY
Alex Brown	Manawatu	20	ZL2AXB
Andre Bordes	Hamilton	12	ZL1LE
Philip Moyle	Christchurch	5	ZL3PGM
Angus Bonney	Christchurch	5	ZL3AKB
Michael McEntee	Christchurch	5	ZL3MJM
William McNaughton	Christchurch	5	ZL3AMOS
Joel Dunwoodie	Christchurch	5	ZL3DWJ
Richar Williamas	Christchurch	5	ZL3RZZ
Riley Page	Christchurch	5	ZL3OMT
Bijaya Bhusal	Christchurch	5	ZL3BBH
Belfiore Bologna	Christchurch	5	ZL3BBE
Jacob Westhead-Spellman	Christchurch	5	ZL3JAC
Hayden Dugmore	Christchurch	5	ZL3QSB
Morag Hills	Christchurch	5	ZL3TOE
Joseph Brown	Christchurch	5	ZL3JN
Darcy Iris	North Shore	29	ZL1YS
Glenn Watson	North Shore	29	ZL2DAV
David Cowlard	North Shore	29	ZL2DAV
Lindsay Gibbs	Lower Hutt	18	ZL2AVF
Blake Gabb	Nelson	26	ZL1BFG

Answers to ZL Radio Codecracker 36 found on page 29

1 A	2 M	3 T	4 E	5 U	6 I	7 N	8 C	9 S	10 V	11 L	12 B	13 G
14 O	15 Z	16 D	17 H	18 R	19 Q	20 Y	21 P	22 X	23 W	24 J	25 K	26 F

50. IPA - RADIO - CLUB - CONTEST

The International Police Association Radio Club (IPARC) invites all radio amateurs of the world to take part in the IPARC-Contest which takes place every year on the first complete weekend in November.

1. Modes and times:

CW	Saturday	0600 - 1800 UTC
SSB	Sunday	0600 - 1800 UTC

2. Bands:

	CW	SSB
80 m	3510 - 3560 khz	3700 - 3800 khz
40 m	7000 - 7025 khz	7060 - 7100 khz, 7130 - 7200 kHz
20 m	14000 - 14060 khz	14125 - 14300 khz
15 m	21000 - 21070 khz	21155 - 21300 khz
10 m	28000 - 28070 khz	28320 - 28600 khz

There are no contest qso allowed outside of the above-mentioned frequency ranges referring to IARU Region 1 HF bandplan!

3. Sections:

- A - CW	Club station and special event station
- A - SSB	Club station and special event station
- B - CW	Single Op, personal callsign only
- B - SSB	Single Op, personal callsign only
- C - CW	SWL
- C - SSB	SWL

Remarks: Participation only with one callsign per mode.
No differentiation between members of IPARC and non-members.
The section must be seen from the log.
Every participating station will be honoured with a diploma showing the ranking.

4. Calling: CQ IPA Contest

5. Exchange: RS(T) + current number, each mode beginning with 001.
Members of IPARC in addition "IPA", IPARC-members of the USA also their state.
Exchanging a rapport is allowed once on every band and in every mode.
An additional rapport with an operator of a club or special event station is allowed for award hunting but does not count for the contest.

6. Points:

- QSO-points:	each QSO 1 point, each IPARC-station 5 points.
- Multiplier:	each DXCC with IPARC-station / US-State with IPARC-station 1 point on each band.
- Score:	each band: summary of QSO-points multiplied by summary of multi-points
- final result:	summary of all bands

7. Contest logs: .txt- and .cbr-files are welcome, avoid .adi-files, but every log will be accepted.
Software for contest logging in German language is kindly provided by HAMOFFICE and available on the IPARC-homepage (www.iparc.de).

8. Closing date: 30. November
By sending the log, the operator gives her/his consent to publish her/his callsign and result in a score list which is available on the IPARC-homepage or via the contest manager.

9. Contest manager: Uwe Greggersen, DJ6QQ, Hurststr. 9, 51645 Gummersbach, Germany
Send your contest log by E-mail to <dj6qq@darc.de>

10. Remarks: This contest is a good chance to work the Sherlock-Holmes-Awards and Sherlock-Holmes-Trophies. It is no longer required to work the awards step by step!
More infos are available on the homepage or by the award-manager:
Roland Starke, DL9GMN, Lindhorstweg 17, 18516 Suederholz, Germany
E-mail: <dl9gmn@darc.de>

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Buy gear from someone who uses it every day! ZL1GUD & ZL3THS

Calling New Zealand - competition

See how many towns you can contact in a month

November 2026

Join New Zealand Hams and see how many towns you can log during November.

- Saturday & Sundays for 4 weeks
- 6am Saturday until midnight Sunday
- HF SSB only

Activators:

- 5 contacts per town to activate it
- Activate as many towns as possible
- Portable or Mobile

Chasers: ZL & VK

- See how many towns you can log.

Each participant will receive a pdf certificate for participating.

The Activator, Chaser and VK with the highest score will each get a printed certificate posted to them.

Email <ZL1GUD@proton.me> for a log and competition details.

* Excel logs for chasers will be provided

www.arec.nz

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Find out more at www.arec.nz/volunteer

Support with equipment and infrastructure maintenance

Use your knowledge and experience to upskill other volunteers

Lead and develop an AREC Group

Respond as a volunteer during SAR and CDEM events