



Next Meeting Friday 4th October 7.30pm Special General Meeting

Two door prize draws this month, due to last months being postponed, so turn up for double the fun!
After the short Special General Meeting, it will be the

RADIO AUCTION NIGHT

BRING YOUR CASH AND BID FOR SOME GREAT DEALS



Don VK3HDX new beam antenna, which is only half the story of his great signals both TX & RX.

For the other half of his successful HF station, take a read of the article " Starting Over - The RF Earth System"

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Around The Shack

LAST MONTHS MEETING

With many members unable to attend it was decided to put forward the door prize draw ahead a month and have two draws next meeting. Mick VK3AY gave a short talk on a simple cheap antenna, see article this issue.

SCAM - A FUNNY STORY, From the Internet (where else!)

I put an advert on VKclassifieds looking for a Yaesu FT1802. I soon received the inevitable scam reply from someone claiming to be Mr Wood K5GNR. A quick Google confirmed this was a scammer. So I thought I'd just rattle his cage and see how far I could push him. The answer is, you cant push these people far enough, they will say anything to steal your money. The following exchange took place over a week and is reproduced word for word. It is genuine. In so far as we were both talking complete cobblers.

Hello, How is your day going? I saw your WTB advert, that's why am sending this mail. I have Yaesu FT1802 up for sale in an excellent condition. Looking to read back from you soonest. 73 Wood

Good Morning Wood

I am very happy you have for sale a Yaesu FT1802. May I ask, what is your lowest price for Yaesu FT1802. Also do you have any pictures of Yaesu FT1802. I anticipate your soonest email with glee. 88 Cook

Hi Cook,
Yaesu FT-1802, 2 meter transceiver, in like new condition. Very low hours, works great, and has been in a smoke free environment since new. Shipped with radio, MH-48 mike, power cord, mounting bracket, and original box. \$110.00 shipped
What is your full name and address for DHL? 73

Morning Wood,
Thank you muchly for your convenient reply. Can I ask? Is this transceiver have modification to enabled transmit on 185MHz. I need this frequency for when the mother ship is to calling me home be. Mesay like FT1802 sa betcha betcha. 147 Cook

It can transmit 185MHz due to some Mods.
So where do you want it shipped. 147 Wood.

Woodly Wood
I am verily ecstatic you inform me of 185MHz operation. Without 185MHz I suffer isolation from the safety of my mother ship. I very much like to purchase your fine FT1802 but need one question firstly. The modulation enhancer of FT1802. Is it be upgraded to octagonal digital freeview, or still the old bicarbonate hydrophone system? I verily have to enquire as your price of \$110 seems low for digital freeview. Maybe you should ask more money. Betcha betcha. 245
Cook

Hello
It has bin modified to octagonal digital freeview. How much can you offer for it?? 147 Cook.

Woody Woody Woody
Thanking you so muchly for your email. I am orgasmic with pleasing for hearing your FT1802 is active on digital freeview. I would precipitously pay \$350 for your goodly FT1802 but only if for it be fitted with genuine Yaesu optional red dot laser signal guidance system for to be helping communication with space traffic. It will be easy for to be telling if your FT1802 is fitted with genuine Yaesu optional red dot laser signal guidance system as the serial number displayed on the rear end of FT1802 be suffixed with the letters FU2 . If your rear end says FU2 I happylily forward you \$350 for to be your earliest convenience. 251
Cook
PS You name is Cook too? Maybe we relations?

Hello Cook,

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I am shocked about the price value of my radio. Thanks for not taking it off me at \$110usd. SN: 6E070FU2 Make Payment to me..... Name: Perry Wood City: Lubbock State: TX. Zipcode: 79414 Country: USA Amount: \$350
Via western union money transfer and get back to me with MTCN. I will send item via DHL to your address on 2working days so I will need your full name and address.....
73 Wood

Woodily Woodilydoo

My pants are elecificated to learn I can buy FT1802 from you with all features needed for to be in communicating with Venusian attack fleet. Will you please be confirming genuine Yaesu optional red dot laser signal guidance system for to be helping communication with space traffic is working to full good condition before I send money. If you are not able to be operating genuine Yaesu optional red dot laser signal guidance system for to be helping communication with space traffic then follow these instructionings. Press set button select menu for updating position of international space station and disable it, so display reads.... PISS OFF select menu to set lythium inhibitor network and select silicon controlled matrix, so display reads.... LYIN SCM
Go outside, connect FT1802 for to an antenna, set to 185MHz and transmit full power. Genuine Yaesu optional red dot laser signal guidance system for to be helping communication with space traffic will illuminationing the whole sky red and digitising display on FT1802 will read reflected light value. Any reading below 1:1.5 will not damage the power amplificationer.
If blue light reflects, this is be laser fire from the mothership so maybe you must inform you local authority not to return fire unless great damage be caused to your country.
If this shows that genuine Yaesu optional red dot laser signal guidance system for to be helping communication with space traffic is operationing satisfactorally. I will provide shipping address and send \$350.
73737373
Cook

I just made contact with Yaesu about it and they confirmed am using genuine Yaesu optional red dot laser signal guidance system. So I await your full shipping info and payment info.
147
Wood

Woohoodie

I am delirious in anticipation to be receiving my FT1802 with octagonal digital freeview and genuine Yaesu optional red dot laser signal guidance system for to be helping communication with space traffic. My shipment address is for Jackimium Cookimus the Great c/o Venusian Embassy Earth, 221B Baker Street Sidney Australia Third rock from the sun
post code X-58.256 Y-25.250 Z-45.800
I have attempted to be sending you moneys, but the Western Union company returned my mailings saying "invalid region selection". This maybe due for that I am immigrant to this planet. Or maybe you don't live in America? Do you have Paypal?
69
Cook

What is your call sign?
You know my callsign. It was on my advert.
What is your callsign?

Hello
Call sign: k5gnr
Kindly go to western union outlet close to you and make the payment
73
Wood

Woodson

I am greatly sorry and begging your forgiveness. There is no western union outlet within range of my ship. I am not to be in the west, or in a union, so this is impossible for me. I am having to do online transfer but always my attempts are rejected. They say your name is Robert. Not Perry. How can you for be having two

names and being only one person?

I would happily give you twice as many moneys to be in compensation for your time if you can send me another way to make pay. 147

Cook

Like I told you before..... Go to western union outlet close to your address and make the transfer.

I am having Perry Wood on my Driver's Licence. 147
Woodicus

I am once again fortuitous and overjilled. I can make payment direct to you with ease. I am finding your home address on the interweb. I will send \$700 by postage to Robert B Wood, K5GNR. 1217 NFM 1729. Lubbock, TX 79403. USA

Problem is solved. I look forward to receiving my FT1802 by return of postage. Is very nice to be doing business with you.

147

Cook

I dont really recieve mails and we have bad weather here. So I would prefer western union or money gram transfer.

73

Coniferous Wood

I will post \$700 direct tomorrow. United states postal service websites is stating there is for no delays in post to TX. You will have moneys in cash in 2 to 3 days.

Please be sending my FT1802 to address sent earlier.

I am much pleased to make new friend who also likes ham radio. I hope very much contact you on air K5GNR.

147

Cook

Hello Cook,

I said you should make a western union money transfer at western union outlet close to you.

73

Wood.

Wood

I not be near western union or any of the other unions. Send money direct saving me fees. Are you having any more radio equipment for sale? I happy to purchase any other radios you selling now that I have easy payment method. Please send me make list of all radios for sale and prices.

Thanks you 147

Cook

Australia Post 168-170 Anzac Parade Kensington, Nsw 2033 +61-1800501500

Lucky 7 Mini Mart Shop 5, 22 Crystal Street Waterloo, Nsw 2017 +61-2-83993848

Beaconsfield Newsagency 442 444 Botany Road Beaconsfield, Nsw 2015 +61-2-96982081

Those are the locations close to you.

you can go there and make the transfer to me .

Wooooood

I have posted \$700 in cash to your address. You will receive moneys in 2 to 3 days. Please be emailing me to let me know you received moneys OK.

I cannot be using western union or other unions transfer system. Is well known on interweb that many devious deceitful nasty disgusting stealing lying people use western union to take moneys from us honest goodly meaning radio hams. I suggest you use different system for to demand moneys or other people will think you are devious deceitful nasty disgusting stealing lying person. Please be sending my FT1802 with octagonal digital freeview and genuine Yaesu optional red dot laser signal guidance system for to be helping communication with space traffic as soon as you receive moneys in post.

147

Cook

No reply

ANZAC DAY 2014

A day for heroes, a day for mates and a day for hams. Are you participating in the Anzac day activation this year?

If not, why not? You can combine a number of our loves into the one day. We can go for a long drive. Set up portable radio stations on any number of bands and we can talk. All the fun of a field day with none of the hassles of scoring. This is not a competition, this is a tribute to what the diggers did for us in all wars.

Come to the Ballarat showgrounds (400m elevation) and help us to commemorate what the diggers did for us.

Contact Johnno, VK3FMPB at johnkarr@bigpond.net.au and come on down. The more the merrier. ~ Johnno

TUESDAY NIGHT NET

8.00 PM

146.450 MHz FM

NET CONTROL STATION

VK3AWS

*Join the Net,
Keep up to date with news from club
and members
Don't forget the door prize,
each meeting,
each time you check in to the
Weekly Net
you get allocated an extra ticket,
increasing your chances of winning
something really worthwhile....!!!!*

VOTE 1 SNAG - BBQ PARTY RULES!

A website for Australians planning when and where they vote in the federal poll crashed. The site electionsausagesizzle.com.au crashed just after 9am but was back online by 11am.

A map on the site displayed sausage sizzles and cake stalls at polling booths across the country, with 1470 stalls registered.

~Internet

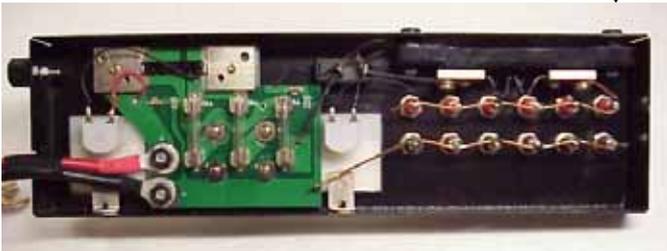
BATTERY POWER - SECOND DRAFT

While the previous battery crate has served well, its a lot of weight to pick up all in one go. Another version was made, after one of the old already second hand batteries failed.

A new 100 Amp battery was purchased to be mounted on a wooden block. The mains inverter was housed in a copper Faraday Cage and a pre-made DC distribution board used to "bring out" all the connections. A very quick thing to make up. The block of wood with everything without the battery is 5.5kg. The battery alone is 29kg weight. After the board is positioned in the car then the battery is placed in its 'holding pen' and attached.



The distribution board Don VK3HDX found on EBay new, just \$60, Tough and well made. You couldn't make this for \$60! To feed the camera and portable TV, Mick added some DC plugs to the distribution block. The DC board inside. ↓



Doing some long term maintenance, heat shrink was applied to every length of coax used portable, including the ATV lot.



The existing 'N' connectors on the ATV RX beams were replaced with twist on/off BNC connectors. With summer and daylight savings soon, time to get ready for some portable operations. ~Mick VK3CH



**BARG Hamvention 2013
Ballarat Amateur Radio Group
Sunday 20th October**

The Ballarat Amateur Radio Group Hamvention is an annual event where traders set up to sell new, used and preloved radio communications equipment, antenna's, test equipment and parts. Entry for all is \$6 per person under 15 free. Traders tables \$10 each. Food available. Doors open 10am. Held at the Ballarat Greyhound Racing Club and is located at the corner of Rubicon and Sutton Streets, Ballarat. 3350. (next to the Trotting Track)

NEW 23CM FM VOICE REPEATER

VK3RBA, located at Ballarat is now on air. Good signals into Melbourne this FM repeater, input 1273.925MHz with a 91.5 CTCSS tone with output on 1293.925MHz

VK3CH BBQ

Mick's invitation to the club for an informal BBQ at his QTH saw eight club members take the opportunity to eat and chat in good weather in the rear yard. The dog enjoyed eating the scraps.



Smoked Lamb Chops / Ribs commence 2 hour cooking session ↑



← John VK3JAK bought a 6 meter military rig along to the BBQ

There was lots to eat and the afternoon was a relaxed mood. As there is no way the XYL would allow such gatherings on her watch, the next one is another year away in 2014...! Thanks to those who attended, trust you enjoyed it all. ~Mick

Cubelock Concept Antenna ~ Mick VK3AY

I thought this may be of interest to some of the newer hams starting out in radio, so just a few notes on antenna making using the old adage "kiss," keep it simple stupid.

I had not used 6mts and the boys were up in the mountains so I decided to make a 6mt antenna for the sake of it to see if I could get a copy back to them, and this is what transpired. And was also a good learning curve for me.

Six mtrs started me on a construction of a simple antenna that would be made by anyone without the need of a workshop or tools other than a hacksaw and a drill, in the original project I had a hills insulator from a old CA16 antenna which I made into a half wave dipole for six mtrs, this worked great whilst horizontally but when I tried to use it in the vertical position the SWR blew right out to my dismay; what I had not realized is that I used a mast that was 3 mtrs long which turns out to be a good reflector size; this was about 1.5 mtrs away from the dipole and was acting as a reflector when I mounted the antenna vertically blowing the SWR out of the water, back to the horizontal and the SWR was back to 1:1 a good trap for young players what I needed to do was to get a longer non resonant mast to experiment with or use a wooden mast the problem of mounting the dipole vertically without going to mounting on a timber mast was problematic to say the least, this made me think of an alternative to a ½ wave dipole.

As I was scrounging through my bits and pieces I came across some cube lock plastic assembly blocks used to make aluminium tables ,stands, and machine guarding, aluminium tube is pushed onto these blocks to form all sorts of mechanical assemblies , these blocks are available from bunnings, masters and most aluminium dealers, looking at the block shown I realised this could mask a great antenna insulator and a basis of making antennas without to many tools , I measured the bore size and found that it measured 5/8 of an inch this would allow 5/8 tube to be pushed into the holes to produce the elements as required, after a bit of thought I realised that I could use this a building block for experimenting with all sorts of antenna's to check the insulation properties I put the cubelock into a microwave oven and found it to be not affected by the RF produced by the microwave oven, this was a good start, after consideration my decision was to make a multi type of antenna 2mtrs 6mtrs 10mtrs and 12 mtrs, ground plane antenna shown on the following photo's

The simplest antenna was the 2 mtr ground plane that converted into a 6mtr ground plane then a 10 mtr followed by a 12 mtr ground plane The initial antenna was constructed with 5/8" aluminium tube, 5 lengths were cut to 505mm as per the formula $150/\text{freq} = \text{mm}$ which is a ½ wave dipole divide by 2 and you have a ¼ wave, the tubes were slotted with a hacksaw to facilitate the ½" tube that would be used for the 6mtr part of the antenna later on. because of the 5/8" dia. I cut the ¼ wave to 148mhz the ground plane elements were assembled by pushing the 5/8" tubes into the cubelock till they reached the end of the opening in the middle of the cube, and the driven element was pushed in 6mm short of reaching the end of the opening, after the tubes pushed in the ground plane earthing is made using 4 pieces of 25mm angle aluminium as shown on the photo connected the coax earth and the centre conductor put on to the antenna driven element, the antenna is then hoisted into the air using a 3mtr length of 25mm square aluminium tube and checked for the SWR which came in at 1.4:1 @ 144mhz 1.3:1 @ 145, 1.1: @ 146, 1.2:1 @ 147 and 1.4:1 @ 147.974

I must admit I was quite pleased with this result, next I started on the 6 mtr section of this antenna 5 lengths of ½ " telescoping 1376mm were cut to length theses were inserted into the 5/8" tube until they came in contact with the 8 gauge screws that secured the 2 mtr tubes and coax connection to the plastic cube lock as per photo.

These tubes were then secured using stainless steel hose clamps, once again the antenna was put into the air and swr was again measured The result came in at 1.4:@50.025mhz, 1.3:1@ 51.000, 1.5:1@ 52.000, 1.3:1@53.000, 1.2:5@53.975 another good result I then went and built a 10 mt antenna and a 12 mtr antenna which both gave good results, interestingly

I did not extend the 6 mtr ground plane and found that 10mts and 12 mtrs tuned up well using the shorter radials, theory tells us that .125 radials should work and they did, this antenna was built for experimenting on antennas and a great learning tools for younger members of the amateur fraternity, and the new amateurs starting in radio that need to put up antenna's in confined spaces that can be taken down after a session on radio and put away,

This antenna is something that amateurs can use to play with or use and experiment with configure the way you want make beams if you wish, simple with minimum amount of tools just a tape measure calculator drill and hacksaw and look up the formulas on the internet, I have always used $468/\text{freq}$ in megahertz for a half wave dipole in ft only because I remember it so well but most formulas are available in metric $150/\text{mhz} = \frac{1}{2}$ dipole in mtrs

Aluminium in telescoping lengths is available from direct aluminium in Thomastown 3/8" or can be purchased from Brian Smith from NBS antennas he also has a broad range of telescoping lengths suitable for antenna manufacturing. The plastic cubelock is available from most warehouses as is the 25mm square tube.

Regards De Mike VK3AY

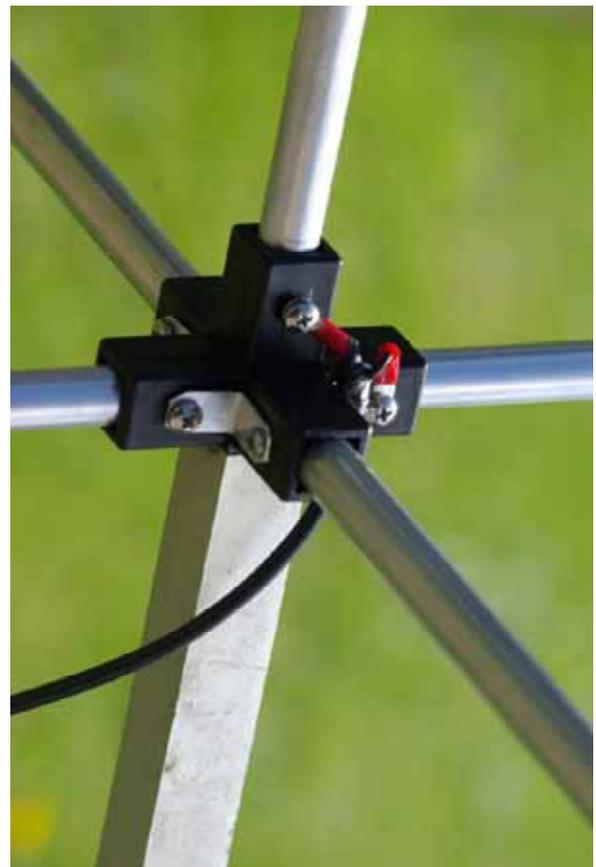


↑ 10 meter version

← Antenna set up a 6 meter ground plane. To extend this to 10 mtrs all you need to do is to loosen the hose clip and pull out the 1/2" section of tube till it is sitting about 25mm inside of the 5/8" tube retighten the hose clamp then insert a length of 3/8" tube into the 1/2" tube to extend the antenna to 2540mm you can then follow the same procedure for 12 mtrs, you can also extend the ground plane radials if you wish, but I found that it was not necessary to do so, so just leave them at 6 mtr, If you like you can change the 2mt antenna to a 5/8 ground plane by adding an inductor to the base and lengthening the antenna the appropriate amount



← Showing coax connected to the ground plane and to the driven element. Also the aluminium angle shorting strips interconnecting the ground plane.



Antenna with the 25mm square aluminium mast fitted ready to be mounted →



Cubelock side and top views

STARTING OVER - THE RF EARTH SYSTEM ~ Don VK3HDX

As many of you know, my XYL & myself spent nearly four years living & working in Sydney, this managed to curtail my amateur radio activities dramatically. If it wasn't for my remote rig setup, there would have been no amateur radio at all. This time away from the home QTH did have one positive, I had a lot of time to think about how I would rebuild the shack & antennas when we eventually returned home.

Well as it turned out our work moved with us and we are now happily back in VK3.

Upon returning we decided we would do major renovations to our property so this was the perfect time to pull out all those notes I made about rebuilding the shack, so were to start?

Having worked for many years with a very big commercial & defence transmitter manufacturer, I decided to call on some expert advice from some of my old colleagues, after a number of email exchanges & phone calls, I was convinced to spend a lot of time (and as it turned out money) on a much overlooked part of most amateur stations, "the station ground" or more precisely a ground mat for my station.

As I'm sure many of you know this is where most commercial or defence antenna installations start, with a very extensive ground mat, and while as amateurs we don't often get the chance to start with a clean site, I was going to be lucky enough to have this opportunity, so I intended to take advantage of it. So more emails & calls to my old colleagues discussing the size of the land, the HF bands that would be the focus of my operations and types of antennas to be used a plan was formed.

I can already hear many of you asking why would you bother, many think buy the biggest antenna put heaps of power into it and you have got it made, in my humble opinion, that's completely wrong, I'm not going to try and explain the theory, when Ray G4NSJ has done such a good job already.

THE RF EARTH SYSTEM What is it and why? FIRST, AN IMPORTANT WARNING!

Do not confuse an RF earth with an ELECTRICAL SAFETY EARTH. I don't use the mains earth in my shack because all my equipment is 12 volt. However, if you have any mains driven gear, make sure that it's properly earthed. The house wiring earth is often full of crackles and spikes and all forms of mains-born interference. While it's best not to use this earth, you must bear in mind that all your equipment requiring a safety earth must be properly grounded. A safety earth is usually a bad RF earth. However, a good RF earth may also be a good safety earth.

MYSTERIES BENEATH THE GROUND:

I heard a chap talking on 80 metres the other evening. He was laughing about RF ground systems and asking his mate why people bother to bury miles of expensive copper wire beneath the ground *simply to warm up the soil*. He mentioned, *all that wasted power*. *Earth current*, he chuckled. *Wasted RF current. It should be up in the air, not beneath the ground*. I found it sad because he was a G3. I'm not saying that G3s should know everything. But I would have thought that their years on the air should have taught them something. How many newcomers were listening to his wholly incorrect crap? How many M3s were hanging on his every uninformed word?

Broadcast stations spend more money below the ground than they do in the air. The vertical mast with its many guy wires and huge concrete base costs a small fortune. But you can quadruple that amount when it comes to the earth mat beneath the ground. Broadcast stations are in business to make money. They *do not* buy miles of expensive copper wire and then bury it and pretend that they've scrapped it as some sort of tax loss. The Inland Revenue aren't daft. Actually, they are. But the insanity of the Inland Revenue is outside the scope of this article.

Think of your transmitter as a voltage source. On the back of the rig there are two terminals supplying this voltage. OK, so you've taken a length of wire from your shack window and fixed the end to a distant tree. Great, you have an end-fed aerial. You connect the shack-end of your magnificent all-band end-fed aerial to one of the terminals on your rig. And the other terminal? What will you connect to that?

It's the RF current flowing in an aerial that radiates the signal. Back to basics... A battery and a bulb. Wire from battery to bulb - wire from bulb back to battery. We have a circuit and, guess what? Yes, current is flowing in our circuit. So, back to your transmitter. You want current to flow in your aerial in order to radiate your signal. No circuit, no current flow. It really is as straightforward as that. How do you make current flow in the aerial? By connecting the other half of the circuit to the other terminal on your voltage source.

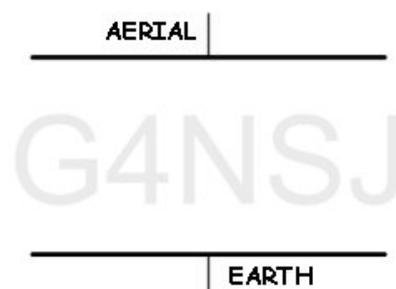
What is the other half of the circuit? You've guessed it. The earth.

I was talking to a fellow amateur on top band a while ago and, like a fool, I mentioned that my homebrew RF ammeter was connected in my earth wire. *You won't get a current reading there*, he laughed. *There's no RF current flowing in the earth*. I tried to explain that the current flowing in the end-fed aerial should be about the same as that flowing in the earth connection. I gave up when he suggested that there was something very wrong with my ground system.

Take a look at the diagram on the right. The aerial and the earth are akin to the two plates of a capacitor. AC current flows through a capacitor, right? Our signal is AC, so it flows between the aerial and the earth, through the air. This completes the circuit. And, as we know, current will not flow in an open circuit. Without an earth connection, we have an open circuit. This also shows how and why the RF current flowing in the aerial is exactly the same as that flowing in the earth connection.

DON'T TRY THIS AT HOME!

Take a couple of wires from a light bulb and connect one wire to the live pin on a wall socket and connect the other wire to an earth rod in the garden. If your earth rod is deep enough and the soil wet enough, the bulb will light. Current is flowing through the ground, right? The more extensive your earth system, the brighter the bulb will glow. Why? Because the more rods and wires you bury in the garden, the less the ground resistance becomes. This is exactly what happens with RF. Imagine that the bulb is the aerial. The less resistance there is in the circuit, the brighter the bulb.





To the left is a picture of the offending RF ammeter. The two terminals on the top are connected together inside the box with heavy wire which runs through the centre of a toroid, making the current transformer. The beauty of this arrangement is that you can stick the meter in the aerial wire or the earth connection. In fact, you can stick it anywhere you like, within reason! Click on the picture for the circuit and construction details.

All this talk about earth currents doesn't apply to dipoles or other balanced aerials. Why? We'll come to that later. So, now you're convinced that RF currents *DO* flow in the ground. You are convinced, aren't you?

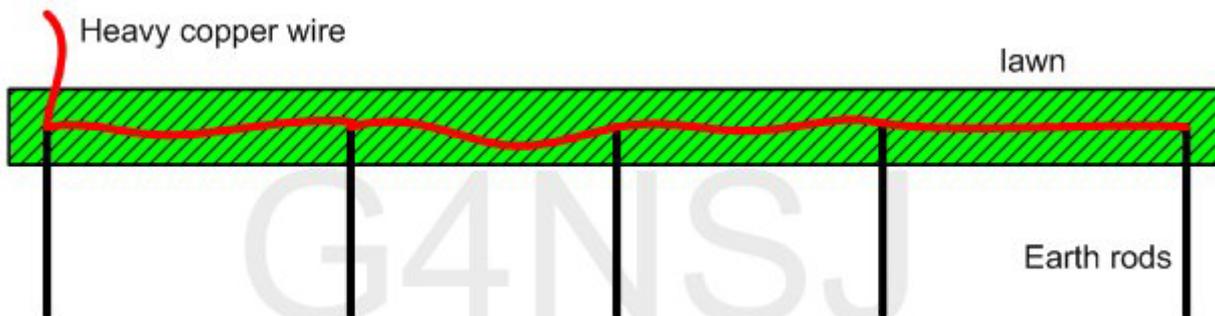
The earth wire running from my ground system into my shack isn't wire at all. It's 8mm copper pipe. The bigger the pipe, the less the resistance. The fact that the pipe is hollow doesn't matter. Why? Because RF currents travel along the *outside* of a conductor. This is called the *skin effect*.
TO WRAP UP OR GO NAKED?

I recently conducted a survey amongst a group of radio amateurs in our local pub. The copper wire buried beneath the ground: does it matter whether it's insulated or not? That was the question. The results of the survey were conclusive. There was a fifty-fifty split. Half of those taking part in the survey said it didn't matter, the other half said bare copper wire had to be used beneath the ground, and the third half were more interested in drinking heavily and chatting up the barmaid. I found the results of the survey fascinating, even though there were only two participants. OK, so there wasn't much of a turn-out.

The string of resistors in the diagram below represent your lawn. I realize that it doesn't look much like your lawn but, to RF currents, this is how it appears. Imagine that there are hundreds of these strings of series resistors fanning out across your lawn.



By burying copper wire beneath the ground, we are trying to decrease the earth resistance. The lower the resistance, the higher the current flow. What we are doing is shorting out the resistors in our diagram with lengths of copper wire. Now we come back to the question: insulated or bare? We're not going to short out anything by wrapping insulated wire around it. So, that's the answer. Go naked. The more wire in contact with the earth, the better.



Hopefully, the above diagram looks a little more like your lawn than the string of resistors. The earth rods I used were four feet long and made of copper-coated steel. Lengths of 15mm copper pipe will do, if you can hammer them into the ground without the things bending and crumpling. The electricity companies reckon that the distance between earth rods should be equal to their length: in my case, four feet apart. The heavy copper wire should be soldered to the tops of the rods and buried just below the surface of the lawn. Cut slots in the lawn with a spade and then tread the grass back into place after burying the wire. Do this while the XYL is out. The job will be done and she'll be too late to put a stop to your lawn-wrecking by the time she gets home. Don't worry, the slots in the lawn will heal up.

If possible, take several lengths of wire from your feed point rod and fan them out across the lawn, burying rods as you go. Any old pattern of wires will do, but don't bring your copper wire back on itself connecting it to rods already used. In other words, don't form loops between rods. The wire from your shack to the first rod must be as thick as possible. I used 8mm copper pipe.

Anorak that I am, I've been making a note of my earth current over the last year or so. Running ten watts on top band, I've taken regular RF current readings. The results? Just as I'd expected. During very dry weather, my earth current drops.

When it's been lashing with rain for a few days, the current rises. Why? Because the ground resistance decreases when the soil is wet. So what does all this mean? How does it affect the man in the street? As far as he's concerned, the dry weather brings out the girls in their short skirts and the wet weather... I'm sorry to be boring but, girls wearing short skirts have nothing to do with earth current.

For those interested in such things, read my article: *Girls Wearing Short Skirts*.

To those who advocate the use of insulated copper wire beneath the ground, I suggest they also use insulated earth rods. Or, better still, use plastic earth rods. No corrosion, no rust... Yeah, right!

COUNTERPOISE, RADIAL, EARTH WIRE... WHAT'S THE DIFFERENCE?

Again, there is mass confusion here. Let's begin with the counterpoise. The dictionary's definition of the word is : A counterbalancing weight. A force or influence that balances or equally counteracts another. The state of being in equilibrium. Imagine that you live on the top floor of a block of flats. Unless you run 300 feet of wire down the outside of the building to the ground, you have no earth. Despite the XYL's moaning, you've slung an end-fed aerial from the curtain rail in the lounge through the hall to the shack. You will need the other half of the circuit for current to flow in your aerial. This is where a counterpoise comes in.

Sometimes called an *artificial earth*, a counterpoise is nothing more than a length of wire running across the floor with one end connected to the earth terminal on your aerial matching unit. This, as the dictionary states, *balances* your aerial system. Cut the wire to one quarter wavelength for the band in use, and you fool your matching unit into thinking that it's seeing the other half of the aerial. As with a half-wave dipole, there isn't an earth connection in sight, Thank you Ray.

Back to my yard, my next step was to explain to the builders, plumbers & electricians working on the site what my intentions were. I'm sure you can all imagine the bemused looks I received, but they didn't care, as long as the crazy man paid them. Now most people would make their ground mat out of copper wire, but that would be far too easy, I had other ideas, I still remember the look on the plumbers face when I asked him if he could quote me for 480m of 12mm copper pipe, you mean 4.8 m? No 480m... @#\$#@ I think is what he said. One of the reasons I wanted to use copper pipe was, as well as making an excellent ground mat, I thought I could run water through some of it, and use it as an irrigation system for the lawn, the plumber had some interesting ideas about that, but more on that later. After the excavator had finished its work, it was time to lay out the copper pipe and to practice my soldering skills!



↑ Construction of the ground mat, while all the copper is electrically connected the curved copper pipe carries water for the irrigation system.

← The RF Ground inside the shack

↓ Ground Mat connection outside the shack wall.



So what did I achieve by going to all this effort?

I dramatically increase the performance of my transmitted signal.

I have no stray RF in my shack.

I have zero TVI / RFI issues.

The received man made noise level has dropped by 6 to 7 S points, how do I know all this?

It's simple really, straight A/B comparisons with the ground mat connected & disconnected.

Mick VK3CH has visited my shack and has witnessed the difference, it is quite incredible to see, most nights I have an S1 to S2 at most noise level on 40 /80 meters, it really is a joy to use in the middle of suburbia.

Would I do it again, if we moved, in a heartbeat! It's the best money I have ever spent on my station, and has been worth more S points than a big expensive amp.

Oh and I almost forgot, the plumbers crazy idea was to connect some of the ground loops to the solar assisted hot water system we have, so with the manipulation of a few valves we can run warm water through some of the copper loops, like an underfloor heating system, why? To raise the soil temperature in the middle of winter, we now have a nice green lawn when it would have normally turned brown.

And yes I did get a little carried away, which is very easy to do when you building and all the tradies working on the place are throwing ideas at you.

~Don VK3HDX

WANSARC NEWS

YOUR MAGAZINE

Got a story to tell?
Working on a project that is of interest to others?
Got gear to sell, buy, swap?
Looking for that hard to get part or information?
Seen something interesting that others should know about?

WANSARC Editor is always looking for stories from members.

Send any news to Mick, VK3CH,
at vk3ch@wia.org.au

Don't think your a good writer, or "time poor", or lazy?
Just email photos and text to Mick and he will write it up for you.

WANSARC VK3AWS

PRESIDENT: Frank Petrowitz VK3OP vk3op@hotmail.com
SECRETARY: Mark Stephenson VK3PI Telephone: 0425 768 320 vk3pi@australiaradio.com.au

All correspondence to be addressed to the **SECRETARY: PO Box 336, RESERVOIR 3073**

WANSARC CLUB PROFILE

History

The Western and Northern Suburbs Amateur Radio Club (**WANSARC**) was first formed in 1969 and since then has served the needs and interests of amateur radio operators, short wave listeners and those interested in hobby radio and electronics. The club is not gender specific, having both female and male members. Members come from all walks of life with a mix of experience, young and mature, novice and technical. The most important aspect of the club is the willingness of all members to share their knowledge for the benefit of others. Members mainly reside in the west and north of Melbourne; however membership is encouraged from all interested. **WANSARC** is an affiliated club of **The Wireless Institute of Australia**.

Meetings

Meetings held at the **Ern Rose Memorial Pavilion, SEAVER GROVE, RESERVOIR** (Melway Map 18 D5) on the **1st Friday of each month** (excluding January) commencing at **7.30pm local time**. Talk in on **146.450MHz FM**—call club station **VK3AWS**.

Benefits

Free technology and related presentations, sponsored construction activities, discounted (and sometimes free) equipment, network of likeminded radio and electronics enthusiasts, excellent club facilities and environment plus an informative monthly newsletter for members to post articles, news, classifieds for all radio, test equipment, etc, featuring Amateur Radio news from WANSARC, ARV, WIA, ACMA, Melbourne Clubs, VK and Worldwide.

Club Nets

146.450MHz FM each Tuesday evening commencing **8.00pm local time**. Net Control Station - **VK3AWS**

Website: www.wansarc.org.au

Postal: **WANSARC PO Box 336 RESERVOIR 3073**

A proud tradition of supporting hobby radio and electronics enthusiasts since 1969

All editors' comments and other opinions in submitted articles may not always represent the opinions of the committee or the members of **WANSARC**, but are published in the spirit in which they were submitted; in any case anything stated is to promote interest and active discussion on club activities and the promotion of Amateur Radio in general. Contributions to **WANSARC** are always welcome from any part of the world. Email attachments of Word™, Plain Text, Excel™, PDF™ and JPG are all acceptable. You can either post material to the Post Office Box address at the top of this page, or email your submission to the editor direct at vk3ch@wia.org.au

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While we strive to be accurate, no responsibility taken for errors, omissions, or other perceived deficiencies, in respect of information contained in technical or other articles.

Any dates, times and locations given for upcoming events should always be checked with a reliable source closer to the event – coming up on the **WANSARC Tuesday evening NET** on **146.450 MHz** starting at **8:00 pm Local** is recommended to discuss and confirm information and any dates.

The club website has current information on planned events and scheduled meeting dates. **WANSARC News** written with Word™ 2007, published with Adobe Acrobat™ 10. You can get the **WIA News** sent to your inbox each week by simply clicking a link and entering your email address found at www.wia.org.au. The links for either text email or MP3 voice files are there as well as Podcasts and Twitter. This service is FREE.