



# NERG NEWS

Incorporated 1985 in Victoria  
Reg No A0006776V - <http://nerg.asn.au>

APRIL 2002

NERG Inc.  
PO Box 270  
Greensborough  
Victoria 3088

This Month:  
**8:00 PM THURSDAY 11<sup>th</sup> April 2002**  
**( Now Back to THURSDAY nights!!! )**  
**UHF antennas – design and construction**

## Thursday night meetings!

This month's meeting reverts back to the 2nd Thursday in the month, on 11<sup>th</sup> April.

The meeting will be held at the NEW venue - Greenhill's Community Centre located in Yandell Reserve, Greensborough (MELWAY 21 B1).

The road entrance is at the traffic light controlled 'T' intersection of Mountain View Road and Saint Helena Road. Enter the rooms via the Child Proof Gate (lift locking pin on top) into the Kindergarten.

We will be discussing antennas and probably building a couple of different types of you-beat 70cm units. (The designs may be applied to other frequencies.) We will also attempt to measure the relative gains of these antennas.

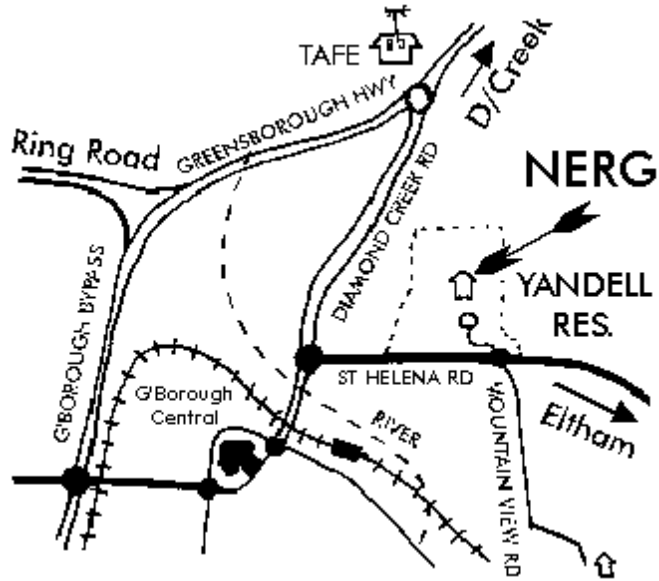
We look forward to meeting all on the 11th and visitors/ newcomers most welcome as always.  
*Don, VK3KDT*

## Last Month's Meeting:

Our March Meeting was held to the Briar Hill hall Friday March 8<sup>th</sup> and was well attended.

The meeting opened with discussions on our final preparations for our John Moyle Field Day venture to Mount Macedon. We had about 12 people in all signing on for the weekend plus generous offers for all sorts of radio and related gear. (This turned out to be a real fun weekend for all.) It was decided that we would all meet at the Mount Macedon General store for breakfast then head on up from there. This was a winning move and sure to be "on the menu" next year.

The star attraction for the night was Mark VK3XXX who gave us a marvellous practical talk and hands on instruction on IRLP. Mark explained briefly the history of the NERG involvement in IRLP then followed with a show and tell style of just how we all can access this new radio medium. Practical demonstrations ensued with contacts to reflectors in the US. Mark placed a lot of emphasis on the fact that users share our repeater with all amateurs and that polite protocol must be observed at all times. Before connecting to a node or reflector, ask if the system is in use, advise intended connection prior to using IRLP, leave breaks



(several seconds) between overs to allow repeater tails etc to complete and to allow others to join in. The person opening the link does not own it, but they should ensure that if they leave it open, that one of the other users knows how to close it. Mark will be printing off practical instructions on IRLP usage for all who may require them and will include the address for listing of all node numbers with their location.

The meeting closed with the usual hot drink, biscuits and discussions on DXing, Dog-Piles etc. Our thanks to Mark for making the night a success.  
*Don, VK3KDT*

## NERG DAYTIME MEETING

The monthly NERG daytime meeting was held at the QTH of JIM VK3DBQ, with Marg VK3VOJ doing an excellent job on the catering. While it was a small group, Steve VK3JSE, Dave VK3JMB and Mark VK3XXX had a good time. The next meeting will be held on Tuesday 23rd April at QTH to be advised, perhaps it can be agreed at the next NERG meeting.

## JOHN MOYLE FIELD DAY

This year's John Moyle was a huge improvement over last year's event – not only was the weather fine throughout and the station back to it's full 24-hour capacity, but there were also lots more people to talk to! Several other clubs and individuals mounted

hill top field day stations this year. DX was not great, with very few interstate VHF stations worked despite hearing VK5 beacons on 70cm at S-9 at times.

Participants this year were (in alphabetical order): Andrew VK3HFT, Bruce VK3JWZ, Ewen VK3OW, Don VK3KDT, Doug VK3JDO, Gerhard VK3EWM, Greg VK3VT, John VK3ZRV, Mark (2) VK3LI, Mark (3) VK3XXX, and me – Mark (1) VK3BYY.

Day visitors included Betsy VK3HBK, Frank VK3DTC, & Steve VK3JSE.

Stay tuned for photos and our score (once I calculate them!).

## MDRC Hamfest in May

The MDRC Hamfest is another of Melbourne's large hamfests. Over 400 people attended last year!

It's on **Saturday May 11**, starting 10am at the Brentwood Secondary College in Watsons Road, Glen Waverley (Melways 71 D7). Enter off Heath Street. If you'd like to book a table, contact Lee on 9705 1051 (home), or 0429 810 101 (mobile).

## AWA RT85A info on Web:

Try: [www.qsl.net/vk3byy](http://www.qsl.net/vk3byy),  
or register for the new RT85 newsgroup at:  
[www.groups.yahoo.com/group/rt85](http://www.groups.yahoo.com/group/rt85)

# A Packet Radio Test Tool

David Aston, VK3THY

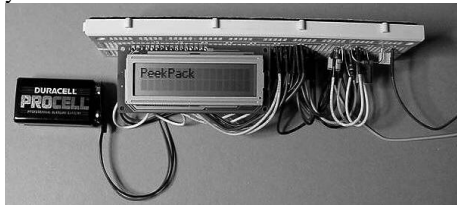
Want to see what's happening on a Packet Frequency without having to fire up and wait ages for your Laptop or PC to wake up, only to find you have been sent a virus or some other nasty. This little baby could be the answer.



I can't claim any originality with this project. It is the work of N6BG in the USA. All I have done is to download his diagrams and code and off I went. One of the most frustrating things when you are setting up your packet system is not knowing if your tones are being decoded or not. Enter the PeekPack. It's a PIC based packet decoder with a 16x2 LCD display that shows you if your tones/data are good. Its also useful as a packet monitor for watching the local DX cluster etc.

One of the beauties of the PIC is that it is small, cheap and it can be reprogrammed many times. As you can see its quite a simple circuit to build requiring only a 16F84-10 PIC, an MX614 Modem (I eventually found it ONLY at Arrow Electronics Australia Pty. Ltd. in Mulgrave, cost \$16.50.) and a few R's, C's, a 7805 and of course the LCD display. There is no circuit board available for this project because of its simplicity but it would not be hard to knock something up. I built mine on a Breadboard. This is very easy as you can add items very easily; and it's great for prototyping.

You will need to program your PIC with the software, which I have, or if you have access to the Internet, from Byon's Webb site. Those that are interested, I can program a PIC for you.



As you can see from the prototype, the LCD displays decoded packet data with the source callsign on the top line and the data itself on the bottom line. The circuit calls for a 16x2 type LCD display however I have heard of a 24x2 display being used.

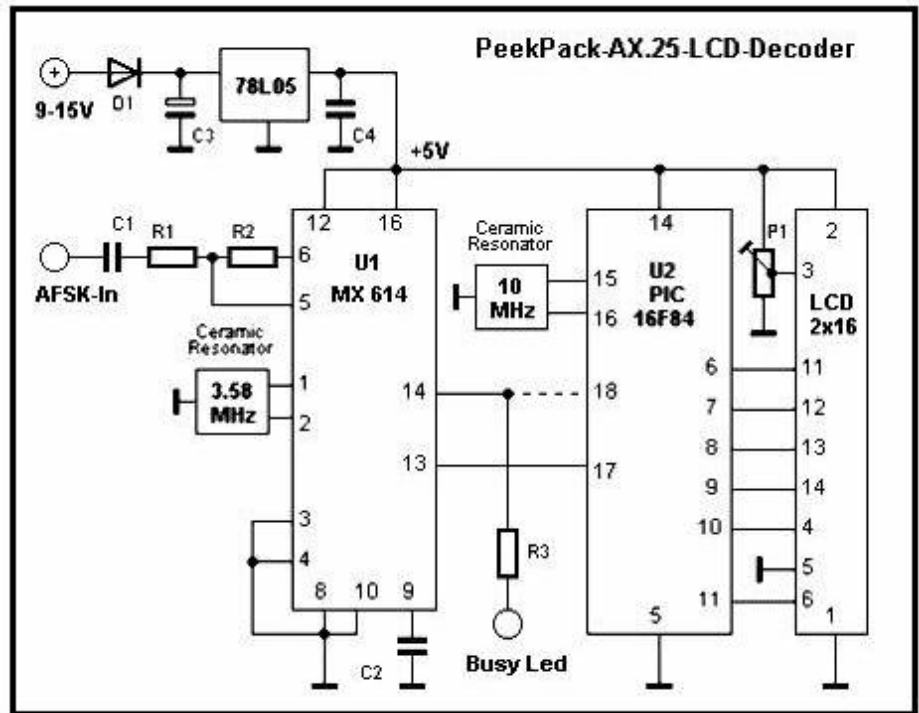
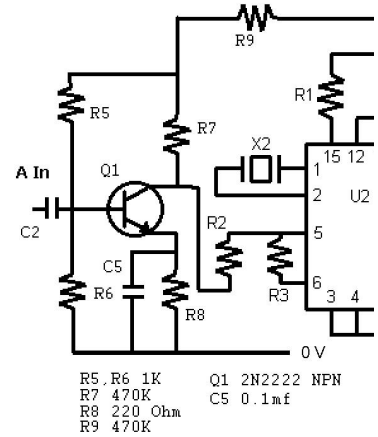
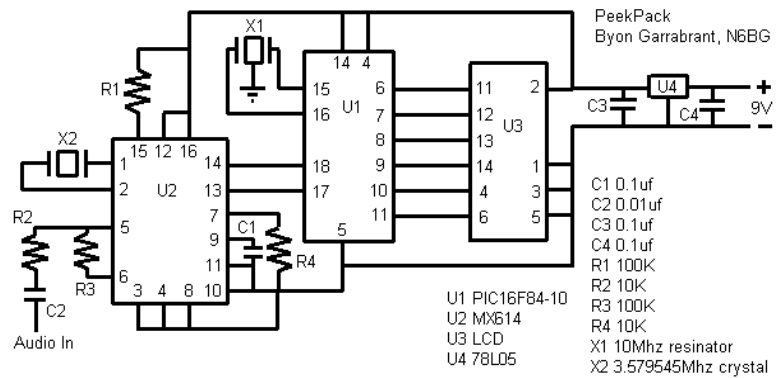
You could mount the finished item in a plastic or metal box with sockets on the side so that you can plug external power and also your HT or Mobile so it could 'hear' what's happening.

The unit worked first time so there should be no problems throwing it together.

Plans for future versions include a scrolling data display (32 or more bytes), GPS position decoding, digipeater information, and other user suggested items.

The circuit at right (Fig2) is similar but includes a pre-amp before the Modem IC. This may be necessary if you are using a HT, to get enough level into the decoder.

Figure 3 (German variation) below, shows an LED for Activity and a control for contrast of the LCD Display, an easy addition. R3 would need to be 220 to 330 ohms depending on the LED used. P1 is used to control the LCD Display contrast or viewing angle as people often call it. Usually a 10K unit.



## Where do you buy the bits??

Most items can be purchased from anywhere except the Modem IC and possibly the PIC. Most places only stock the 4Mhz PIC version. You will need the 10Mhz or better. There is also a 20Mhz version. RS Components stock the PIC (about \$15), as should Farnell. The Modem IC after some searching I only found at Arrow Electronics Australia Pty. Ltd. in Mulgrave for about \$16.50. This company is a wholesaler and usually sells quantities. The crystals are easy to find, 10 Mhz is standard and the other is the NTSC subcarrier frequency. You do not need to use resonators as above, if you have access to crystals. In fact, I found RS the cheapest for these, about

\$1.00 usually they are \$3.00 or \$4.00 elsewhere. Don't get ripped off. The circuit is a little different for the PIC if you use a crystal with the addition of 2 x 22pF ceramic caps to ground. The resonators have these inside with the crystal. Tricky Dicks have the LCD Display as does lots of other people. If you look hard enough at disposal places, you can usually pick them up very cheaply, and in quantities. They are pretty vanilla units; the only option being if you want to use it in a dark environment, then you will need one with a backlit screen. (The power consumption will rise though) If enough people are interested, I can organise a bulk purchase of the necessary items. As you can

see the whole thing draws little and is quite happy with a 9-Volt Battery.

The MX-614 could be used as a complete Portable Packet Modem with a Palm Pilot or Pocket Organiser etc running a Terminal Program with your Handheld. You don't need to carry around a Laptop or PC. Great for portable use.

David Aston VK3THY.

### Simple UHF antennas

So now you have a 70cm radio, I guess you'll be needing an antenna? We will be discussing suitable antennas at the April NERG meeting and may even build a few then. Several will be published in future NERG NEWS issues.

One thing you'll notice on UHF is that simple antennas don't appear to work as well as their VHF equivalents. This is because they are physically smaller and simply catch less of the passing signal (in technical terms they have a smaller capture area or aperture). So for equivalent antenna types, transmitter power, and receiver sensitivities, VHF will get you further (in free space that is – however you will find 70cm signals reflect all over the place and sometimes work better than VHF).

Fortunately it's not too difficult to build 70cm antennas with a bit of gain (and a bigger capture area!). A 70cm dipole is only 34 centimeters long, so an antenna consisting of four halfwaves is quite manageable with a total length of about 1.3 meters. The gain of such an antenna relative to a single dipole is 6 dB and is written as 6 *dBi* (a dipole is 0 *dBi*). You can add another 2.15 dB to express the antenna's gain over the mythical "isotropic radiator", in this case 8.15 *dBi*. (Warning: Manufacturers like quoting *dBi* because it sounds better, so a 2.15*dBi* antenna is probably just a dipole in a fancy housing!).

Because of their small size, high gain antennas can be constructed on the kitchen table and do not necessarily require metal cutting and drilling equipment. In fact most of the antennas we publish over the next few months can be built with nothing more than a Stanley knife and a soldering iron.

Some general rules that apply to most antennas, but particularly UHF antennas:

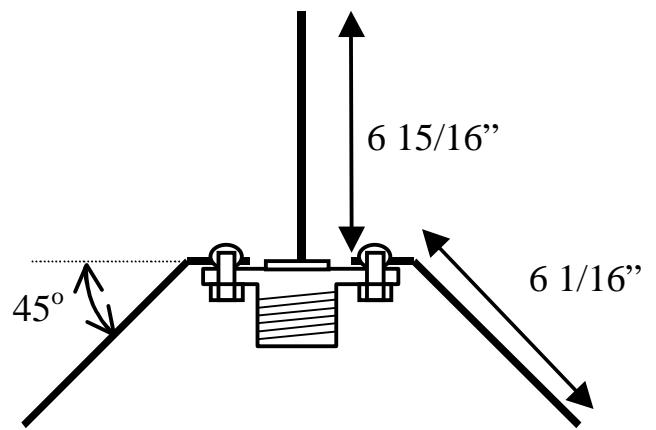
- Height rules! Get the antenna up as high as possible, well clear of surrounding clutter (until cable losses negate any improvements).
- Antenna gain always comes at the expense of physical size.
- Antennas cannot add power to the radiated signal, they just concentrate it in certain directions.

**Next Issue – UHF Colinear Antennas...**

### A simple ground plane antenna for 70cm

Peter VK3DU

Here are the details of the ground plane I made for the RT85A. It's easy to make, 4 pieces of wire attached to colder lugs and bolted to a coax socket plus another piece soldered to the centre pin. Don't forget to apply a suitable sealant to the centre pin.



Below are the SWR figures using the NERG VHF/UHF SWR meter:

433.025	2.1:1
433.500	2.2:1
434.975	2.5:1
438.775	1.6:1
439.000	1.8:1
439.250	1.9:1

This is with RG213 cable and "UHF" (PL259) connectors. The ground plane could be built around an 'N' socket or even a BNC socket (for mobile installations).

Reference: The ARRL Antenna Handbook (16<sup>th</sup> Ed). Dimensions scaled to 436MHz. #10 copper wire.

[This antenna doesn't have any gain but it will get you on the fast! I built one a year ago and haven't replaced it yet. It's fine for repeater work but I haven't heard any DX yet! - Mark VK3BYY].

#### FOR SALE

Homemade Multiband Vertical for Sale: Consists of 2 section of high grade aluminium tubing each about 7 Metres long.

Base load multi tap coil and 3 radials. Unit resonates on the 7 MHz Amateur band. in GC \$65.00

#### Also Wanted:

Valve Tester, must be complete and going with manuals.

David Aston VK3THY

### EMR regulations delayed

The ACA has delayed it's release of the new Amateur regulations for limits on Electromagnetic Radiation. The regulations are likely to take effect for new stations on 1 July 2002, and existing stations 3 months later. (from WIAVic's online news).

### Radio on Rails in April

from Peter Parker VK3YE

Melbourne's most exciting amateur radio operating event will be on again soon. Called Radio on Rails, it encourages amateurs to operate their VHF/UHF transceivers from the trains and trams of Melbourne. It's a great opportunity to test how good your handheld transceiver or scanner really is.

Radio on Rails is on **Sunday April 14**. It goes for four hours, from 9am to 1pm. Operators on board (or waiting for) trains or trams can work anybody, while home and car mobile stations work train or tram mobile operators only. You are invited to submit a log of contacts made, whether you are train/tram mobile or not.

All activity will be on 2m and 70cm, FM only. Contacts via repeaters are permissible and count for scoring purposes. Repeat contacts on each band may be made after one hour. You get an extra point if you meet another contest participant on a train or tram !

Because of the tiny size of many VHF/UHF scanners, this four-hour fun day is great for listeners as well as amateurs. The MDRC invites listeners to enter, with scoring similar to transmitting stations. This means that if you're on a tram or train, any station heard (whether in the contest or not) counts for scoring, whereas if you're at home, rail mobile stations only may be logged. SWLs may also claim eyeball contacts. We ask that entrants wear earphones and handle antennas with care to ensure that the safety and comfort of non-participating travellers is protected.

The rules for the Fun Day are very simple and appear on the MDRC website and in Packet/Internet editions of APC News. They will also appear in the April WIA's Amateur Radio magazine. Participants are invited to meet for lunch after the event - it's suggested that they gather at Flinders St Station before 1pm and liaise on VK3RCC 438.100 MHz or VK3REC on 147.175 MHz.

Further information: Peter Parker VK3YE parkerp@alphalink.com.au

**The NERG Inc.** Reg No A0006776V <http://nerg.asn.au>

The North Eastern Radio Group, Inc. is an amateur radio club devoted to encouraging members and others to enjoy the hobby of amateur radio. It tries not to hang on ceremony and endless reporting but rather participate in the fun aspects of this fascinating hobby.

**Membership Fees (due each August):**

**Full: \$30 Family: \$40 Concession: \$20**

**Committee**

President	Greg Williams	VK3VT	9432 0563
Secretary	Mark Beacham	VK3XXX	
Treasurer	Marg Baxter	VK3VOJ	9467 1253
Committee	Dave Pricter	VK3JMB	9465 9708
	Betsy King	VK3HBK	9431 2191
	Peter Cosway	VK3DU	9379 3626
Social Sec.	Don Haslam	VK3KDT	9439 1102
Repeaters	Mark Harrison	VK3BYY	9435 3043

**Meetings**

2nd Thursday of each month at 8.00 PM (excepting Dec. & Jan.)  
**NEW VENUE !!!** Greenhills Community Centre, Yandell Reserve,  
St. Helena Road, Greensborough. (Melway map ref 21-B1)

**Classes**

NERG occasionally runs classes and exams for Amateur license candidates.

**Callsigns and Repeaters (25km North East of Melbourne)**

Club call - VK3CNE  
6m rpt VK3RMH FM 52.550 MHz in 53.550 MHz out  
6m beacon VK3RMH CW (10 Watts) 50.295 MHz (trial)  
70cm rpt VK3RMH FM 433.325 MHz in 438.325 MHz out  
10m VK3RMH CW Beacon (20Watts) 28.2565 MHz  
Occasionally home to the Scout Radio & Electronics Group repeater:  
2m VK3RSR FM 146.375 MHz in 146.975 MHz out

**NETS**

NERG NETS run on 146.575 MHz FM Simplex (8.30 – 9.30 pm Thursdays).  
Please join the discussions. NERGs often monitor this frequency and the 70cm  
VK3RMHrepeater.

**WEB Site:** <http://nerg.asn.au>, <http://www.qsl.net/vk3rmh> & /vk3cne

**NERG NEWS submissions and comments**

editor: Mark Harrison VK3BYY  
ph: 9435-3043 hm (btwn. 7.30-9.30 p.m. please)  
post: 266 Nell Street West, Watsonia, 3087  
email: [vk3byy@qsl.net](mailto:vk3byy@qsl.net)



**NERG**

North–East Radio Group VK3CNE  
Incorporated 1985  
BOX 270 GREENSBOROUGH VIC 3088

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## MEETING this week::

**8:00 PM THURSDAY 11th April 2002**

**Now Back on the 2<sup>nd</sup> THURSDAY of each Month at the NEW venue of  
**Greenhill's Community Centre, Yandell Reserve, Greensborough****

**This Month: Practical UHF antenna design and construction**

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### CALENDAR 2002

<b>April 11<sup>th</sup></b>	<b>Thursday night - NERG meeting</b>
April 12 <sup>th</sup>	Cosmonautics Day - special activity from the International Space Station (?)
April 13-15 <sup>th</sup>	Special event station GB90MGY operating CW only to commemorate the 90th anniversary of the sinking of the Titanic.
April 14 <sup>th</sup>	Club "Radio on Rails" - Moorabbin and District Radio - Encouraging VHF/UHF operating on Melbourne's trains and trams. From 9am to 1pm Sunday
April 18 <sup>th</sup>	World Amateur Radio Day - "Amateur Radio: Continuing Innovation in Communication"
April 28 <sup>th</sup>	Midland Amateur Radio Club Convention - Weeroona Secondary College Hall, Midland Hwy, Bendigo. Further info: Mark Harris 5448 7055
<b>May 9<sup>th</sup></b>	<b>Thursday night - NERG meeting</b>
May 11 <sup>th</sup>	Moorabbin and District Radio Club Hamfest – see details inside.