

# OXTALES

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Newsletter of the Oxley Region Amateur Radio Club Inc.

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## March 2012

Compiled by VK2TT & VK2AYQ

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### President's Report

#### March 2012

All members will be pleased to learn that ORARC has received the \$1,500 cheque from the WIA in payment of the Club Grant awarded to the club for the fitting of new wheels and axle to, and for signwriting of the club's Communications Caravan. This is the culmination of the hard work done by John McLean VK2KC and Keith Anderson VK2FKJA in preparing the club's application for the grant. Thank you to John McLean VK2KC and his helpers in fitting the caravan with a new axle and wheels. At the time of writing all the work is complete except for the signwriting and the application of the final coats of the under chassis rustproofing.



Thank you to the large contingent of club members who attended the Central Coast Field Day at Wyong on Sunday the 26<sup>th</sup> of February. A special thank to those who wore their ORARC polo shirts during the

day. As always, the shirts stood out well which publicized our club and it certainly made it easy to spot ORARC members in the crowd.

The Wyong Field Day marked the start of a busy series of Amateur Radio activities for club members.

The next event is the John Moyle Memorial Field Day which commences at noon on Saturday the 17<sup>th</sup> of March and finishes at one minute to noon on Sunday the 18<sup>th</sup> of March 2012. This year the club will take its newly refurbished communications caravan to the park at the end of Clearwater Crescent, Port Macquarie. Clearwater Crescent  
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**Down The Coax**  
**Friday Night Get-Together**  
**Friday 16 March 7.00 pm**

**John Moyle Memorial Field Day**  
**Saturday March 17 Noon to**  
**Noon Sunday 18 March 2012**

**Car Rally Saturday 24 March 2012**

**Monthly Meeting in April will be held on**  
**Saturday 31 March 2012 2 pm**

**Urunga Convention Saturday 7 and Sunday**  
**8 April 2012**

**Friday Night Get-Together**  
**Friday 20 April 7.00 pm**

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**Net Controllers' Roster**  
**Nets on Voice Repeater VK2RPM 146.700 MHz**

**Sundays**  
**(0830 Local)**

**Thursdays**  
**(1930 Local)**

**Mar 2012**

VK2OA	Mar - 04	VK2ZHE	Mar - 01
VK2VIV	Mar - 11	VK2EM	Mar - 08
VK2TT	Mar - 18	VK2ATM	Mar - 15
VK2OA	Mar - 25	VK2ZHE	Mar - 22
		VK2EM	Mar - 29

**Apr 2012**

VK2VIV	Apr - 01	VK2ATM	Apr - 05
VK2TT	Apr - 08	VK2ZHE	Apr - 12
VK2OA	Apr - 15	VK2EM	Apr - 19
VK2VIV	Apr - 22	VK2ATM	Apr - 26
VK2TT	Apr - 29		

**May 2012**

VK2OA	May - 06	VK2ZHE	May - 03
VK2VIV	May - 13	VK2EM	May - 10
VK2TT	May - 20	VK2ATM	May - 17
VK2OA	May - 27	VK2ZHE	May - 24
		VK2EM	May - 31

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### **Editors Note**

Thank you to the members who submitted the technical articles information and photographs for this months Oxtales.

The editors would like to compile a pool of technical articles or photographs for inclusion into future editions of Oxtales.

Members who attended the Wyong field day and took photographs are invited to send their pictures with a description to either Trevor VK2TT or John VK2AYQ for inclusion into future editions of Oxtales.

*(Continued from Page 1)*

is the road which runs East towards the water storage dam off Ocean Drive South of the Greenmeadows traffic lights on Ocean Drive. The park overlooks the Rosendahl Reservoir. It is proposed to operate on both HF and VHF on the Saturday afternoon. Bring your family and friends and enjoy a pleasant afternoon. As usual hot dogs for lunch and tea, coffee and soft drinks will be available all afternoon from the caravan. For more information on the John Moyle Memorial Field Day visit

<http://www.wia.org.au/members/contests/johnmoyle/>

On the following weekend ORARC club members will be providing safety communications for the Hastings Valley Sporting Car Club Bago Rally car rally on Saturday the 24th of March 2012. Bruce Walker VK2HOT is co-ordinating the Amateur Radio communications. A briefing will be held at the ORARC Friday night get together on the evening of Friday the 16<sup>th</sup> of March. If you are able to assist and have not yet advised Bruce that you are available please let him know as soon as possible. Visit

<http://www.hvscc.com.au/> for more information on this rally.

A reminder that the ORARC April Monthly General Meeting which would normally have been on Saturday the 7th of April which is Easter Saturday this year has been brought forward to Saturday the 31st of March 2012. We will have two Monthly General Meetings in March this year!

The Urunga Convention runs over the Easter Weekend on Saturday the 7th and Sunday the 8th of April 2012 at the Senior Citizens' Hall in Bowra Street. ORARC club members are always well represented at this event. If you are staying overnight don't forget the Field Day dinner at the Urunga Bowling Club on the Saturday evening. The fox hunting is always keenly contested but

there is always plenty of opportunity for a quiet eyeball in the comfort of the hall and surrounds. Regardless of whether you are in Urunga or not, please come on air between 9 am and 9:30 am on Sunday morning to participate in the famous Urunga Scramble – any power, any frequency, any location – highest number of contacts in the 30 minutes wins! Visit <http://users.tpg.com.au/goldy2/> for the field day program and information.

The 2012 WIA National Field Day will be held on Saturday the 14th and Sunday the 15th of April 2012. The Club Communications Caravan will be set up on the Port Macquarie Town Green at the northern end of Horton Street on Sunday morning from 10am to mid afternoon. For more information on the WIA National Field Day visit

<http://www.wia.org.au/members/contests/nfd/>

Please make some time available to assist in making this opportunity to showcase Amateur Radio to the public a success. A call for volunteers will be made at the ORARC April Monthly General Meeting.

The ORARC 2012 Field Day takes place on Saturday the 9<sup>th</sup> and Sunday the 10<sup>th</sup> of June during the Queen's Birthday Weekend. The venue will be the Tacking Point Surf Life Saving Club hall in Matthew Flinders Drive, Lighthouse Beach, Port Macquarie. Please make yourself available when calls are made for assistance. It is important to make the field day a success as it is the major fund raising activity for the year. Without the income from the annual Field Day it would be necessary to significantly increase ORARC membership subscriptions.

Those who listen to the two metre band will have noticed a great deal of activity on the national APRS (Automatic Position Reporting System) frequency of 145.175 MHz. This activity is increasing on an almost daily basis. To learn more about APRS visit

<http://www.aprs.net.au/>

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*(Continued from Page 3)*

APRS is definitely the club activity of the moment with 25 trackers being built. At the time of writing more than half of them are already up and running so there are many local tracks to view on the APRS Google map at <http://aprs.fi/>

Thank you to Arthur Monck VK2ATM and John McLean VK2KC for their initiatives in sourcing the hardware.

The club's 145.175 MHz VK2RPM-1 APRS digipeater is now working well on test and will soon be installed at the VK2RPM repeater site at Middle Brother Mountain. Work has commenced to construct a second APRS digipeater which will be installed at the VK2RCN repeater site at Telegraph Point in order to provide reliable coverage in the Port Macquarie and Wauchope areas.

As many members will be aware, on the afternoon of Saturday the 11<sup>th</sup> of February 2012 a fierce electrical storm with violent winds unleashed its fury on the area immediately to the north of Telegraph Point. The wind brought down a very large number of large trees which blocked roads and brought down power lines. Some 7 SES teams, Hastings Council and Essential Energy spent the next two days making the roads trafficable and restoring power. Only after the roads were trafficable and the power lines were made safe was SES able to attend to the large number of individual calls for assistance. Red Hill where the club's VK2RCN repeaters are located was one of the worst affected areas. It was with great relief that the VK2RCN 147.0 MHz and 438.425 MHz repeaters were found to be working after the storm. Henry Lundell VK2ZHE inspected the site on the Sunday morning and confirmed that damage to the site was relatively minor and that the batteries were holding up well in the absence of mains power. However work is required to reattach some of the detached coaxial cables to the antenna mast.



*The RCN mast still standing after the winds*

The site clearance work carried out prior to Christmas ensured that no timber fell on the mast guy wires. Thank you to everyone who participated in those working bees. Had that work not been done the aftermath of the storm might have revealed a very different situation.

Henry Lundell VK2ZHE  
President



*RCN repeater building Telegraph Point*

## APRS

Dave VK2AYD

As most of you that attend monthly meetings know, the current theme for the year is APRS. So what is APRS and how is our club involving itself with this digital communication ?

*APRS system kit*



APRS stands for Automatic Position Reporting System. It's been in use by Amateurs around the world for over 10 years and was originally developed by Bob Brunings WB4APR. It is a system used by mobile stations to advise their location to others. In very simple language it is a system that transmits your position at designated intervals (say every 5 or 10 minutes) to a receiving station that passes it along to a master station that inputs it into the internet through iGates and using a specific programme that interfaces with Google Maps, will show everyone exactly where you are.

APRS is used all around the Earth. If I want to find the current location of a friend in his vehicle in the USA I just type in his i.d. and bingo, up comes a map of the area he is travelling in with his actual location indicated. All sounds very simple. Now your XYL can keep track of you – or you of her!!

Without going into the technical details too heavily it is an upgraded (or modified) Packet

Radio module that has been programmed for this specific purpose. Some of you that are new to Amateur Radio may not be aware of Packet Radio. Twenty five years ago it was all the rage and it was the fore-runner of emails and the internet. The difference was that it was sent by radio. PR is still in use today.

Here in Australia, APRS is starting to become popular with Amateurs, especially with travelers with caravans, mobile homes, boats, etc. Go to [www.aprs.fi](http://www.aprs.fi) and type in Sydney. You will soon be frantically pushing the zoom-in control. It just doesn't show Radio Amateurs with APRS fitted, it also shows ships and other vehicles. Now you know just where the Manly Ferry is! It can also be installed in your home station if you wanted to transmit weather details say every half hour.

What frequencies do these stations use? In the Amateur world we use UHF/VHF and also HF although the latter is unreliable. On VHF we use 145.175 MHz so for the sake of this article we will assume this is the common Amateur APRS frequency throughout Australia.

Take a listen on the frequency. Here in the Hastings you won't hear much as the special receiving station for this is still in the Beta stage at Henry's VK2ZHE. It will eventually be at Middle Brother where it can monitor the Packets and send them down south to the master station for insertion into the internet.

Interested? So what do I need?



*Front Panel of unit.*

Three items are essential:

A 2m transmitter. (A transceiver is preferred as it can monitor the input and delay sending packet if the frequency is occupied).

A GPS receiver (no screen needed)

An inter-face unit



*Internal view showing 2m transmitter, and interface unit with GPS receiver.*

Under the guidance of Henry VK2ZHE, John VK2KC and Arthur VK2ATM the last two items have been group purchased. Their interest is just not amateur but the possible use by the SES for vehicle location during emergency operations. (No. They will not be using Amateur frequencies)!

If you would like to learn more, talk to one of these 3 gentlemen.  
de VK2AYD



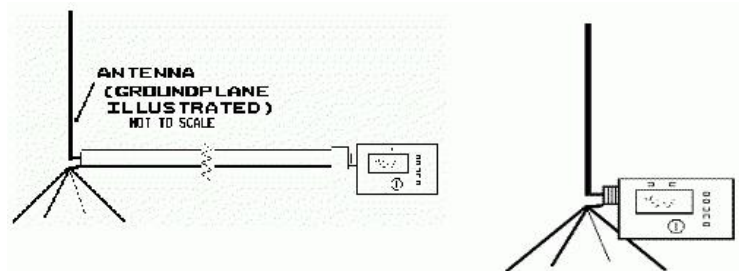
*Back of the APRS unit*

Submitted by Bill VK2ZCV

## SOME USES FOR an ANTENNA ANALYSER

### THE HANDIEST INSTRUMENTS IN DECADES!

When you put up an antenna in the old days, it could be a real struggle. The only way to tell if it was tuned to the right frequency was to fire up your transmitter and check the SWR over the band you're trying to hit. But if the antenna was not resonant in the band your transmitter covered, about all you might be able to tell is that it is resonant above or below the band. With an Analyst, which goes outside the ham bands, you can tell exactly how much adjustment to make without taking the antenna up or down or running back and forth to your ground-mounted antenna. And it can do so much more!



### SWR Measurement

As shown above, any Analyst can be used to measure at the far end of the feedline or directly at the antenna. Of course, any type of antenna can be measured--not just verticals. Also, the units can measure balanced line as well as coax, since the unit is so small that it essentially "floats" from ground.

Making SWR plots and determining resonant frequency is the main use for any Analyst. Simply connect as shown above, vary the Analyst frequency and measure SWR. The antenna is resonant at the frequency where SWR is lowest.

If you've never used an Analyst before, you're in for a treat. Previously, the normal procedure for adjusting an antenna was to transmit using your main transmitter and measure SWR. If the SWR was high, it was often difficult to tell what correction to make, since the transmitter is limited to the ham bands.

Using an Analyst you can now tell the resonant frequency **exactly** and determine exactly how much to shorten or lengthen your antenna after only one measurement. For example, if you're shooting for a 14 MHz resonance, and the SWR is lowest at 14.56 MHz, this is exactly 4% higher than desired. So you know to lengthen the antenna by exactly 4%. There's no need to keep cutting the antenna and raising and lowering it many times. This is explained in more detail in the instructions.

Furthermore, the frequency of lowest SWR for random length antennas well outside Ham bands can tell you whether to add a coil or capacitor. (For example, maybe you can "tune up" your house gutter!)

The other advantage is that you can take the Analyst outside or up a tower since it's completely self-contained. So you can adjust the antenna **on the spot** without having to go back to the main transmitter each time you make a change.

## TRANSMISSION LINE

### MEASUREMENT

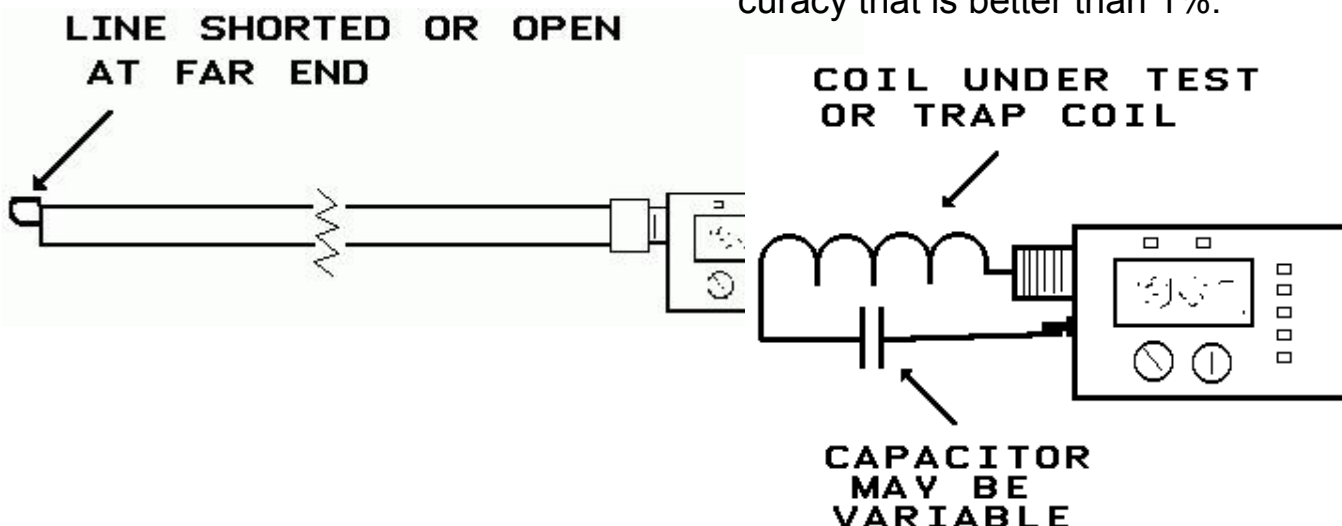
By measuring an isolated transmission line you can determine:

1. The loss in the line
2. The electrical length of the line, e.g. 1/2 wavelength

How lossy is your transmission line? Has weathering or burial ruined it? In the old days, this was very hard to determine. With an Analyst, it is simple:

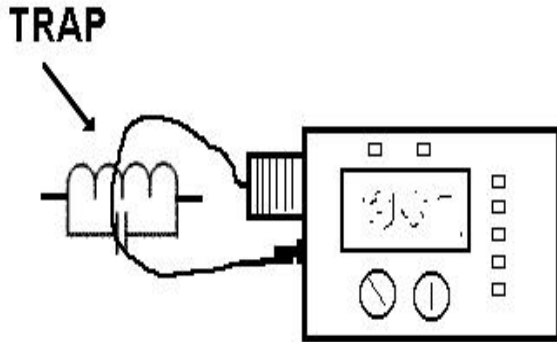
To measure line loss, simply measure the impedance (Z) of the open or shorted line vs. frequency until you find minimum value. This minimum value reoccurs periodically in frequency. The minimum impedance yields the line loss in dB. For example, if you measure an 8 ohm minimum impedance with 50 ohm line, the loss is about 1.4 dB. (A lossless line would read zero ohms.) Loss in line other than 50 ohms, e.g. 300 ohms, can also be measured. All Analysts are accurate at low impedance with digital readout. The instructions explain this simple procedure further.

The electrical length of the line is also easily found by looking at impedance vs frequency. So it is easy to cut 1/2 wave and 1/4 wave lines. And do it with an accuracy that is better than 1%.



## RESONANT FREQUENCY MEASUREMENT

Changing the Analyst frequency until you find the minimum impedance for the above circuit gives the resonant frequency of the circuit.



### TRAP FREQUENCY MEASUREMENT

(It also acts like a "grid-dip" meter, but easier to read, and with digital frequency readout !)

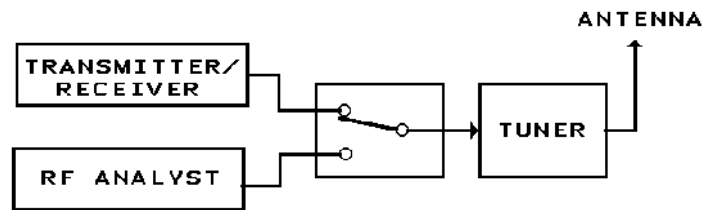
**Bonus: Not in all Analyst Instructions.** A simpler way to measure the resonant frequency of a trap, or any tuned circuit, is to connect a piece of wire between the Analyst output and the Analyst ground (the ground screw next to the coax connector, or the outside of the coax connector.) The wire can be a few inches to many feet long. (Note: You must disconnect at least one end of the trap from any antenna to measure its resonant frequency.)

Put the Analyst in the Z mode. You will read a small Z which simply represents the inductance of the wire. Now put the wire near the trap. As you tune the Analyst frequency, Z will increase dramatically at the trap resonant frequency! The frequency of peak Z is the trap resonant frequency.

If the trap has high Q and is large you can probably see the jump in Z with the wire several inches from the coil. For a

small coil, you might need to wrap the wire into a small loop at the end and bring it near the coil. No fancy plug-in coils are needed such as a grid-dip meter requires...just a few inches of wire! And the Analyst's digital frequency and Z readout pinpoint the resonant frequency exactly.

The same wire can usually be used over the entire frequency range of the Analyst, so you can also forget about the many plug-in coils that a grid-dip meter requires.



### TUNING AN ANTENNA TUNER WITHOUT TRANSMITTING

If you construct a simple switch as shown above, you can use an Analyst to tune your antenna tuner without transmitting. Simply set the Analyst at the desired frequency and set the tuner for lowest SWR.

### MEASURING COILS AND CAPACITORS

The RF1 and VA1 both measure coils and capacitors at the RF frequency of your choice. Simply connect the coil or capacitor across the units coax connector; directly, or using clipleads (supplied.) Both units subtract the stray output capacitance of the connector, etc., so C is usually read directly without any correction required. The VA1, which measures the sign of X, will show a negative L if a capacitor is measured. This is often handy since this is the L value which resonates with the capacitor at the measurement frequency. The RF1 does not measure the sign of X, but will also show



the equivalent L value.

Please note that the L and C functions of the RF1 are only for measuring pure L and C, whereas the VA1 shows the L or C component of any load ( $R + jX$ ), **including the sign.**

## COILS ARE MEASURED AT RF FREQUENCY

Please note that one can buy other meters which measure L and C, which are usually intended for TV repair people. These meters usually operate at 1 kHz to 100 kHz and so are essentially **useless for RF measurements of coils !**. The inductance of a coil varies considerably at high frequencies because of stray capacitance and other factors. In addition, if the coil is wound on a ferrite core (e.g. toroid), the core material causes the inductance to vary even more with frequency. So, an L/C meter which operates at 1 kHz or 100 kHz will not read RF inductance correctly. In contrast, Analysts can be set to the frequency of interest when measuring L.

## MEASURING LINE IMPEDANCE

By connecting a known resistor value to the far end of a transmission line and observing how Z varies with frequency, the line impedance can be determined. This simple procedure is discussed further in the instructions.

## MEASURING BALUNS AND RF TRANSFORMERS

If you have a 1:1 balun, simply connect a small 50 ohm resistor across its output, and verify that Z at the input is also 50 ohms. Similarly, if it is a 1:4 balun, connect 12.5 ohms at the output and verify that 50 ohms is measured at the input. Or, for a 4:1 balun, connect 200 ohms at the output, etc. (Don't expect "perfect"

results, and especially expect some degradation at the low and high frequency limits of the balun specs.)

## MEASURING "CHOKER" BALUN IMPEDANCE

**Bonus: Not in Analyst Instructions.** "Current" baluns are often used to keep current from flowing on the outside of the cable when coaxial cable feeds a balanced antenna such as a dipole or inverted V. Also, vertical groundplanes (verticals that don't use an "earth" ground) should have one, especially if only one or two groundplanes are used, as is becoming more popular. However, compact baluns are easy to burn out at high SWR. So, if weight and size are not a problem, a "choke balun" is often used. This can be made by coiling 4 to 10 turns of the coax feedline in a loop (very simple and cheap), or, similarly, by slipping many ferrite cores over the outside of the coax (not so cheap, but lighter.) See the ARRL Antenna Book for details...sorry, we cannot supply details.

The impedance of the "choke" is easily found by measuring the Z of the coax shield between the input and the output of the "choke." That is, connect the Analyst ground to the coax braid on one side of the "choke," and connect the "hot" end of the Analyst (inside of Analyst coax connector) to the coax braid on the other side of the "choke." You can stick a hairpin through the coax insulation to reach the braid without cutting the coax. Vary frequency, and verify that Z is high over the frequency range of interest. You may measure Z greater than 1000 ohms over part of the range.

## ADVANCED USES

The R and X components of the load are often desired. It turns out that R and X

can be calculated from SWR and Z, which are read out by the RF1 and RF5. The equation to do this is in the instructions. So, if you occasionally need R and X components, this is adequate. Note, however, that this does not yield the **sign** of X, and the results are not nearly as accurate as using a VA1. Also, this method does not work above 150 to 200 MHz because of stray inductance and capacitance which can cause large errors in Z.

The VA1 measures R and X, **including the sign of X** directly and instantly, and does everything else that the RF1 does, of course. The VA1 also shows SWR for lines other than 50 ohms, and shows the R and X components of an antenna in the air. If you're an advanced user, you should consider the VA1. However, the less-expensive RF1 is also extremely accurate and adequate for most tasks.

Submitted by Bill VK2ZCV

## WINTER PROJECT 2

de David Pilley #013 VK2AYD  
dvdply@midcoast.com.au

*Last time I told you all about Project 1 and my headphone solution. This was shortly followed by another challenge with ergonomics.*

As I mentioned in Project 1 I'm a very keen CW person. However sometimes I like to join in the SSB HF Contests like the IARU or our own Oceania DX Contest. Calling CQ on CW is easy, my el-keyer is programmed to do it for me, but I don't have a ".wav" file in the computer for voice and after a few hours operation I am speechless.

I needed a voice recorder. The idea of tape seemed a little old hat and I started to search through old magazines and journals looking for an alternative, eventually discovering in

August 2000 EA magazine there was an excellent voice recorder described using a APR9600. This is a complete digital voice recording system on a single 28 pin DIL package. The APR9600 is designed to store up to 60 second of voice recording, even when the power is turned off. It can be programmed for two, four or eight messages. It is designed to take signals directly from an electret microphone and deliver the replayed audio directly to a loudspeaker. However the output is very low and using a second LM386 audio amp chip to deliver a more satisfying output is recommended.

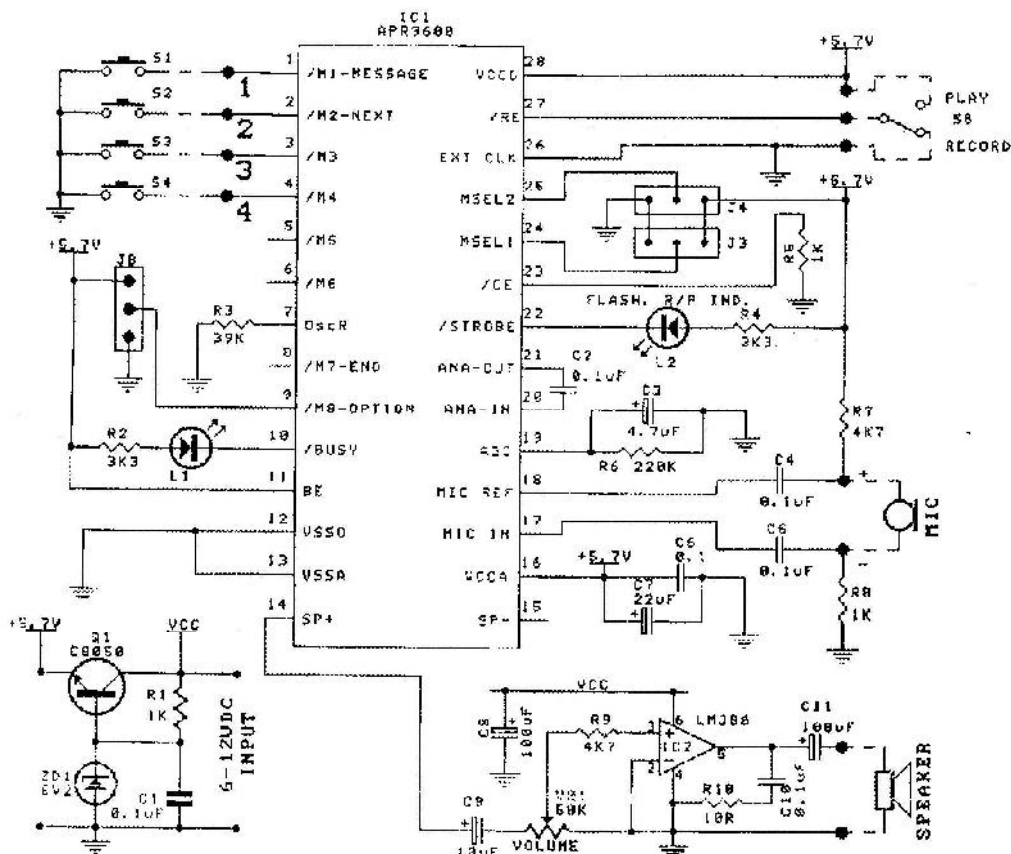
Oatley Electronics, an Australian electronic supplier, was offering a complete kit of parts (K162) at \$A30. This included the pcb and case. A quick call and 3 days later it was on my work-bench. The assembly of the kit on the 63x39cm pcb took about 4 hours however the drilling of the 125x65mm jiffy box took me a little longer. Whatever, it only took a day which was well spent.

This you've got to try! The result was fantastic and I was really surprised. Programming was just simple links and programming 4 channels of recording was easy. I soon had it hooked into the system with 4 selective messages. Auto "CQ Contest" etc.. It was so impressive,

My Grandson talked me into building him a unit for use in his car which now says "Please close the door", "Please fasten your seat-belt", etc.. All very polite and it really impresses his friends!

The diagrams for this project are reproduced on the following page.

Editors note: Thanks very much to Dave VK2AYD for the project. I hope that this will inspire others to submit other projects.



## 60 SECOND DIGITAL VOICE RECORDER

Inside the APR9600 there's a microphone preamp and an automatic gain control (AGC) circuit for recording, along with an anti-aliasing filter and sample-and-hold circuit. The sampling circuit is clocked by an internal oscillator, whose frequency can be varied between approximately 4kHz and 8kHz to give a total recording time varying from 60 seconds down to 32 seconds, with a bandwidth varying from 2.1kHz to 4.0kHz.

The audio samples are then written directly into the chip's 256K memory, for recording. But this is no ordinary memory; it's described by Aplus as a 'flash EPROM analog storage array, where the samples are stored not as 8-bit digital samples, but apparently as 256-level analog samples. And because the memory uses a variant of flash EPROM technology, they're stored in non-volatile fashion. This means they don't evaporate when the power is removed; they simply remain there until the power is applied again. (You can still record over them, though.)

For replay, the samples are read back out again - non-destructively and then passed through a low-pass filter for smoothing, and finally through an output amplifier.

Along with these basic audio signal processing and storage circuits, the APR9600 also contains mode and function control circuitry. This is used to determine which recording / play mode it's configured in, whether it's in recording or play mode, which memory segment is in use and so on.

As you can see from the schematic, the APR9600 comes in a 28-pin DIL package. The audio from the electret microphone feeds directly into its internal recording preamp via pins 17 and 18, with coupling capacitors C4 and C5 used to block the electret's bias voltage. Components C3 and R6 connected to pin 19 are used to set the attack time of the chip's internal AGC circuit, and are optimised for speech.



# OXLEY REGION AMATEUR RADIO CLUB Inc.

## MEMBERSHIP REGISTER as of 28 February 2012

No.	Cat.	Surname	Given	Spouse	Call	Locaon	Tph
1	O	ANDERSON	KEITH		VK2FKJA	LAKE CATHIE	02 6586.3988
2	O	BAILEY	JOHN	(FLORENCE)	VK2KHB	PORT MACQUARIE	02 6582.2192
3	D	BELL	ALAN		VK2BEL	COOLONGLOOK	02 6554.1689
4	D	BLACKMORE	MARK		VK2XOF	BAULKHAM HILLS	02 9639 0663
5	L	BLYTH	BOB		VK2XIQ	TELEGRAPH POINT -	
6	O	BOYD	ROSS		VK2RR	LAKE CATHIE	02 6585 4903
7	D	BRICE	GRAHAM	(CYNTHIA)	VK2VV	SCONE	02 6545.0411
8	L	BRODIE	BOB		VK2EJK	PORT MACQUARIE	02 6582.0592
9	F	BROOKE	AILSAS	(BILL)	VK2FABJ	PORT MACQUARIE	02 6581.0547
10	F	BROOKE	BILL	(AILSAS)	VK2ZCW	PORT MACQUARIE	02 6581.0547
11	O	BURGESS	ROY	(JUNE)	VK2YOR	PORT MACQUARIE	02 6583.8801
12	O	COURT	RICHARD	(LINDA)	VK2CHC	PORT MACQUARIE	02 6584.6872
13	O	DANIEL	JIM		VK2FJKD	PORT MACQUARIE	02 6583.1933
14	O	EDMONDSON	CHARLES	(PAT)	VK2KCE	PORT MACQUARIE	02 6584.0495
15	D	EKERT	BRUCE	(YULIA)	VK2EM	FORSTER	Mob 0414532496
16	D	ELLIS	STAN	(BETTY)	VK2DDL	TUNCURRY	02 6554.7996
17	F	FLETCHER	PETER	(CAROLINE)	VK2HPE	PORT MACQUARIE	02 6584 5191
18	F	FLETCHER	CAROLINE	(PETER)	VK2CZF	PORT MACQUARIE	02 6584.5191
19	O	FROST	ROBERT	(SUSAN)	VK2CRF	PAPPINBARRA	02 6587.6129
20	O	GILSON	BARRY	(FAY)	VK2FBRG	PORT MACQUARIE	02 6583.8814
21	L	GREEN	LEWIS	(PAMELA)	VK2AG	PORT MACQUARIE	02 6584.9162
22	O	GREENWOOD	GRAEME		VK2ZIS	McMAHONS POINT -	
23	L	HANLON	KEITH		-	PORT MACQUARIE -	
24	O	HANSEN	JOHN		VK2AYQ	PORT MACQUARIE	02 6582.7932
25	O	HARDING	DAVID	(ISABELLA)	VK2AIF	WAUCHOPE	02 6586.4980
26	O	HOLMES	JOSH		VK2FJDH	BONNY HILLS	02 6585.5148
27	D	HUTCHESON	COLIN	(PAULINE)	VK5DK	MT. GAMBIER	08 8725.5527
28	D	JANES	LES	(BEVERLY)	VK5JL	SALISBURY HEIGHTS	08 8281.3878
29	O	JONES	PAUL	(SANDRA)	VK2DEL	PORT MACQUARIE	02 6584 3772
30	O	KOPPEL	HORST		VK2FHKO	LAKE CATHIE	02 6585.5992
31	L	LINDSAY	LARRY		VK2CLL	WAUCHOPE	02 6587.1155
32	L	LUNDELL	HENRY		VK2ZHE	PORT MACQUARIE	02 6582.0534
33	O	MADIGAN	ALLAN	(DAWN)	VK2OA	WAUCHOPE	02 6585.2043
34	O	MARTIN	CRAIG	(JENNY)	VK2ZCM	SANCROX	02 6585.3452
35	O	McGUIRE	MARK		VK2FMGM	PORT MACQUARIE	02 6583.8875
36	O	MCLEAN	JOHN	(CORRINE)	VK2KC	PORT MACQUARIE	02 6584.6220
37	O	MEEHAN	TERRY		VK2KL	PORT MACQUARIE	02 6584.2997
38	O	MELVILLE	STUART		VK2KSM	BONNY HILLS	Mob 0419043316
39	D	MILLS	TIM		VK2ZTM	BEECROFT	02 9868.1434
40	D	MINAHAN	CHRIS		VK2EJ	HALLIDAYS POINT	02 6559.3516
41	L	MONCK	ARTHUR		VK2ATM	PORT MACQUARIE	02 6581.0960
42	O	NEIL	JIM	(CAROL)	VK2VIV	PORT MACQUARIE	02 6581.2481
43	O	NEWY	DAVID	(LEONIE)	VK2DEN	PORT MACQUARIE	Mob 0439925065
44	O	NEWY	LEONIE	(DAVID)	VK2LPN	PORT MACQUARIE	Mob 0401015220
45	O	NEWHAM	LAURIE	(ROBIN)	VK2ELN	PORT MACQUARIE	02 6583.5387
46	D	NIVEN	TREVOR	(BETH)	VK5NC	MT. GAMBIER	08 8723.2432
47	O	PILLEY	DAVID	(DEE)	VK2AYD	KING CREEK	02 6585.2647
48	O	ROMAINE	PAUL		VK2UPR	PORT MACQUARIE	
49	O	SANDFORD	NEIL	(VERENA)	VK2EI	PORT MACQUARIE	02 6582.5830
50	L	SINCLAIR	BILL	(CORALIE)	VK2ZCV	PORT MACQUARIE	02 6583.9302
51	O	SMITH	LYLE	(JEANNINE)	VK2FCVI	WAUCHOPE	02 6585.2497
52	O	STOFMEEL	BILL	(TONI)	VK2BST	PORT MACQUARIE	02 6582 5612
53	D	TARRANT	DAVID	(AILEEN)	VK2TBC	ILUKA -	
54	O	TRAYNOR	JOHN		VK2FMJT	PORT MACQUARIE	Mob 0487748338
55	O	THATCHER	TREVOR		VK2TT	WAUCHOPE	02 6585.2278
56	O	THOMPSON	DES	(BETTY)	VK9FLHI	LORD HOWE ISLAND	02 6563 2152
57	O	WALKER	BRUCE	(GWEN)	VK2HOT	PORT MACQUARIE	02 6583.8360
58	O	WARD	MICHAEL	(RUTH)	VK2FMDW	PORT MACQUARIE	Mob 0427291276
59	O	WINCHESTER	JOHN	(PAULINE)	VK2FGAA	PORT MACQUARIE	02 6580 3031

Category Key: O = ORDINARY A = ASSOCIATE D = DISTANT H = HONORARY L = LIFE