MEETINGS, NETS and SERVICES

Club Station: VK4WIS

Club Repeaters:

Maleny: VK4RSC on 146.850 MHz & 438.075 MHz.
Peregian Beach: VK4RMB on 146.825 MHz & 438.175 MHz.
Gympie: VK4RGY on 146.625 MHz & 438.825 MHz.
Bli Bli: VK4RSN on 53.700 MHz

General Meeting: Monthly on the first Tuesday at 7:30 pm in the Club House, old Toll Plaza building, 85 Godfreys Road, Bli Bli. Visitors are welcome to attend.

Weekday Meeting: Weekly at 10:00 am on Wednesday.

Good Morning Net: Daily at 8.15 am at VK4RSC on 146.850 MHz. Conducted by various club members.

Tech Net: Weekly at 8:30 pm Sunday at VK4RSC on 146.850 MHz. Check in, raise topics and ask your technical questions.

80 m Net: Weekly at 7:30 pm Thursday on 3660 kHz.

10 m Net: Weekly at 8:15 pm Wednesday on 28.470 MHz.

6 m Net: Weekly at 7.30 pm Friday at VK4RSN on 53.700 MHz.

2 m Net: Weekly at 7:30 pm Sunday on 144.300 MHz SSB. Conducted by club station VK4WIS.

QNEWS: Relayed Sunday at 9:00 am at VK4RSC on 146.850 MHz. After the broadcast a callback is conducted by VK4WIS.

Internet: www.vk4wis.org
This website provides previous issues of Pelican Droppings in full colour in pdf format which can be downloaded. The current issue can be had by subscribing to the email edition in pdf format. Apply to SCARC.

EchoLink: Available on VK4RSC 146.850 MHz.
The Internet station is VK4AKA-R and the node is #195107.

NEXT ISSUE A complete update on the WICEN caravan projuect and other WICEN progress.

SCARC Inc. Office Bearers AGM Feb 2006

President	Ray Stuart VK4YRS
Vice-President	Noel Des Jardins VK4NL
Secretary	Gordon Taylor VK4VP
Treasurer	Keith Noll VK4AKA
Committee	Harvey Wickes VK4AHW; Frank Winter VK4BLF; Mike Little VK4YFL; Richard Philp VK4YRP

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Email editor: geoffcom@powerup.com.au

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Pelican Droppings

Newsletter of the Sunshine Coast Amateur Radio Club Inc.

Issue No.87 February-March 2007

Not all useful projects are complicated and expensive. Here is a 12 Volt power board built for a purpose by Tony Thorrold VK4KKY . See inside.

INSIDE

Address: The Secretary, Sunshine Coast Amateur Radio Club Inc.
85 Godfreys Road Bli Bli Qld 4560

Presidential Preamble

Another New Year has arrived and on behalf of the club I would like to wish all members a healthy and happy New Year.
At our 6th of March meeting the club's Annual General Meeting will be held. Nominations for all positions will be accepted. We will not be having a guest speaker at the AGM.

Recently the Club purchased an overhead projector and a DVD/Video combination player. We are now able to view computer presentations, DVDs, video tapes and television through the overhead projector. A stereo amplifier and speakers have been donated to the club and these will be used with the overhead projector for guest speakers. A label maker has also been purchased for use in the clubrooms and caravan. This should make operating equipment a lot easier.

Wicen sub committee

Records held by our caravan project coordinator Vin VK4FVCW show that over 1500 man-hours have gone into the caravan so far. Members that have signed up for Wicen activity will soon be able to brush up on emergency operating procedures. Check with Richard VK4YRP for details.

Repeaters,

The 6 metre repeater has been adjusted again by Warwick VK4NW and the 70 cm repeater has been relocated to Dulong for testing. Noel VK4NL will be assisting.

Clubroom happenings

The Green Room is being revamped again. A new HF rig is in place and Bill VK4XZ is simplifying the room's operation.

Our next night meeting is on Tuesday 4th of February 2007 at 7:30pm at the clubrooms and remember that the clubrooms are now open on the first and third Sunday of the month starting at 9:00am. Please join us for a talk and a BYO BBQ lunch.

Remember the club web site www.vk4wis.org for information updates. Please call in on the club nets to keep the net controllers busy.

That's enough from me. 73 all, Ray

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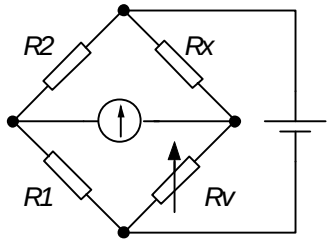
Famous Personalities: Ohm and Wheatstone

Georg Simon Ohm (1787 – 1854) was born in Erlangen, Germany and graduated from the University of Erlangen with a degree in physics. In 1827 he formulated the mathematical law which relates voltage, current and resistance: R=E/I which we know so well today. At the time no one could see a use for the discovery and it was neglected and forgotten until 1833. Ohm also found that the resistance of a conductor depends on its material, dimensions and temperature. Today the unit of resistance is called an ohm in his honour and the International Standard ohm is defined as the resistance of a thread of mercury with a cross sectional area of 1 mm^2 and a length of 106.3 cm at 0ºC.

Sir Charles Wheatstone (1802 – 1875) was born in Gloucester, England and became professor of experimental philosophy at Kings College in London. He became well known for his work in measurement and telegraphy. With a colleague W.F. Crooke, he patented an electric telegraph in 1837, just about the same time as Samuel Morse in the USA. Wheatstone's telegraph was widely used in Great Britain and was much easier for the average person to master than the Morse code. The original apparatus consisted of five needles each connected to a separate wire. Pulses of current caused two needles at a time to move and point to letters written in a circle around the needles. The device was soon improved to use just one needle which would point to one letter at a time. He also did important research into acoustics and underwater telegraphy.

He is probably best remembered for the Wheatstone Bridge, but in fact he did not invent this bridge, he merely improved on an earlier discovery. It is a sensitive instrument used for measuring resistance. R1 and R2 are fixed, known resistances. Rv, a variable resistance, is adjusted until the meter M reads zero. The bridge is then in balance and the value of the unknown resistance Rx can be calculated using the formula:

$$\frac{R_x}{R_v} = \frac{R_2}{R_1}$$



End

Six metre half-wave vertical antenna
Clockwise from left: Complete antenna, coil assembly installed for repeater site, parallel coil and capacitor .

The New Foundation Licence

Now it is easier than ever to get an Amateur Radio License and get involved in the fascinating hobby enjoyed by millions all round the World.

No Morse Code required.

Only two simple exams to sit… Theory and Practical.

The Theory exam consists of 25 questions, multiple choice, with a 70% min. pass mark required.
The Practical exam is largely an oral exam on operating procedures and protocols, antennas, feed lines, connectors and electrical safety. It includes a hands-on aptitude test, connecting a transceiver to a power supply and antenna system, and adjusting for best results. The one Practical exam is valid for all three Amateur Radio levels… Foundation, Intermediate and Advanced. (also 70% min pass mark required.)

Free training classes are being offered by your local Ham Radio Club, SCARC – The Sunshine Coast Amateur Radio Club Inc. located at 85 Godfreys Road, Bli-Bli. Contact Harvey at 54765209 for details.
Costs: There is a $25 License Assessment fee, payable to the WIA. The Annual License Fee for an Amateur License is currently $57 per year.
Further information can be found on line at: http://www.wia.org.au/
And local Sunshine Coast Amateur Radio Club at:
http://vk4wis.org/

General Meetings - Change of format proposal

At the last Executive Committee meeting, discussion was had in regard to the format of General Meetings. We are seeking members opinions on the following change:

Have a full general meeting every two months, and every other month have a technical meeting with either no general meeting or a short general meeting.

Please advise your committee members of your opinion on this proposed change.

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A 12 volt Power Board

By Tony Thorrold VK4KKY

My 12 volt 20 amp power supply has only one set of heavy current terminals, normally connected to the HF transceiver. If I wanted to use another 12 volt device, I would first have to disconnect the radio. So a “Power Board” was built to fill the need. The circuit diagram is shpown in Fig.1.

I used an old plastic Jiffy Box to mount four sets of banana plug sockets, a fuse holder and a LED (see front cover photo). The two high-set banana sockets are shorted with a heavy wire link and are connected in series with the incoming supply. The link can easily be removed to give convenient access for an ammeter. The LED is just to indicate that power is available.

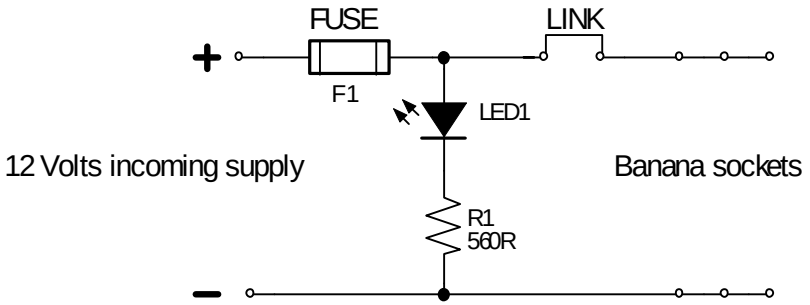

Fig.1 Circuit diagram of power board

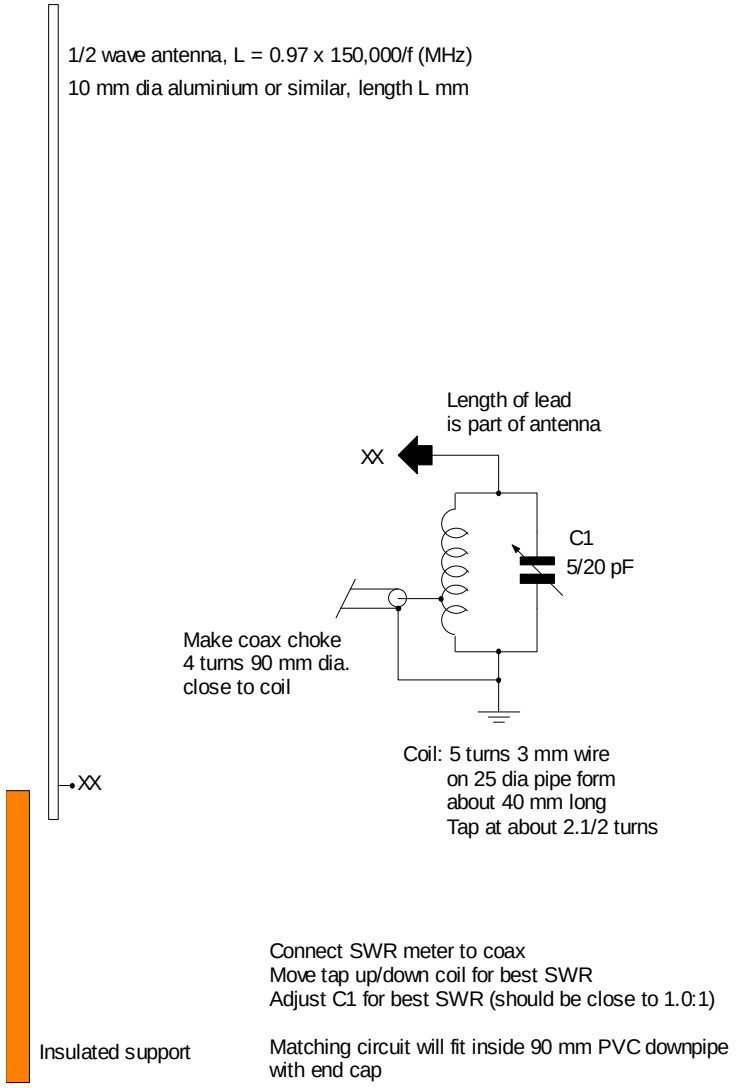

Fig. 1 Six metre half-wave vertical antenna

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Half-wave six metre vertical antenna

by Warwick Marshallsea VK4NW

I developed this antenna some five years ago when I found that available commercial types did not work effectively. It is suitable for mounting on a small pole or on a barge board. Details of this antenna are shown in the diagram of Fig. 1.

Half-wave (dipole) antennas are known to be excellent low-angle radiators when compared with, say, the quarter-wave ground plane. However, because it is convenient to feed them from the high-impedance end (high voltage - low current) of the half-wave, feeding and matching them is relatively complicated. Adjustment is often critical because the impedance near the dipole end is changes rapidly with distance from the end. This antenna is matched impedance-wise using a tapped tuned circuit, the high impedance end of which feeds the antenna via a short length of copper wire. Note that this length of wire is part of the antenna and is included in the calculation for length, L. Some fiddling with the coax tap point will be required, and only small movements are required to obtain low swr, after which the variable capacitor of the tuned circuit is adjusted for lowest swr. There is interaction between the tapping point and tuning and a couple of tries on each is required to achieve a swr of 1.0:1.

Because the antenna is a half-wave (dipole) it and the matching circuit must be insulated and separated from ground. I use orange pvc conduit as an insulated support as it is strong and withstands UV radiation from the sun well. A coax choke to stop RF radiation from the coax should be placed close to the matching unit.

Bandwidth will be about 2 MHz depending on the diameter of the half-wave dipole (thicker dipole, wider bandwidth). Tuning of the parallel circuit should be done with the swr meter close to the antenna and with the antenna mounted in the clear about 2 metres above ground. Final testing should be carried out with a high power of 40 to 100 W if possible.

These types of antennas are in use around the Sunshine Coast region and on the SCARC six metre repeater with good reports from users. They cover most of the six metre band including the ssb section if tuned to around 51.5 MHz .

The matching arrangement will work fine on other bands from 160 m HF to 6 m VHF. Photos appear in Fig. 2, p14 End

Emporium Delirium

by Harvey Wickes VK4AHW

The following is a non–paid but blatant plug for that wonderful treasure trove, the Little Mountain ‘Emporium’, aka the Caloundra Recyling Centre, opposite the entrance to the Corbould Park Racecourse in Pierce Avenue. This amazing bargain center is open every Saturday only, from 9.00am to 4.00pm, and comes highly recommended as a Community Resource Center par excellence.

Quite a few SCARC members and their wives, friends and neighbours are to be found each Saturday, lined up outside the big roller doors, waiting to rush right in at 9.00am sharp, in order to grab that totally indispensable item that they just can’t live without. For those of us with a love of electronics, there is always plenty to choose from.

For the rest of the community, there are such diverse things as bargain priced books, kids toys, household furniture, fish tanks, steam irons, roller skates, DVD’s, Videos, fishing rods, depth sounders, gardening tools, tins of paint, steel pipes, galvanized beams, timber, roofing iron, irrigation systems, garden sprinklers, whipper snippers, lawnmowers, BBQ’s, bicycles, scooters, swings, slides, exercise equipment, Gym workout treadmills, pedal machines, weight lifting benches, boats, trailers, doors, desks, tables, chairs, air compressors, power tools and… starting to get the picture?

Oh yes, that reminds me, there are also pictures in frames, paintings in oils and water colours, statues, garden gnomes, chess sets, board games, crockery, cutlery, camping equipment, book cases, desks, foot massagers, pressure cookers, vitamizers, mix masters, waffle makers… and yes, you are right, I am waffling on. Time to get to the really interesting things, of great value and interest to the electronics enthusiasts, home brewers and general handy persons. The writer now calls upon personal experience and past bargains, just to whet your appetite. Let’s start with Gell Cell and NiCad rechargeable batteries. These are to be found in the large selection of battery powered kids scooters, trikes and plastic toy cars, along with an interesting assortment of DC motors, both 12V and 24V, some up to 200 watts.

Of course, some turn out to be duds, and must be discarded, but the good batteries usually outnumber the crook ones, and many just

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require a recharge. Old Emergency Exit lights are a good source of 'D' sized NiCad cells, which have been used in the VK4AHW household to re- power torches, power tools and so on.

Talking about power tools, this is an area where the writer has struck gold, time and time again. I now have an impressive supply of battery powered drills, screwdrivers and lanterns, many of them now re-packed with cheap Nickel Metal Hydride cells derived from Truscotts, in Melbourne. Now that's another story. The 240-volt tools are also proving to be very useful, although many require a little work to get them going. Here again, there are the odd failures that end up back at the Tip, but a little careful selection and a close inspection before purchase usually pays off nicely.

Just this morning I paid the princely sum of $3 for a rather impressive 10" Compound Slide Miter Saw. It looked to be fully intact and in reasonable condition, so I took a chance and put it in the boot. When I got it home, I plugged it in and it was dead. A quick inspection revealed the brushes were OK, the commutator looked fine and the motor bearings were perfect. I dismantled the trigger unit, and discovered a loose spade connector in the power lead to the trigger switch. I pushed it back on, re-assembled, and away it went, happy

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Example:

Let us use the same data as with the T-pad design and see what the values are for a π-pad instead. (R_0 = 50 ohms, attenuation = 30 dB)

Once again we know that the attenuation is in dB and we have to convert this to a voltage ratio (see T-pad calculation)

R1=50x(31.62x31.62-1)/2x31.62=789.7 ohm

R2=50x(31.62+1)/(31.62-1)=53.2 ohm

The L-section attenuator

An L-section attenuator is asymmetrical – the impedance when viewed from the source is not the same as the impedance when viewed from the load. This type of pad is generally used for matching purposes only and it is designed to introduce the minimum amount of attenuation.

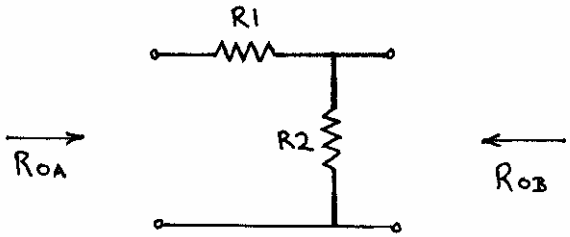
The following formulae for calculating the resistor values use

Roa = input impedance looking from R1 side,

Rob = input impedance looking from R2 side.

R1=(Roa{Roa-Rob})^0.5

R2=(RoaRob^2/{Roa-Rob})^0.5



L - Section Attenuator

Example:

Your personal CD player is designed to use 35 ohm headphones, but you want to use your trusty and comfortable old 8 ohm headset. Design an impedance-matching L-pad.

R1=(35x{35-8})^0.5=30.7 ohm

R2=(35x8x8/{35-8})^0.5=9.1 ohm End

as a pig in mud!

I could go on at even greater length about many of the other bargains I have picked up at 'The Emporium', but a picture is worth a thousand words, so they say, so check out the items displayed herewith. Most of these items are around 50 cents each, or a few dollars. The most I have ever paid for anything so far is $30 for a flash looking 24 Volt scooter with a 200-watt motor. I have a professional Laser Leveler ($5), a perfect and complete Pentium 2 computer, ($20), a brand new ceiling fan, and a light and controller now in the spare bedroom and working well ($5). My wife Judi has also picked up some real bargains in the form of rare text books, bone china, a rice steamer, a steam iron and a radio/CD player, just to name a few. I guess it is safe to say that each Saturday morning, we both suffer a little from Emporium Delirium. Although this disease is somewhat contagious, and has been known to have strange side effects, it does not seem to be overly injurious to your health, and it seems to produce a mild feeling of euphoria, which is directly proportional to the size and quality of your latest bargain.

I'll possibly see you next Saturday, at 'The Emporium". End

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Attenuators

A Pelican Droppings Tech Review by Tony Thorrold VK4KKY

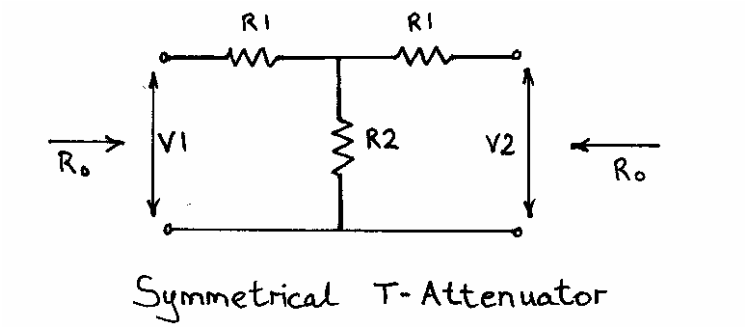
The word "attenuate" means to reduce in strength, or to make weaker. It is the opposite of "amplify". In electrical and radio work, an attenuator is a circuit that will introduce a specified loss between a source and a load without upsetting the impedance relationship necessary for matching. The attenuator must provide the correct input and output impedances as well as the required attenuation.

Attenuator circuits are often called "pads" and are usually, but not necessarily, constructed using resistors. We will be examining three types of pad: T, π and L.

Symmetrical T-section attenuator

A symmetrical T-pad has the same impedance looking from either the source or the load. It may be inserted into a network without changing the impedance of the network. The two resistors R1 are equal in value. There are thus four parameters associated with a symmetrical T-pad: The value of R1, the value of R2, the characteristic impedance of the pad R_0 and the attenuation of the pad A.

The attenuation may be expressed as a voltage ratio $A=V_1/V_2$ or in decibels as 20 log (V_1/V_2) or as a power ratio 10 log (P_1/P_2).



Without going into the mathematical derivation of the formulas for calculating the values, they are:

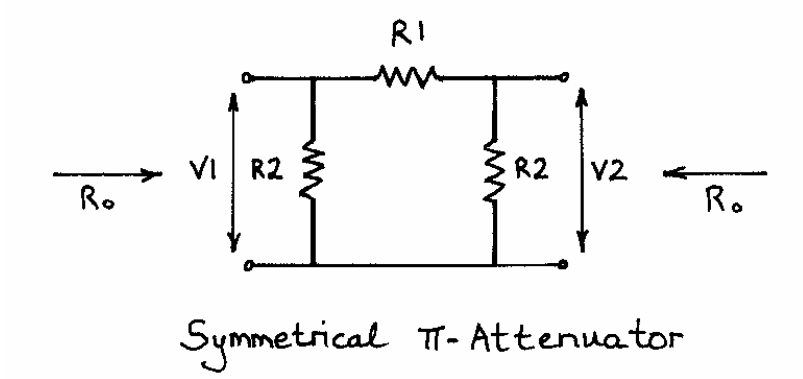
R1=Ro(A-1)/(A+1)
R2=Ro(2A/(A^2-1))
Ro=(R1^2+2R1R2)^0.5
A=(Ro+R1)/(Ro-R1)

Example:
The 6-metre dx signals at my home are so strong that I wish to attenuate them by 30 dB. The coax from the wire antenna to the transceiver is 50 ohm impedance. Design a symmetrical T-pad.
Attenuation = 30 dB = 20 log (V_1/V_2) so 30 = 20 log A

Thus log A = 30/20 = 1.5, so A = 31.62
R1=50x(31.62-1)/31.62+1)=46.93 ohm
R2=50x2x31.62/(31.62x31.62-1)=3.17 ohm

Symmetrical π-attenuator

Like the symmetrical T-pad, a π-pad has the same impedance looking from either the source or the load and it may also be inserted into a network without changing the impedance of the network.



The two resistors R1 are equal in value. We will use similar names for the components: R1, R2, attenuation A and characteristic impedance R_0.
Ro=(R1R2^2/{R1+2R2})^0.5
The formulas for a symmetrical π-pad are:
R1=Ro(A^2-1)/2A
R2=Ro(A+1)/(A-1)
A=(R2+Ro)/(R2-Ro)

continued next page

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