

**The Official Newsletter of the
Auckland VHF Group Inc.
Spectrum**



**WARO President Marlene ZL1MYL with the WARO Group at Rotorua
celebrating their 55th Anniversary.**

**NZART 2017 Conference Report
See page 6**



Auckland VHF Group Inc.

Branch 66 NZART

PO Box 10138, Dominion Rd, Auckland 1446
Clubrooms: 30 Hazel Ave, Mt Roskill

Office	Name	Call sign	Home	Work / Mobile	E-mail
President	Vacant				
Vice President	Dave Dingley	ZL1TIA	828 9394		marday@ihug.co.nz
Secretary	Marlene Matthews	ZL1MYL	634 5130		perma@xtra.co.nz
Treasurer	Vacant				
Committee	George Raffles	ZL1TUX	626 6944	021 735 361	graffles@xtra.co.nz
	Brendon Reid				brendon@aa.net.nz
	Peter Loveridge	ZL1UKG	377 3398		peterlov@ihug.co.nz
	Greg Storz	ZL1GSG	849 2878		
	Darryl Grange	ZL1TCI	817 4553		
AREC Section Leader	Laurie Mathews	ZL1ICU	634 5130	0274 817 463	perma@xtra.co.nz
Deputy Section	George Raffles	ZL1TUX	626 6944	021 735 361	graffles@xtra.co.nz
ZL1BQ Trustee	Vaughan Henderson	ZL1VH	418 1071	021 844 804	vaughanh@vodafone.co.nz
Repeater Trustee	Vaughan Henderson	ZL1VH	418 1071	021 844 804	vaughanh@vodafone.co.nz
Klondyke Managers	ZL1VH / ZL1BK				
690 Manager	Dennis Seymour	ZL1UET	532 8666		
850/670 Manager	Vaughan Henderson	ZL1VH	418 1071	021 844 804	vaughanh@vodafone.co.nz
ATV/Beacons					
Spectrum Editor	Peter Loveridge	ZL1UKG	09-4276362		peterlov@ihug.co.nz
Trading Table	Vaughan Henderson	ZL1VH		tradingtable@aucklandvhfgroup.org.nz	
Hon Auditor	Raequel Probine		630 8044		
Webmaster	Terry Corin ZL1BPA			z11bq.webmaster@gmail.com	
Club Web Page				http://www.gsl.net/zl1bq	
ATV Interest Group				http://www.gsl.net/zl1qf/atvug/ATVusers.html	
ZL1VHD Dstar gateway administrator; Laurie ZL1ICU			634 5130	0274 817463	perma@xtra.co.nz
ZL1VHD Dstar gateway registration URL :				http://zl1vhd.dstar.org.nz	

Club News and Net:

The combined Auckland VHF Group and Auckland Regional Branch News and Net are held on 146.625 MHz and 439.875 MHz at 8.15 pm each Sunday or after the ZL6A National Broadcast on the last Sunday of the month.

Club meetings are held at the Clubrooms at Hazel Avenue, on the second Monday of each month at 7.30 pm. For other details, listen to the News and Net each Sunday evening.

SPECTRUM is the official journal of the Auckland VHF Group Inc. Opinions expressed are those of the authors and do not necessarily reflect club points of view.

The closing date for SPECTRUM articles is by the 1st of each month. Articles to be submitted to the editor Peter ZL1UKG peterlov@ihug.co.nz

Auckland VHF Group (Inc) Branch 66

General Meeting notice

10th July 2017 7.30pm, Hazel Avenue Club Rooms

(Located on left at the end of Hazel Avenue)

The Evenings Subject:

**Matthew King ZL1YOT will talk about Antenna Modeling
using 4NEC2.**

4NEC2 is a completely free Windows based tool for creating, viewing, optimizing and checking 2D and 3D style antenna geometry structures. It can generate, display and/or compare near/far-field radiation patterns for both the starting and experienced antenna modeller. With the included Optimizer and Sweeper one is able to optimize antenna and/or other environment variables for Gain, resonance, SWR, efficiency and/or F/B, F/R-ratio. With the sweeper one is able to graphically display the effect of changing one or more of these variables for a specified range of values/frequencies. For the starting modeller a graphically based 3D geometry-editor is included which requires no additional NEC knowledge while still enabling you to create and visualize and compare current-distribution, far/near-field patterns and Gain/SWR charts. More experienced modellers can use the gradient style and/or the genetic algorithm based optimizers to improve their designs.

EVERYBODY WELCOME

Whangarei Branch 28 Annual Junk Sale

Saturday 22 July at the Club Rooms Heritage Park, Manu (off SH14). Venue opens for buyers from 10.00am. Venue open for sellers from 8.00am. Table bookings to Brian Winger ZL1BSW Ph (09)438 8232 or email bwinger@xtra.co.nz. Delicious refreshments available during the sale – sausages – sausage rolls – sandwiches – cakes – scones – tea – coffee – Milo.

VHF Group General Meeting Minutes: Monday 12th June 2017

Held At: Auckland VHF Group Clubrooms

30 Hazel Avenue, Mt Roskill

Attendance: As per attendance book. (some members are: ZL1TIA, ZL1TUX, ZL1VH, ZL1GSG, ZL1UET, ZL1TOF, ZL1TCI, ZL3VP, ZL1SK, ZL1AYV.

Apologies: ZL1TAY - Dennis, ZL1ICU - Laurie, ZL1MYL - Marlene, ZL1TDG - Vern,
ZL1UKG - Peter

Moved: ZL1TCI **Seconded:** ZL1UET

Start of Meeting: 07:45 pm
Meeting Chaired By: Dave, ZL1TIA
Minute Taker: George, ZL1TUX

Minutes of Last Meeting: It was advised that the minutes for the last two meetings were not available for viewing. These need to be confirmed at the next meeting.

Matters Arising: NIL, as per above.

Correspondence IN:

- 1) Peter, Secretary Auckland Branch enquiring about the \$100.00 Donation for Repeaters and receipt. Money had been received / banked, Dave to get back to Peter.
- 2) Auckland Council Lease. This has been resolved after discussions with the Puketepapa Board at a favorable rate. 10 year license to occupy with one right of renewal of 10 year.

Correspondence OUT:

No Correspondence out

Correspondence In and Out, Received and Actioned.

Accounts:

Still trying to get information from the Bank to transfer the signing of accounts.
Also transferring of logins from Doug's to current members.

Accounts IN: Normal Power Accounts for Contact, Mercury and Meridian, for Clubrooms, Klondyke & Brynderwyns

Accounts OUT:

Final invoice to Transpower for power usage at Klondyke.

Accounts, Received and Payments done on receipts of invoices.

General Business:

Klondyke Tower.

Discussion on Klondyke site, Been quiet and believed owners have changed solicitors.
Best to leave this at present. Other users are still on site with their own buildings.

AREC Report

No report tabled,

Up and coming events:

May need communications help for Whitianga Gold Rush Rally in August.

Correction to Phone Number on the clubs web pages:

Dennis Seymour, asked that his phone number on the web page be updated.

Dave Zl1TIA to update the webmaster.

Meetings Proposals:

October Meeting: Possibly Show and Tell

Talk on Batteries, usage, charging and types of batteries. (Merv to investigate and back to committee)

Clubrooms carpark:

- 1) Talk needs to be with council regarding car park update.
- 2) Low hanging trees on drive causing issues with trucks, tall vehicles into car park.

Stolen Equipment

Equipment Stolen from a site over Christmas was found for sale on EBAY. The Police are involved in chasing up the persons, gear has not been recovered.

Meeting Closed 8:48 pm

Followed by tea & coffee,

Conference Report by Vaughan Henderson

Followed by video's from the 2017 Dayton Hamfest shown by Vaughan Henderson

Vaughan thanked by Dave for the Conference Report and Videos.

NZART 2017 Conference Report

The venue was the Sudima Hotel in Rotorua. This was a good choice, warm and comfortable. There were about 145 full registrations for the weekend plus another 20+ who came for the AGM only.

From the AGM - Highlights:

Subscriptions for 2018 will remain the same with a rebate of \$10 if paid by 30 November 2017. There will be an 80-page hard copy CallBook this year, included with your Nov/Dec Break-In. Council is planning some advertising in the NZMCA magazine and possibly others to try and attract new people to amateur radio.

Remit Results:

Remit 1 (Constitution changes to make NZART a charitable trust)

Carried on voices

Remit 2 (Constitutional change to allow email nominations for Council)

An amendment from Marlborough Branch to make wording clearer – carried on voices.
Amended remit Carried on voices.

Remit 3 (VHF & UHF repeater contacts not allowed for contacts when claiming “VHF Century” and “Worked All Districts” awards).

Lost on voices.

Treasurer's Report

Good outcome for 2016 with a small surplus.
Need to maintain NZART membership at a minimum of 1800, below that the Association will decline.
Attending overseas conferences every 3 to 4 years will mean finances will dip into the red.
Break-In team continues to contain costs despite an average CPI over the last 20 years of <2.4%
Tony Cross reconfirmed as the Auditor/Reviewer for the Associations accounts.
He recommended for next year a constitutional amendment to remove requirement for a Chartered Accountant to be the reviewer, potentially saving \$4K or more per year in fees.

Conference Awards 2016:

Break-In Awards Year presented by Mark ZL2UFI, Break-In Editor:

Best technical article 2016 – ZL3IO Holger Hannemann

Best General article - Douglas Birt ZL1BFS

Best Columnist – Murray Greenman ZL1BPU

Each award winner received a certificate and a copy of the RSGB handbook.

ZL1HV Jumbo Godfrey award: Pete Moore ZL2AUB, Laurie Winton ZL2TC, Heather Scott ZL2TYF, Dylan Smart ZL2SAR.

100% Examination pass 2016: Merijn Weehuizen ZL1MXW Br 28, Walter ZL4EC & Estelle ZL4WAL Flanagan Br 28, James Buchanan ZL1JSAT Br 55 and Wally Smith ZL1JLM Br 65.

Rothschild Cup – Most successful examination passes Christchurch Branch 05 – 32 passes

Best Examination Result 2016 under 18. Sponsored by Icom NZ: Matthew Woermann ZL3COG aged 17, Result - 58/60 from Branch 05

Youngest Amateur Result 2016 Sponsored by Nelson Sound: Alice Bowler-Parkin ZL2EM Result - 56/60 aged 14, from Branch 13

Amateur of the Year: Kelvin Barnsdale ZL3KB for contributions to Break-In as Technical Editor, the Christchurch Branch HamCram Weekends, and the Examination Update Working Group.

Website Update – Chris Hellyar ZL3LF gave us a comprehensive update on the new website, a lot of work has gone on “under the hood” which will result in a site which is much easier to use. It is hoped to have a facility on the website for the 2018 subscriptions to be paid online.

Conference 2018 – is to be held at Burns Lodge Mosgiel, Queens Birthday weekend 2018. It’s recommended that you book early as there are a limited number of motel rooms available in Mosgiel.

Stirrers Award – Stuart Watchman ZL2TW for an unbelievable number of quips throughout the AGM.

Administration Liaison Officer:

Successful outcome of licence fee review. The amateur service will pay \$50 inc. GST for all repeaters, beacons and fixed links. (Others pay \$150)

Amateur allocation at 220 MHz: We appear to have been forgotten. The cabinet paper on allocations to Band III (174 to 230 MHz) did not reference an amateur allocation! A 220 MHz amateur allocation is only in Region 2, not in Region 1 or 3 (us). ALO has copy of Cabinet paper, intends to ask RSM why we were ignored!

Outcome of the 174–230 MHz review

Three new uses for the band have been decided: Internet of Things, land mobile radio and supporting the critical communications of the New Zealand Defence Force.

Internet of Things and land mobile radio will each be allocated 10 MHz in the band and the New Zealand Defence Force will be allocated 5 MHz.

Spectrum has also been set aside to allow for a Digital Audio Broadcasting network, should a decision be made to implement this in future.

The new spectrum for Internet of Things and land mobile radio will be introduced following further consultation with industry in late 2017.

A band plan indicating the allocation of Band III by service is below:



We are asking for 222 to 225 MHz to align with the USA

Band at 5 MHz (5351.5–5366.5 kHz)

NZ Defence Force is the primary user (any amateur allocation will be secondary). NZDF are favourable to freeing up spectrum for amateur use - HOWEVER – have to have agreement with Australian Defence!

RSM will not make an allocation until this agreement made. NZDF are negotiating with Defence Australia and we are hopeful of a good outcome although it may only be 6kHz initially. Allocation will be on a non-interference basis and limited to 25W EIRP – may be channelised – not confirmed.

Saturday afternoon at Conference was devoted to the AREC Forum and our Section Leader ZL1ICU will be reporting on this.

On Sunday forums and AGM's of special interest groups took place:

AMSAT AGM announced that KiwiSat will be scrapped in 12 months if there is no further progress towards a launch. In the meantime, if the project can get some new people involved, a launch may still be possible. See the "Get Involved" item from AMSAT ZL elsewhere in this issue.

WARO AGM and 55th Birthday Get-together. Congratulations to Marlene ZL1MYL elected President of WARO.

Hamilton Amateur Radio Club

MARKET DAY

Saturday, August 26, 2017

Waikato Table Tennis Stadium, Edgecumbe Street

Vendors from 8:00am,
Buyers from 10:00am

All enquiries to: Market Day,
Hamilton Amateur Radio
Club, PO Box 606, Hamilton
E-mail: harcmday@nzart.org.nz
Web: http://www.zl1ux.org.nz/market_day.html

NZART is operating a promotion to bring back those people whose membership has lapsed.



The New Zealand Association of Radio Transmitters

Incorporated

Founder Member of the International Amateur Radio Union Region 3



PO Box 40525
Upper Hutt 5140

Ph: 04 939 2189
E-mail nzart@nzart.org.nz

2017 April Branch Circular

Dear Branch Secretaries

Enclosed is the Branch update form, please complete and return to me by 31 July 2017

Membership Statistics.

Also included are your NZART members' branch statistics. If someone is not listed, ensure they have paid their 2017 subscription, or if they are affiliated to another branch.

The NZART database stores only one branch affiliation for voting purposes, a member may belong to as many as they wish, however they can only place their vote for NZART elections or remits at one branch. Can you please pass this on to your members.

Branch Membership promotion

At last year's AGM in Christchurch, it was announced that Council would offer the introduction to new members by way of their branch, a reduced membership fee.

This was to encourage long ago lapsed members of the Association to re-join, or perhaps for some members within your branch to consider becoming a member of the Association for the first time.

Council therefore offer a special membership fee of **\$49.50** for all your members who have not belonged to the Association for a period of two years or longer, as from **31 December 2016**. This offer is only available to individual members, and runs until the end of July 2017.

Remember to advise those joining with this special offer, this is for the current 2017 membership year. An invoice will be included with their August issue of Break In for the 2018 membership year, and will need to be paid by 31 December.

Financial Accounts of NZART

At the time of Break In going to print, the annual review of the NZART accounts had not been completed. These are available from me electronically.

Enclosed:

- NZART Membership for Voting 2017 (Remits published in March/April Break In)
- Branch Address/AREC Details form.
- New member promo application form
- Reviewed Annual Accounts available electronically

Debby Morgan ZL2DL - NZART General Secretary/Business Manager

Use this form to supply your details if you wish to take advantage of this offer.

Join NZART! Please complete the following and post to:
The General Secretary, NZART Headquarters, PO Box 40525, UPPER HUTT 5140

Your Name:

Initials

Surname

Callsign

Add details

of Family

Members

Address:

Postcode

Occupation:

The above information is for membership records required to be maintained under the Incorporated Societies Act 1908.

Date of Birth: (For statistical purposes only)

Preferred NZART Branch: (Name or No.)



The New Zealand Association of Radio Transmitters Incorporated

The Radio Amateur's Organisation

Founded 16 August 1926

It serves you at local, national and international levels.

It deserves our full support if we are to continue to have the frequencies and operating privileges we currently enjoy.

Founder Member of the International Amateur Radio Union Region 3



The International Amateur Radio Union Region 3

Formed in 1968, to promote the special interests of the Member Societies in Region 3 of the International Telecommunication Union, and to present their interests at ITU Radio Conferences

SPECIAL BRANCH PROMOTIONAL OFFER

Subscription: Year 2017 (Tick appropriate boxes)

TRANSMITTING

☐ 49.50

This is applicable to one member per household only

My subscription to 31 December 2017 is: \$

Donation to the Association: \$

Enclosed: ☐

Total sent: \$

By Credit Card ☐ (Please complete details)

VISA ☐ MASTERCARD ☐ EXPIRES

CARD

Signature: _____

Or credit to **BNZ 02 0772 0209760 00**. Please use your name or call sign as a reference.

I agree to abide by the NZART Constitution.

Enquiries to:

Phone: 04 939 2189

Signature _____

Email: nzart@nzart.org.nz

QB-50 Constellation Satellites Deployed from ISS

From ARRL Letter 05/26/2017

More than 2 dozen QB50 constellation CubeSats have been deployed from the International Space Station (ISS), including three carrying Amateur Radio transponders. Built by student groups from 23 countries, the string-of-pearls QB50 constellation aims to study the lower thermosphere 200-380 kilometres above Earth. The satellites were launched to the ISS onboard an Atlas V rocket in March.

In all 28 QB50 2U and 3U CubeSats were released into orbit between May 16 and May 25. These included LilacSat-1 (ON02CN), which includes an Amateur Radio VHF/UHF FM to Codec2-BPSK digital voice transponder, APRS digipeater, and a camera; X-CubeSat (ON01FR) and SpaceCube (ON05FR). LilacSat-1's transponder's FM uplink is 145.985 MHz (67 Hz CTCSS tone); the Codec2 9600 bps BPSK downlink is 436.510 MHz. The uplink frequency for both X-CubeSat and SpaceCube is 145.860 MHz (210.7 Hz CTCSS tone). Downlinks are 437.020 MHz for X-CubeSat and 436.880 MHz for SpaceCube.

LilacSat-1 was developed at the Harbin Institute of Technology. Its primary payload is an ion and neutral particle mass spectrometer, developed by the University of London, to measure the mass and distribution of charged and neutral atoms. Shortly after its deployment LilacSat-1 took a picture of the ISS solar panels, and the image was received by students on 70 cm, using 9,600 bps BPSK.

Eight other QB50 CubeSats will be placed into orbit from India onboard Polar Satellite Launch Vehicles (PSLVs). No launch campaign has been announced for another four QB50 CubeSats. All of the QB50 CubeSats have downlinks between 435.8 and 438 MHz, and reports from radio amateurs are welcome.

At the last Committee meeting the meeting programme for the rest of the year was planned and baring misfortune looks like this. Watch the "Activities" page on the web site for more details and updates as they happen.

14th August – Meteor Scatter Communications with James Smith ZL2ET

11th September – "Bring and Show" our annual evening devoted to members projects and what they have been working on.

09th October – Battery Technology – an update from Gary Chapman

14th October – Celebrating 45 years since the clubrooms were officially opened. This will take the form of an afternoon tea at the clubrooms and we hope to have a photo display and some history and background to the clubrooms origins, etc.

13th November – Annual General Meeting

11th December – End of Year Xmas Social and informal get together at the Clubrooms.



Amateur Radio Emergency Communication.
Volunteers in radio communications.
Using our resources to help the community.

INFORMATION

The Auckland VHF Group has an active AREC section that works closely with Auckland City Civil Defence. They provide advice, resources and manpower to assist in times of need. The Auckland VHF Group clubrooms provide a backup system to complement the existing systems maintained by Auckland City Council Civil Defence.

The AREC section is headed by Section Leader Laurie Mathews ZL1ICU.

From time to time the VHF Group has training sessions and exercises. Members also assist with sports events, parades and Rally NZ.

For further information about AREC please see the NZART web site.

JOIN BRANCH 66 AREC

All members of the Auckland VHF Group are encouraged to join the AREC section. Your contribution, large or small is appreciated by all involved.

For further information about joining branch 66 AREC contact the Section Leader or his Deputy.

AREC:

Section Leader; Laurie Mathews ZL1ICU 634 5130 0274 817 463 perma@xtra.co.nz

Deputy Section; George Raffles ZL1TUX 626 6944 021 735 361 zl1tux@xtra.co.nz



AUCKLAND VHF GROUP (INC)

**SUPPORT THE EFFORTS OF THE VHF GROUP THROUGH YOUR
SUBSCRIPTION**

SUBSCRIPTIONS FOR 2017

THE SUBS GO TOWARDS;

- Maintenance and on-going improvements to beacons, repeaters and linking systems for the national system, including the Klondyke repeater site.
- Provides on-time and free access to spectrum magazine as soon as it is available.
- Provides facilities for good speakers and lecturers at our general meetings.
- Discounted access to our trading table goodies.
- Access to test equipment and technical help when needed.

FULL MEMBERSHIP **\$45.00**

ASSOCIATE MEMBERSHIP **\$40.00**

FAMILY MEMBERSHIP ADDITIONAL **\$10:00**



SEE ATTACHED MEMBERSHIP RENEWAL FORM (next page)

REMEMBER TO KEEP US INFORMED OF YOUR INTERNET ADDRESS!

OTHERWISE WE CANNOT SEND YOU SPECTRUM!

NAME	Mr/Mrs/Miss/Ms	Christian or given name	Surname
	Mr		
Address			
		Phone: (home)	
		Phone: (work)	
		Phone (Cell)	
		Email	
Occupation:		Callsign	
NZART Member		Branch assigned	
AREC Member		Branch assigned	
Category			To pay
Membership	Full	\$45:00	\$
New/Renewal/Change	Associate	\$40:00	\$
Receipt #	Family Add	\$10:00	\$
Donations	Auckland ATV		\$
	Auckland/Klondyke		\$
	Brynderwyn		\$
	Data/D-Star		\$
	IRLP		\$
	Beacon/Repeater/Links/ATV Licences		\$
	Other		\$
		Total	\$
Payment			
Circle one -->	Cash	Cheque	Internet deposit
Invoice/Statement re-quired	Please Advise Treasurer		
Internet	To account ASB 12-3020-0473626-00. Account name is: Auckland VHF Group Inc. Include your Name/Callsign for us to track. Note: this form needs to be returned to update records. FAX to 028 25544801 or Email		
Post	The Treasurer, Auckland VHF Group Inc., PO Box 10138, Dominion Road, Auckland 1446.		
In Person	Bring this form and payment to the next club meeting, 2 nd Monday of the month or to the Committee meeting last Monday of the month.		

The Auckland VHF Group Inc Branch 66 NZART

gratefully acknowledges the sponsorship of Branch 66 Beacons, Repeaters and Fixed Links license fees and the Group's repeater operations by the following radio amateurs and NZART Branches for 2017

<u>Repeater frequency</u> and name	Repeater location	Sponsorship advised for 2017	Amount paid
53.725 Repeater	Klondyke Road		
144.253 Beacon	Nihotupu		
145.625 Data Rptr	Klondyke Road	NON-operational	
145.650 Dstar repeater	Klondyke Road	ZL1ICU	50.00
146.625 Repeater	Klondyke Road	ZL1ICU	50.00
146.700 Repeater	Ruaotuwheua		
146.900 Repeater	Mt Puketutu Radio		
432.253 Beacon	Nihotupu	Under repair	
438.175 Dstar repeater	Klondyke Road	ZL1ICU	50.00
438.500 Repeater	North Head		
439.850 Link Tx to Kaimai	Klondyke Road		
439.875 Ak Nat Sys Rptr	Klondyke Road		
439.900 Link Tx to Egmont	Klondyke Road		
439.950 Link Tx to Brynderwyn	Klondyke Road		
1291.9 Repeater	217 Glenfield Rd	ZL1ABS	50.00
		Total Sponsorship	\$200.00
NZART Inc: Branch/Personal donations			
Franklin Radio Club. Br: 10		\$200.00	
Papakura Radio Club. Br: 65		\$500.00	
Auckland Radio Club. Br: 02		\$100.00	
Manukau Radio Club. Br: 21		\$	
Martyn Seay ZL3CK donation		\$	
	Donations	\$800.00	
Current as at 03/07/2017			

The Auckland VHF Group, Branch 66, would like to thank all those who came forward to sponsor the licence fee for our Beacons, Repeaters or Fixed Links for the year 2017 or donate towards the Group's repeater Operations.

TRADING TABLE

Currently our Trading Table is only open on meeting nights. Opening on Saturdays may resume later in the year so keep an eye out for announcements in Spectrum.

NEW – NEW - NEW

We have heaps of parts from dismantled commercial analog TV gear – transmitters, filters, circulators, patch panels, power supplies, cabinets. Too much to list individually, so come along to the clubrooms and have a look



And there's

more...



More from the Trading Table: Surplus filters from analogue TV



Motorola Oncore VP GPS Receivers

The VP Oncore is Motorola's original credit card-sized 8-channel GPS receiver. It measures just 2" x 3 1/4" x 1/2", has very low power requirements, and is well suited for embedded applications. The VP Oncore has the capability of acting as a DGPS reference station for greater position accuracy.

The units on offer have been in storage for some time, and the tinplate screen covers show some signs of corrosion – see photo. Most of the units have a sticker attached saying "Prog NMEA" and are likely to output data in NMEA V2.0 serial format.

Interface is via a 10-pin board header – see reference below for pinout details. Power supply is 5.0v +/-0.25V. Module requires an external active GPS antenna (5V power supplied by receiver module). GPS connector is a snap-on type OSX. Output data includes a 1PPS (one pulse per second) output and TTL level Tx and Rx data lines.

More details can be found at : <ftp://ftp.tapr.org/gps/motorola/oncore.eng.notes.pdf>



\$20.00 each – limited quantity.



N-Type connectors for LMR-400

Crimp-on only. \$5.00 each

Other coaxial connectors available from the Trading Table:

Please note we have sold out of TNC connectors – these are no longer available.

BNC plugs 50 ohm for RG58 coax (solder/clamp type)	\$2.50 each
BNC plugs 50 ohm for RG58 coax (crimp on type)	\$2.50 each
BNC sockets 75 ohm – single hole mounting	\$1.50 each
N Type male solder on suit RG213 coax	\$4.00 each
N Type male right angle, suit RG213 coax	\$4.00 each
N Type male crimp on suit RG213 coax **	\$3.00 each
N Type socket crimp on suit RG213 coax **	\$3.00 each
N Type male right angle, solder on suit RG213 coax	\$4.00 each
N Type male sliver plated solder/clamp on suit RG58 coax	\$3.00 each
N Type male crimp on suit RG58 coax **	\$2.50 each
N-Type adaptor Male to Male	\$3.00 each
Adaptor TNC Male to UHF Female	\$3.00 each

** Crimping service available for these at club meetings.

Need Crystals for your next project?

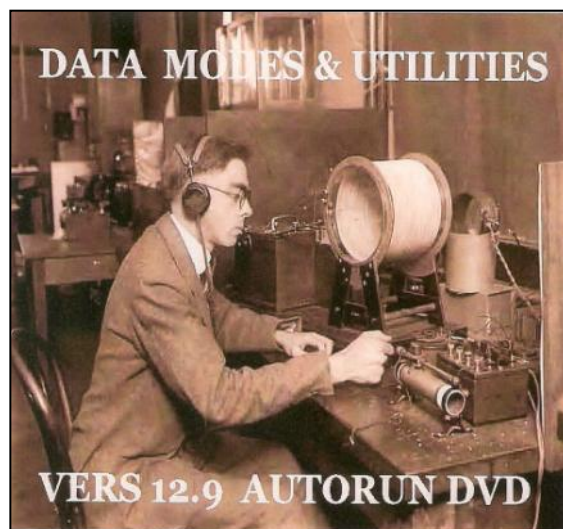
3.579545 MHz HC18/U wire ended holder	
4.194304 MHz HC18/U wire ended holder	\$1.00 each
4.1952 MHz HC18/U wire ended holder	\$1.00 each
4.33618 MHz HC18/U wire ended holder	\$1.00 each
6.000 MHz HC49/S SMD package 20pF load capacitance	\$1.00 each
8.000 MHz HC18/U wire ended holder	\$1.00 each
8.192 MHz HC18/U wire ended holder	\$1.00 each
8.867238 MHz HC18/U wire ended holder	\$1.00 each
10.000 MHz HC18/U wire ended holder (KDS Brand)	\$1.00 each
13.875 MHz HC18/U wire ended holder	\$1.00 each
14.31818 MHz HC18/U wire ended holder. Rakon J30G-4H spec	\$2.00 each
14.7456 MHz HC49/S SMD package	\$1.00 each
17.472 MHz HC18/U wire ended holder	\$1.00 each
18.432 MHz HC18/U wire ended holder	\$1.00 each
20.0000 MHz HC49S SMD package P/No.7D20000183BSAF25Q3	\$1.00 each
24.567 MHz HC18/U wire ended holder	\$1.00 each
45.600 MHz HC18/U wire ended holder	\$0.50 each

Radio Frequency Transistors

ATF55143	Low noise E-PHEMT 0.6dB noise figure.	\$1.00 each
	Low noise amp for frequencies between 450MHz and 6GHz. SMD package SOT343 (4 lead).	
MGF1302	Low noise GaAs FET Nf = 1.4dB @ 4GHz, 4dB @ 12GHz.	\$5.00 each
BFR91	NS RF Amp. 5GHz 1.9dBnf @ 500MHz	\$2.00 each
BFY90	NS 30V 50mA 2.5dBnf @ 200MHz TO72 VHF/UHF	\$1.50 each
MFE121	Dual gate N-MOSFET 20V 5mA VHF Amp BF352 equiv.	\$0.50 each
MPS5179	NS TO92 12V 50mA 200mW ft 2000MHz Nf 5.0dB	\$0.50 each
	RF Transistor. Use in UHF/VHF amplifiers with collector currents in the 100 μ A to 30 mA range, and in low frequency drift, high output UHF oscillators.	
BFG67	NS 8GHz 50mA rf amp/preamp SOT143B package	\$1.50 each
MPS5172	NS 25V 100mA Ft 120MHz	\$0.10 each
MPS6507	NS, VHF Mixer, 20V, 100mA, Ft 700MHz [data]	\$0.20 each
MRF237	NS RF Pwr. VHF 4.0W 12V TO39	\$3.00 each
MRF559	NS RF Pwr. 806-960MHz 0.5W 12.5V	\$0.50 each
MRF904	NS RF Small signal amp. Ft 4GHz 15V TO206	\$3.00 each
2SC908	NS TO39 RF Amp 1W @ 500MHz 13.6V [data]	\$1.00 each
	Designed as driver and RF power amplifier. 0.5 to 0.8W output at UHF land mobile band. Gain 15dB (Vce=6.0V, Ic=5mA, ft=2000MHz)	
3SK45	Packaged as ECG221, dual-gate N-channel MOSFET	\$0.75 each
	for vhf amp and mixer applications.	
3SK73GR	Dual-Gate MOSFET N-channel 30V 7mA	\$1.50 each
3SK74L	Dual-Gate MOSFET N-Channel 20V 25mA(max)	\$1.00 each
3SK192GR	Dual-Gate MOSFET 15V 30mA(max)	\$1.00 each
2SC5488	NS 30V 70mA low noise rf pre-amp	\$0.10 each
BF199	NS 25V 25mA, 500mW ft = 550MHz TO92	\$1.00 for 10
BF494	NS 20V 30mA Low noise mix-osc/ IF amp TO-92	\$1.50 for 10
40673	Dual-gate N-Mosfet – See MFE121	\$0.50 each

DATA MODES & UTILITIES CD

Version 12.09 has even more updates and new programs on this latest release. This is an excellent selection of software, notes, links to web sites compiled by the late Doug ZL1AVY and this latest edition has over 300 applications, references and notes. These cover all digital modes, useful software applications for your pc, contest logging and e-qso programmes, radio interfaces, software defined radio information, slow scan TV software, test equipment utilities, satellite tracking software, and much, much more. **Still only \$10.00**



SMD Quartz Crystals: In addition to our selection of leaded holders, now have 6MHz and 20MHz crystals in SMD style housings:

6.0000 MHz HC49S SMD package 20pF load capacitance \$1.00 each

20.0000 MHz HC49S SMD package P/No. 7D20000183BSAF25Q3
1.00 each



Capacitors, Surface Mount – most are 1206 size.

Packed in bags of 10 for 50c

NPO 50V working: 0.68pF, 1.2pF, 1.8pF, 2.2pF, 5.6pF, 6.8pF, 8.2pF, 10pF, 15pF,

22pF, 33pF, 68pF, 82pF, 270pF, 470pF, 100nF.

63V working: 10pF, 47pF, 100pF, 270pF, 330pF, 470pF, 1nF, 1.2nF, 2.2nF, 4.7nF, 10nF
10uF 25V electrolytic

Capacitors, Metal Clad Mica (Unelco, Semco)

\$2.20 each

Values (in pF):

Or 10 up for \$2.00 each

3.9, 4.7, 6.8, 10, 12, 15, 20, 22, 24, 27, 30, 33, 34, 47, 51, 62, 82,

100, 120, 130, 150, 220, 240, 300, 360, 680pF

Most are rated 350V working $\pm 5\%$ tolerance.

Similar to illustration, tab does not have hole:



Mixers:

Mini-Circuits Model TFM-2-408-1:
+17dBm LO drive, 40dB isolation
\$25.00 each



5 – 1000MHz 6dB insertion loss,

Note: some of these mixers are labeled TFM-2-408-2. They are identical to the TFM-2-408-1.