Volume 5, Issue 2

Mid Sussex Matters

February 2017

Inside this issue:

Cape May County ARC Website

Here is a link to the CMCARC website which will allow you to keep in touch with our US friends and follow news of Bob, N4XAT as he moves into his new house in Leisuretowne New Jersey and starts thinking about antennas. http://www.cmcarc.org

Check the latest issue of their Newsletter, see the photos of their Christmas Dinner and Bob being presented by Bill Cole with a Certificate thanking him for more than 20 years work for CMCARC.

Look at the photo and short video of their Winter Field Day. It takes real dedication to turn out in such conditions!

Bill Cole who is the CMCARC Webmaster already has one of our Anniversary Windmill Badges and some of MSARS members have membership of CMCARC and their 2017 badges. Look out for them at the club and give the website a check now and then to keep in touch.

Ken, G3WYN

Mid Sussex ARS Net Times—all times local

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Sunday	1100	145.350MHz
Weekdays	1330	21.330MHz+/-QRM
Tuesday (SCARF)	2030	3.725MHz+/-QRM
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From the President's Corner

The "Meet Your New Committee" held last Friday was well attended and those around the table had a variety of points to raise which were discussed at length and duly recorded by Alan in his Hon. Sec. mode.

It was noted that we need younger members to assume some of the rolls being undertaken by those of us who are not so young now and a photograph in last month's Newsletter showing about 15 members helping out at one of our field days years ago demonstrated that many hands make light work and we can't run 24 hour outside events if only 4 members turn up on the day.

A more important point raised at the meeting was that of our future when Cyprus Hall is no longer available to us as the Burgess Hill redevelopment scheme gets underway.

It is, in my mind essential, that we prepare for this before events catch up with us and we should prepare a document setting out the aims and capabilities of MSARS; in the educational field, our need for space in which we can hold meetings and examinations and our need for storage space for our equipment as well as somewhere which can be used as a shack. Outside space to install our antennas would also be of great value to us and all these requirements (or dreams) make the possibility of us relocating more difficult than if we were a history group who came and went once a month bringing nothing with them and leaving nothing behind.

Our excellent record in the educational field with an exam pass rate the envy of all others should give us an ideal opening to schools which might have space available and also be used in our discussions with the local council authorities who might be persuaded to re-house us to allow our courses to continue.

All these matters will no doubt be considered by our Committee and I hope acted upon without delay.

In the meantime, the HF bands have seen much activity over the past week or so, I wonder if you took the opportunity to work a few new ones?

73, Ken G3WYN

My Vertical Aerial Installation at the End of the Garden by Pete G4AKG

My vertical aerial installation is at the end of my garden approx 110 feet from the house and is situated between a large pond and shed / out buildings. The pond has to be netted to prevent the fish being eaten by Herons. This is achieved by a wooden frame supporting chicken wire soldered together. This is connected to the earthing system approx 100 radials of various lengths and several earth rods the deepest of which is currently 20 feet with another 4 feet to go! It does make a difference! I hammer in the earth rod every time I go down the garden its a lot less strenuous that way.

The Aerial is a Hy Gain Dx 88 and is 29 feet high. The tuning for 80/40 metres is achieved at ground level however the window for a low swr is quite narrow on 80 metres and not too great on 40. I found an article online to add a tuning mechanism to overcome this (see photo).

I removed one of the tuning rods and substituted a variable capacitor instead. This is in a waterproof box and is controlled by a gearbox and a modelling motor in an Eddystone box linked with a plastic tube. This is controlled by a model railway controller in the shack. It works well and covers all of 40 metres and 80 metres with a 1 to 1 swr. There are plenty of articles online re: this aerial a good earthing system will give good results. The long feeder run (RG213 Mil Spec) has been outside for a number of years and works well. I have used verticals since the late 70s .

73

Pete G4AKG

My Vertical Aerial Installation at the End of the Garden

by Pete G4AKG

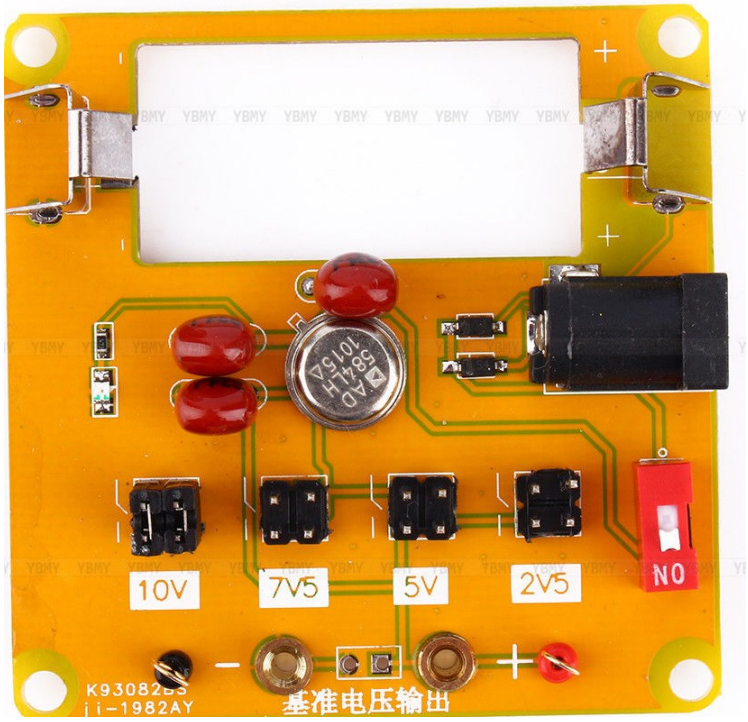
eBay Bargains

by Chris J Coward G3YTU

Interesting items to buy on eBay for amateur radio and electronics enthusiasts.

Voltmeter calibration module

For about £3.99 you can buy a printed circuit board module based on the AD584 Integrated Circuit precision voltage reference which you can use to check and calibrate your multimeter on voltage ranges or check any voltmeter for accuracy. It provides selectable reference voltages of 10V, 7.5V, 5V & 2.5V. It can be powered either by a DC power supply or 15V battery [CPC BT05725 Varta PX74 - 10LR54].



Whilst you can't expect National Physics Laboratory Standards at this price, you can get something useful for your electronics test and measurements toolbox.

Look out for another eBay Bargain in the next issue!

The Properties of Ferrite Toroids by Alex M0TOT

Introduction

Photo. No 1

I have a collection of toroids – both ferrite and powdered-iron, but do not know their specification; they just sit in my spares box (Photo. No 1). I am thinking: 'I need to sort them out one day.' So I have now taken the opportunity. The problem was I only had a vague idea for what I was looking. Although I had read some articles on baluns and toroids, the subject still seemed a bit of a 'dark-art'.

I chanced upon an article in RADCOM: 'Antennas'; February 2010; Peter Dodd G3LDO. This gave information on the 'mini Ring Core Calculator', for calculating various properties of toroids. He used this program together with a 'Peak Atlas LCR Meter'.

There is a simple formula for working out the inductance and the number of turns that a toroid needs, when the other values are known:

$N = 1000(L(mH)/A_L)_*^{0.5}$ Turns.....Equ. No 1

And, if required:

$L = A_L(N/1000)^2$ mH.....Equu. No 2

and where:

N = number of turns of wire on the toroid.

L = Inductance of toroid with wire windings (mH).

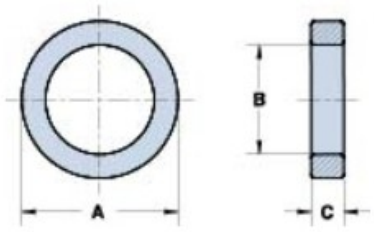
A_L = Inductance Factor – property of material (mH/1000 turns).

Fair-Rite FT-140-43 Ferrite Toroid

Photo. No 2

L = 93.91uH
ui = 849.1
AL = 939.10
N = 10
S.W.G.= 28

Physical Dimensions



OD(A) = 1.400 in / 35.55 mm +/- 0.75 mm
ID(B) = 0.900 in / 23.0 mm +/- 0.55 mm
Ht(C) = 0.500 in / 12.7 mm +/- 0.50 mm

A_L=885 +/- 20 % uH=(A_L*Turns^2)/1000
Actual measured AL using 10 turns #28 wire

Temperature Stability (ppm /°C) = 12500

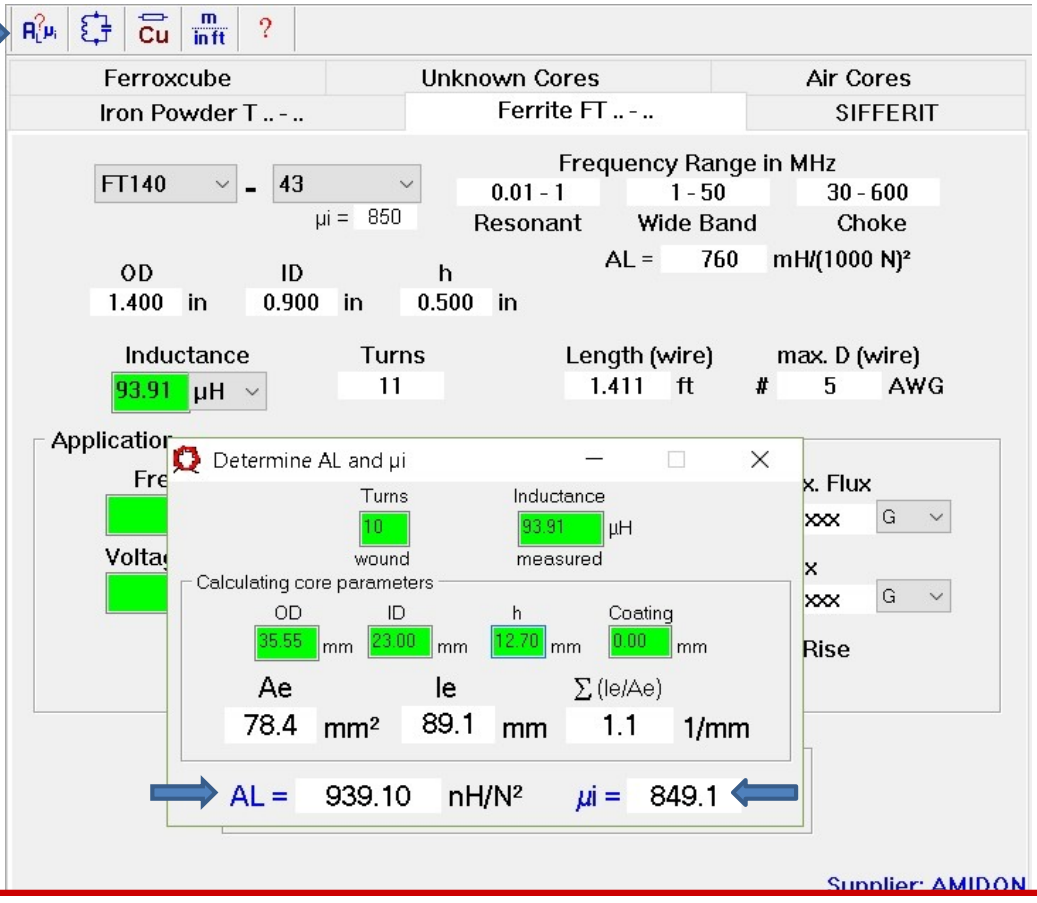
Color Code = shiny black

Application Freq Range
Wideband Transformers 5 - 400 MHz
Power Transformers 0.5 - 30 MHz
RFI Suppression 5 - 500 MHz

Orders and Pricing
www.kitsandparts.com

Mini Ring Core Calculator V. 1.2 Used on Fair-Rite FT-140-43 Ferrite - Fig. No 1

RL ui



The Properties of Ferrite Toroids continued

I took the largest toroids (These were three identical ones that I had ordered some time ago from R.S.G.B. for E.M.C. purposes). I used the specification sheet for the Fair-Rite FT-140-43, and made some measurements using a 'Peak Atlas LCR Meter' (Photo. No 2) and free software 'Ring Core Calculator' (Fig. No 1) to find-out the inductance and other properties. I could then use this information to check the validity of the equations.

Using Equ. No 1 and data from Photo. No 2:

$N = 1000(L(mH)/A_L)_*^{0.5}$ Turns

$N = 1000(0.09391/939)_*^{0.5}$ Turns

N = 10 Turns

Please refer back to page 7 for both photo 2 and fig. 1.

Fair-Rite FT-140-43 Ferrite Toroids - Photo. No 3
Single-strand wire = 0.6mm (S.W.G. = 23)
O.D. = 35.5mm, I.D. = 22.8mm, T = 12.7mm
www.catzco.com/toroids.htm ;
www.kitsandparts.com

N = 20	N = 10	N = 5
L = 395.5uH	L = 96.32uH	L = 25.09uH
AL = 989.75	AL = 963.20	AL = 1003.60
ui = 880.1	ui = 856.5	ui = 892.4

Note: Doubling the number of wire turns gives a four-fold increase in inductance.
ui = Initial Permeability (mu); AL = Inductance Factor (mH/1000N)*0.5

Photo. No 3 shows that by increasing the number of turns, the inductance increases. In fact there is a direct relationship between the number of turns and inductance, as the photo. shows. Also the gauge of the wire does not seem to make much difference to the outcome. The wire gauge in some data sheets may be A.W.G. (American Wire Gauge). But there is little difference between A.W.G. and S.W.G. (Standard Wire Gauge) which is used in the U.K.. *0.5 = Square Root. The Inductance Factor (AL) is +/- 20%; this needs to be allowed for in any calculation.

Manufacturer's Data:

'*Material = 43 (Nickel-zinc).*
Initial Permeability mu (ui) = 800.
Uses = Medium-wave inductors and wideband transformers to 50MHz; high attenuation over 30 to 40 MHz; high volume resistivity.'

The final outcome requires a blend of art and science. The calculations can only provide part of the solution. Eventually the completed toroid will need its values checked with an instrument

by Alex M0TOT

From Chairmum February 2017

Firstly to late you know that we are now in possession of a new tri-band white stick and we can now go ahead and get our aerial company in to replace that. Also check over the 6m beam and replace the u-bolt. The G-5RV aerial will also be checked at the same time.

Outside Events can only happen with your help. Please can you put you name down in our 'little blue book' even if it is only for 1 or 2 hours this is gratefully received.

At the moment we are not actively looking for anywhere else to move to, although we are making up a 'wish list' should the need arise in the future. It would appear that we have at least 2-5 years and possibly 10 years before anything is done with Cyprus Hall.

Lastly I would like to let you know that we have a new Treasurer, Mrs Sue Davis G6YPY. The Programme Secretary's job will now be done by Mr Dennis Conway M0YDC.

73

Stella M6ZRJ

MSARS Chairmum

chairwoman@msars.org.uk

Diary Dates March 2017 and April 2017

03 Mar Friday Down **'On Air Night'**

10 Mar Friday Down Chat Night

17 Mar Friday Down Radio Night & Table Top Sale

24 Mar Friday Down **Oldlands Mill Talk**

31 Mar Friday Down **'On Air Night'**

07 Apr Friday Down **Surplus Equipment Sale**

14 Apr Friday Down Good Friday **SHUT**

21 Apr Friday Down Radio Night & Table Top Sale

28 Apr Friday Down **Quiz & Cakes night**

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Copy

I am hoping to go to print each month. For this I need copy from any one of you however small and it **may or may not be** radio related.

Request for copy around 6th—10th with copy to me nominally by the 15th of each month.

If I get no copy there will be no MSM, it is as simple as that.

73

Stella, Editor of MSM

Amateur Radio Insurance
General Information
South West Broking Ltd Insurance Brokers

South West Broking Ltd is pleased to offer insurance for radio amateurs.

Cover

Insurance is available to individuals, clubs and Raynet Groups

Cover is provided for "All Risks" of loss or damage to your amateur radio equipment including masts, aerials and ancillary equipment by theft, water damage, lightning strike and other accidental damage.

- Cover at your home or club house.
- Anywhere in the United Kingdom.
- Anywhere in the world.

Basis of Claims Settlement

- New for Old

Significant Exceptions and Limitations

- Wear and tear, gradual deterioration, frost, faulty or defective design or materials or workmanship.
- Mechanical or electrical breakdown or derangement.
- Losses from unattended vehicles unless certain conditions are met.
- An excess of £50 applies if you have cover restricted to your premises only but this is increased to £75 if you have selected cover for anywhere in Great Britain or worldwide. In respect of outdoor antennae and masts, you will be responsible for the first £250 each and every loss.

Third Party Personal Liability

Personal Liability providing cover against injury to third parties or damage to their property arising from your negligence is included as standard whilst you are engaged in any amateur radio activities.

For further information, please contact Julian Dent
Telephone: 01454 806503
Email: julian@southwestbroking.co.uk
www.southwestbroking.co.uk

Scan here for more information

www.msars.org.uk

Mid Sussex Amateur Radio Society 2015— 2016

President	Ken Gibson	G3WYN	01444 412420
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Treasurer	Sue Davis	G6YPY	01273 845103
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Vice Chairman	Kim Newland	G7AIE	07787 770059
Shack Manager	Chris Davis	M6FOW	
QSL Manager	Rob Simpson	2E0KDT	07730 209539
Course Administrator	Adrian Allen	M0TCD	01798 815286
Lead Instructor	Chris Saunders	G4ZCS	

Our normal "QTH" is Cyprus Hall
Burgess Hill
Sat Nav
RH15 8DX

We meet most Fridays in the Millfield Suite
7.30pm till 10.00

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(This will only work from a members email address registered with the society)

Newsletter—Editor Stella Rogers M6ZRJ

 Contributions are invited from Society members and should be sent to newsletter@msars.org.uk
Otherwise you can use Snail mail to my address at:
28 Damian Way,
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Hassocks,
West Sussex,
BN6 8BJ.

If you have some great old pics that need to be aired I can share them with the rest of the club.
Best Wishes
Stella