

# Llais Y Ddraig

# The Dragon's Voice



CYLCHGRAWN CLWB RADIO AMATUR Y DDRAIG  
THE JOURNAL OF DRAGON AMATEUR RADIO CLUB

Gorneffennaf / July 2018

Rhif / Issue 118

## Programme July-Nov 2018

Month	Date	Subject / Event	Speaker / NOV holder
Jul	Mon 2nd	SDR - Software Defined Radio	Emil Preda MW0IMZ
	Mon 16th	"Natter night" – Informal evening with refreshments (inc, cake!). Bring along your construction projects, thorny problems or anything radio related. We'll be operating as well.	
Aug	Mon 6th	EGM and Quiz night	John Brimcombe GW3GUX
	18th – 19th	SES International Lighthouses and Lightships Weekend, Penmon.	John Brimcombe GW3GUX
	Mon 20th	Operating night, Pentraeth Beach, Red Wharf Bay	Steve Goodwin MW6KGY
Sep	Mon 3rd	Radio Caroline	David Crawford, Wales Wireless Museum
	Mon 17th	"Natter night" and a talk on the history of microphones	Les Hayward MW0SEC
	22nd - 23rd	SES 100th anniversary of first radio transmission between UK and Australia	John Pritchard MW0JWP
Oct	Mon 1st	The Sinking of the RMS Leinster	Paul Dicken GW1PCD
	10th – 14th	SES to commemorate 100 <sup>th</sup> anniversary of sinking of RMS Leinster	Simon Taylor MW0NWM
	Mon 15th	Computing - safer operation in the shack	Bryn Smiles MW6BZO
Nov	Mon 5th	To be announced	
	Mon 19	Annual General Meeting	

Revised 29 June 2018

## Programme Update.....

Monday 5th November

Annual Construction Competition

Simon MW0NWM

GET THOSE SOLDERING IRONS TO WORK!

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**Thank you ....**

A big thank you for contributions to this issue from:

Paul GW1PCD, Stewart GW0ETF, Les MW0SEC, John GW3VVC and John GW3GUX.

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**Notice of EGM, Monday 6th August.**

By Paul GW1PCD.

Our Secretary, John MW0JWP has issued notice of an Extraordinary General Meeting to be held on Monday 6 August, at Ebenezer Hall, Llanfairpwll, to elect a new Chairman. It is very important that as many members as possible attend as our constitution requires 30% of members to attend. It is planned that it will be a single item agenda but other items can be added if the Secretary receives them 14 days beforehand.

Following the short EGM, our famous quizmaster, John Brimcombe GW3GUX, will be holding one of his fiendishly difficult quizzes. Actually, he has promised it won't be too difficult and hopefully there will be some non-radio questions.

**From the Editor**

Simon MW0NWM

Welcome to issue 118 of the new look Llais Y Ddraig, the Journal of Dragon Amateur Radio Club. I had no plan to change the look of this issue, but a total failure of my old laptop meant that I lost the template I used and also the Office software. However thanks to Bryn MW6DZO who supplied me with a copy of Microsoft Office, I am finally in a position to publish this edition.



A lot has happened this year at Dragon ARC, due to personal reasons I took the decision to step down as Chairman in early May and an EGM has been called for Monday 6th August to elect my successor. I would like to wish the successor the very best of luck in their new post. The club has enjoyed many interesting talks so far this year, including Emil MW0IMZ who gave a fascinating introduction to the world of Software Defined Radio (SDR). We also enjoyed another enjoyable weekend at Waunfawr in April for International Marconi Day. Even though we had a few technical issues, the sun shone and the humour was great!

We are about to head into an active period of special events, with activations in August, September and October. On the weekend of 18th and 19th of August we shall be operating from Penmon Coast Guard Station for the International Lighthouses and Lightships weekend. On the weekend of 22nd and 23rd September we shall be celebrating the centenary of the very first official telegram sent by radio from the UK (Waunfawr) to Australia. This particular event will be held at Waunfawr using the callsign GB2VK and will be a significant event in the history of Dragon ARC. Finally from the 10th to the 14th of October, we shall be running the 'special' special event call of GB100MCV to commemorate the centenary of the sinking of the RMS Leinster and the single largest loss of life ever recorded in the Irish Sea. Paul GW1PCD will be giving a talk at the club about the Leinster on Monday 1st October.

Whilst we all have busy lives, all three of these events take time and effort to organise, set up and run. I urge you all to offer to help out where you can and in whatever capacity you feel able. I am sure our Communications / Public Relations Officer, Paul GW1PCD shall be giving you lots more information about all these special events in his superb monthly Program newsletter, which he has now created. Incidentally Paul sends his communiqués via email, do we have your current email address? Do you read your emails? Paul addresses this subject on page 19. Finally, I hope you enjoy this issue of Llais Y Ddraig and a huge thank you to all contributors.

Simon (MW0NWM) Editor.

## The World Cup Marathon

by Stewart GW0ETF

This is an event organised by the Union of Radio Amateurs of Russia (RRC) to celebrate the football World Cup in June and July 2018 and runs from June 1<sup>st</sup> through to July 15<sup>th</sup> which is the date of the final game. Each member country of the football world governing body FIFA can use special callsigns for the period and these are registered with RRC and form the basis of awards for contacting stations. There was some early confusion within the RSGB over the process of obtaining the special calls which led the chair of the HF Contest Committee G4FAL to seek the agreement of RRC to accept the RSGB Contest Club call of G6XX and its regional variants as qualifying calls. Nick then set up a booking system where any member could reserve a slot during the period from an hour to a day using any suitable mode.

I've used GW6XX with cw on four occasions so far and have been absolutely amazed at the popularity of the Marathon. It's been the norm to create a pile-up within seconds of appearing on the Reverse Beacon Network and some have been quite eye watering and lasting an hour or more before subsiding into more like a lively run. Of course Wales didn't qualify for the finals in Russia so to make a point I booked the whole day of England's first game to avoid the BBC induced delirium and stayed well clear of the TV; despite only doing a standard 'day shift' and very poor conditions in the morning I ended with over 900 contacts in the log, thanks to good 30m conditions in the afternoon producing some nice pile-ups plus some huge extended pile-ups on 40m and 80m in the evening. The surprising thing to me is that even though I'm using the same mode on much the same bands the activity is just as fierce each time I go on with the FIFA call.



## The World Cup Marathon Ctd.

This has been one of those extremely rare opportunities for a mediocre station in the UK with simple single element wire antennas to experience the thrill of being on the sharp end of big and sustained pile-ups. It's great fun and excellent practice but to easily control a pile-up we all know you need to be LOUD. You can normally tell if you're not by the pregnant pauses after going back to a callsign you've dug out from the mire; this means a repeat and hope s/he can now hear you over the persistent other callers (who to be fair may not hear you clearly enough to know you've gone back to someone..) This is normally a sign that it's time to go split and this always improves the situation. When picking a frequency I'll choose one in the clear for at least 2Khz above on the panadapter if possible to allow split operation. If this isn't possible, or if someone suddenly appears within a split channel in the meantime you're stuck with simplex. In this situation I will be sending the call more than once as in "GWOETF 5NN GWOETF" and so on. With a big pile-up you can quite quickly gauge which tricks are effective while operating simplex – and it's good practice for contesting where split isn't normally used.

There aren't even any bureaucratic overheads either as all you need do is send an adif file to Nick who forwards them to RRC. I'll certainly be on again before July 15<sup>th</sup> - it's an opportunity not to be missed.

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## Audio Considerations... Metering and Monitoring

by Les MW0SEC

### (4) Metering & monitoring.

This completes the series on audio with details of metering and monitoring. Neither is essential, but I find both of use to easily and quickly ensure that all is working. The meter is particularly handy for adjusting input from say, a computer.

### The Metering circuit:

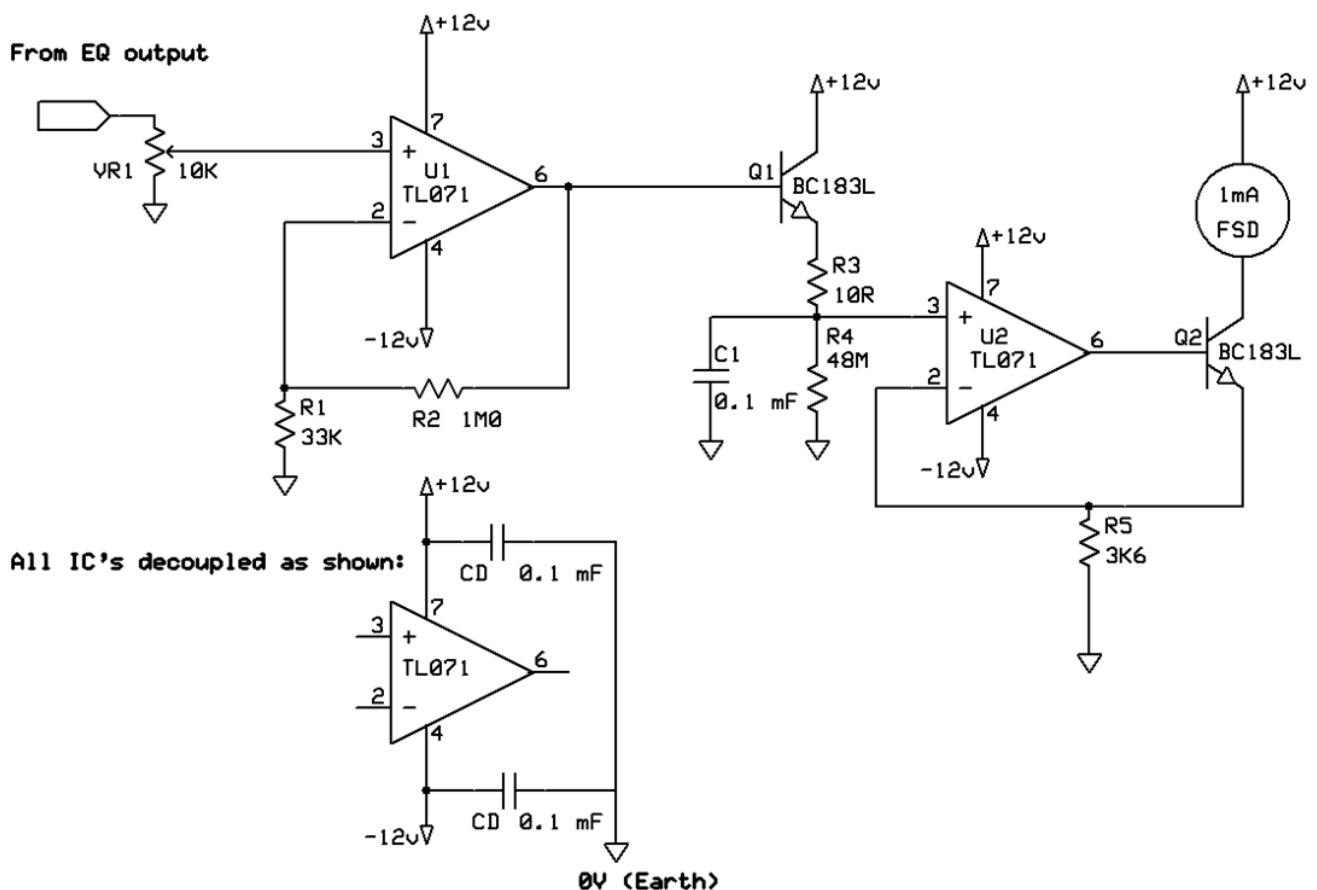
This module takes the final signal and indicates the modulation level by a 1mA meter. The circuit is designed for a fast initial reading to take account of peaks, with a slow decay to hold the reading, even on a very fast peak. The amplifier (U1) is buffered by an emitter follower which charges C1 in proportion to the signal level. (The transistor junction also acts to rectify the signal.) C1 eventually discharges through R4 (48M), giving a discharge time constant of around 4 seconds. The voltage across C1 is then buffered by a high impedance follower and current amplifier which feeds the meter. Note that R5 is chosen such that the output driving the meter is close to saturation of the output and this prevents any excess input damaging the meter.

## Audio Considerations... Metering and Monitoring Ctd:

The only setting up required is to adjust the preset VR1 such that a calibration mark near full scale on the meter represents full modulation on the transmitter (Having previously set up the other circuits).

This module is effectively an equivalent of the peak-programme meter, with the exception of a logarithmic response. The accurate recording of speech signals is much better than the VU meter, which is incapable of holding very fast peaks.

### Circuit of level meter:



### The monitor:

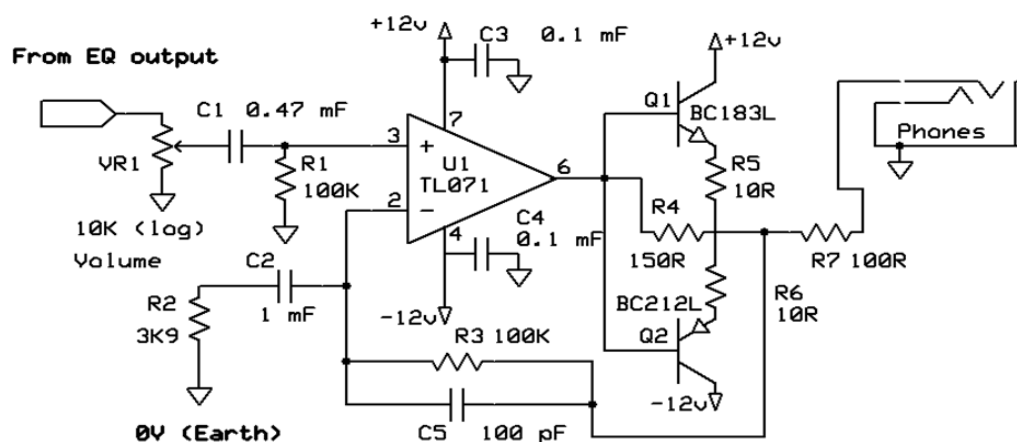
This is a simple amplifier which uses an operational amplifier coupled to a complimentary current-dumping circuit to provide a suitable level for headphones having an impedance in the range of 15-600 Ohms. The resistor R7 is included to limit hearing damage, and its value may be adjusted to suit any particular phones.



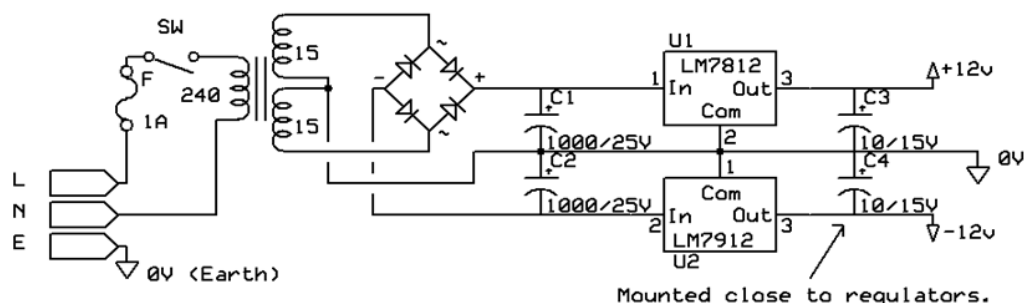
## Audio Considerations... Metering and Monitoring Ctd:

This is particularly useful when monitoring computer output and checking for quality.

Incidentally, this is a high quality amplifier, suitable for Hi Fi listening! Replace C2 with a 2 mFd and reduce C5 to 56 pFd and you have a low noise, low distortion headphone amplifier having a frequency range flat from 20 c/s to 20 Kc/s. Do remember though, that the headphones lead makes a very good aerial and if the phones are required to be connected whilst transmitting, RF bypass capacitors are needed close to the phone jack.



Fiinally, for the sake of completeness, I include the circuit for a possible mains supply. The whole unit as previously described consumes milliamps rather than amps, so almost any mains transformer will be suitable, if the voltage is about right.



This concludes things. Please accept my early apologies for any overlooked drafting errors! I first built this around 2005 and I hope the notes I made at the time are accurate. The components listed should still be available.

## The Moxon Antenna

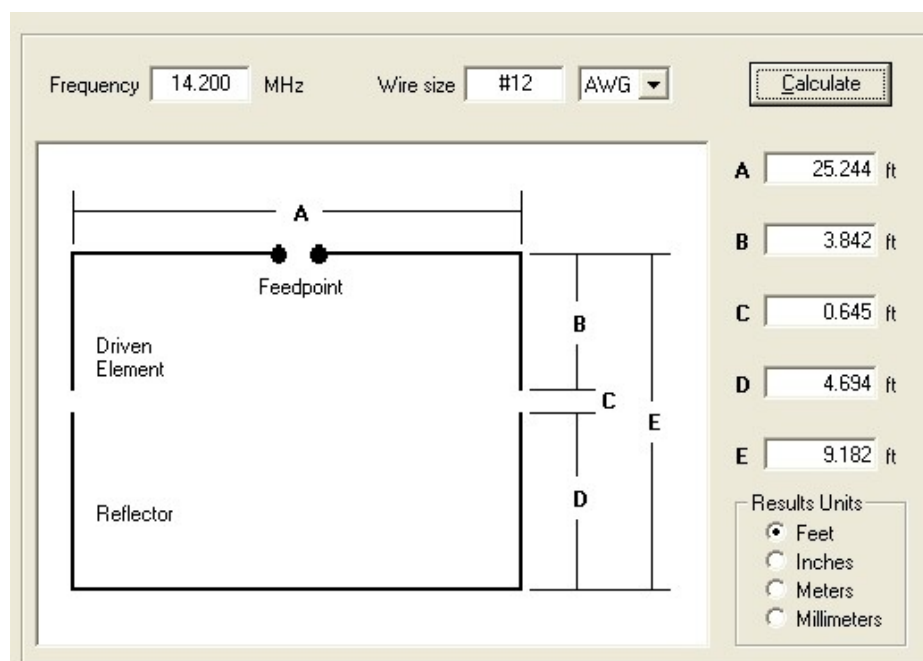
by Simon Taylor MW0NWM

In March this year, Stewart GW0ETF gave the club a fascinating talk titled 'Peanut Power in the CQWW Contest'. One element of Stewart's talk was his use of a vertical Moxon 2 element beam antenna on 20 metres (14MHz). I have long been a fan of Moxon beams and they really do provide useful gain, can be made out of relatively inexpensive materials and are lightweight; making them ideal for those of us on a budget and easy to rotate by the 'arm strong' method (by hand). They are also simple to build and work well at both HF, VHF and UHF, plus being smaller than a regular yagi; you may well have more success in obtaining permission from the powers that be to erect them on a permanent or temporary basis.

The Moxon beam was invented by the late Len Moxon (G6XN) and first introduced in his book 'HF Antennas for All Locations', published by the Radio Society of Great Britain (RSGB) in 1993. The Moxon can best be described as a simple two element beam, with the element tips bent in towards each other. The tips are insulated from one another and that helps to create the Moxon's unique radiation pattern.

If you wish to have a go at making a Moxon, I advise you to download the 'MOXON Rectangle Generator' programme, written by Dan Maguire AC6LA and can be found via the following web page:

<http://www.moxonantennaproject.com/design.htm>



*Fig.1 A Screenshot of the Moxon Rectangle Generator, showing the basic layout of the Moxon, plus all dimensions. The programme allows you to input the thickness of the wire and gives metric or imperial measurements.*



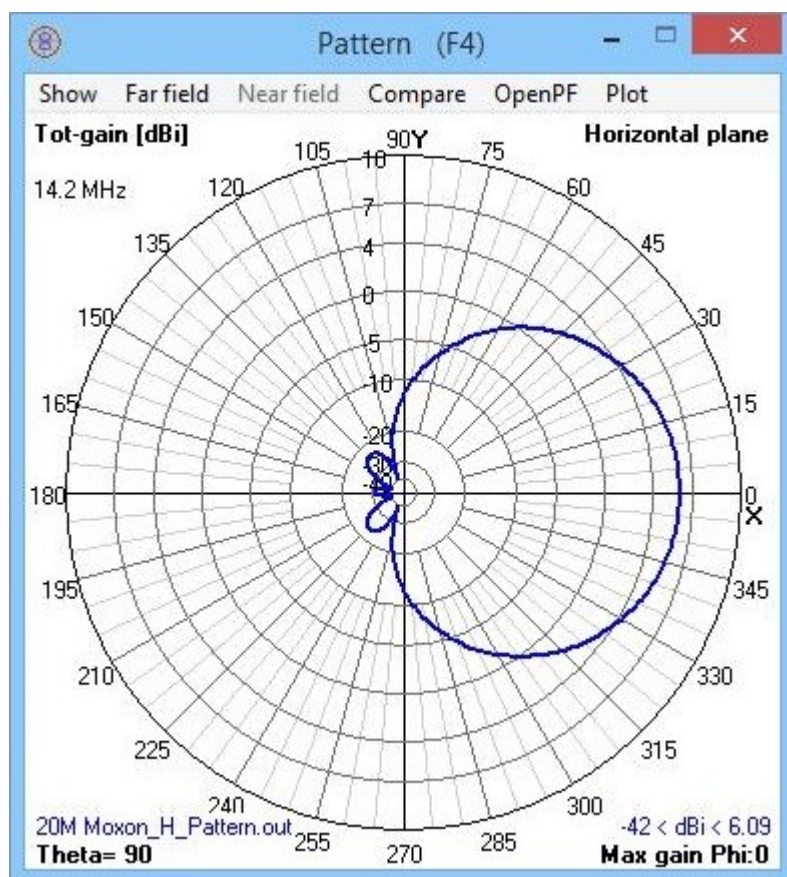
## The Moxon Antenna Ctd.

The Moxon beam has three distinct advantages which make it very popular. These are:

1) **Small in Physical Size.** With it's unique bent elements, the Moxon rectangle is roughly 75% the size of a standard beam. Can also be employed both vertically and horizontally.

2) **Impressive Front to Back Ratio.** The Moxon beam exhibits a front to back ratio of approximately 30dB, giving you quite a lot of gain in a particular direction (see **Fig.2**). The antenna is also ok at heights of only half a wavelength above the ground, for instance 10 metres asl for a 14MHz (20 metre) design. However it will still work well at height lower than half a wavelength, but the radiation pattern may not be perfect.

3) **The Moxon is a 50 Ohm Antenna.** This means that you do not need any kind of matching network at the feedpoint and can be attached straight to coax. However if you are considering using high power, I would suggest using a homemade 1:1 balun, helping to reduce what is know as 'common mode currents' in your coax and therefore improve the performance of your antenna.



**Fig.2** Azimuth showing the radiation pattern of a typical Moxon beam, this example centred on 14.2MHz.

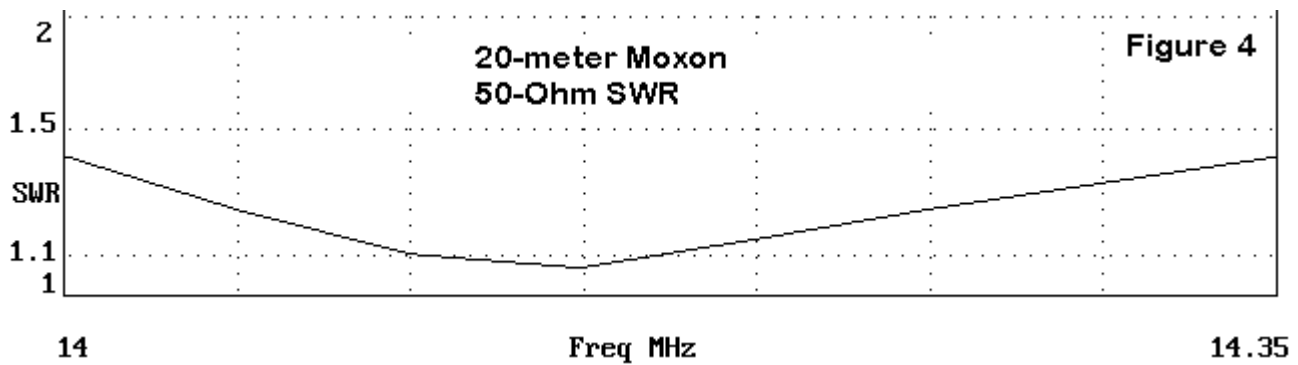
For information about baluns, I would suggest having a look at the designs and comments from MOPZT at:

<http://www.m0pzt.com/baluns/>

A simple web search will throw up many 1:1 balun designs, so happy hunting!

### The Moxon Antenna Ctd.

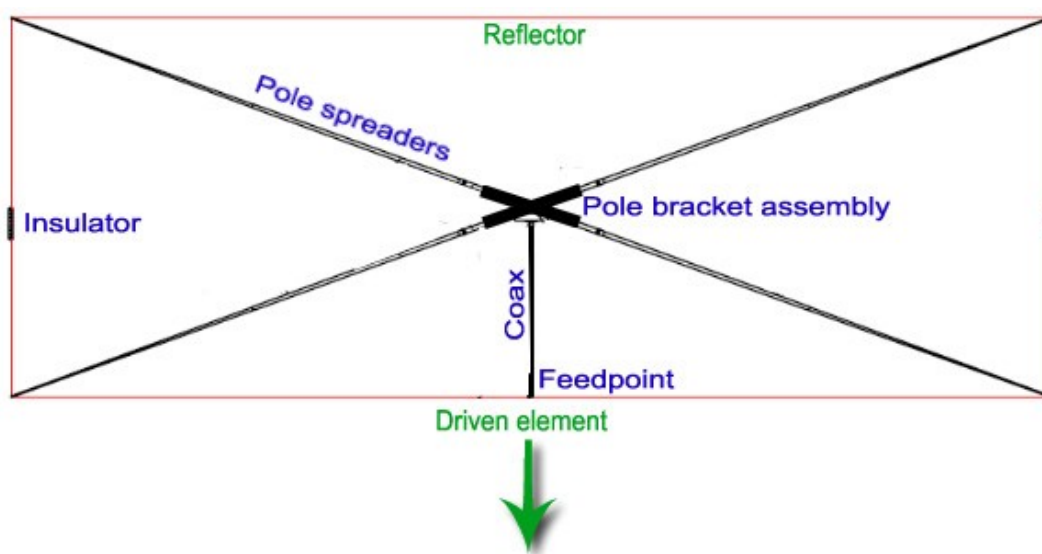
The Moxon also exhibits a low SWR over a large portion of the planned band, meaning it is quite versatile and should not require any correction from an antenna tuning unit (ATU), see **Fig.3**.



**Fig.3** SWR plot of a Moxon beam for the 20 metre (14MHz) band.

The most enjoyable aspect of a Moxon is building it, plus no two are the same! Once you have your dimensions, it is time to get started, but please remember due to differences in characteristics caused by using insulated wire (Google wire velocity factor), the dimensions will need to be reduced by around 5%.

Moxon antennas can be built with simple bamboo spreaders and wire, ideal at VHF / UHF and perhaps 28MHz (ten metres), but for HF perhaps use aluminium elements or fibreglass telescopic spreaders and wire; both methods being structurally stronger on larger designs.



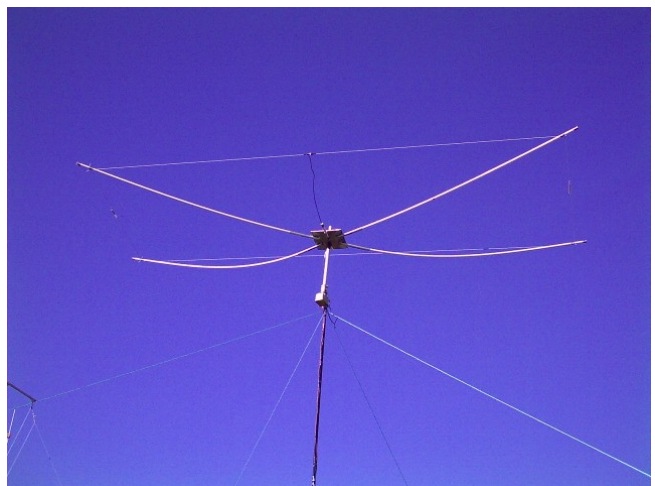
**Fig.4** An example of how you could construct your Moxon.

## The Moxon Antenna Ctd.

I think it wise to leave to your own imagination the full list of materials you would use and how best to build to suit your needs. But it is important to remember that you need to use non conductive material for the insulators... yes I know I am speaking the obvious, but it is still worth saying!

My own experience of a Moxon has been on the two metre (144MHz) band. I used to regularly use the ugliest Moxon antenna ever, built with insulated wire, bamboo canes and electrical tape. From various hill tops and about 10 watts of SSB I have worked all around the UK and with the right conditions throughout western Europe. Why not give them a try at V/UHF or HF for an effective and affordable beam!

I shall leave you with a few pictures of other peoples Moxon builds which are freely available on the web.





**International Marconi Day 2018**

This years International Marconi Day event took place on Saturday 21st April and Dragon ARC took part from the old Marconi transmitting site at Waunfawr. Although there were a few technological issues, the team were still able to get on the air. In spite indifferent conditions on HF, a number of contacts were made and all those present enjoyed good weather, good company and good food from the bbq courtesy of chef Steve MW6KGY! Fingers crossed the weather gods are kind for our Centenary activation from the same location this September! Thank you to all who helped set up, tear down and operate over the weekend.



Three potential new members???



## Interesting Reads or Watches

Do you have some time to spare? Perhaps you are sat waiting for a train or to see your GP. Fear not, take out your mobile, get online and lose a little time taking a look at the following links.....

### **CW Shoes?** (BBC News item)

<https://www.bbc.co.uk/news/av/technology-43205947/morse-code-shoes-send-toe-tapping-texts-at-mwc-2018>

**National Grid Dashboard.** See how the country's is being created and used in real time.

<http://www.gridwatch.templar.co.uk/>

### **Propagation and Solar Data** (website)

<http://www.hamqsl.com/solar.html>

**TX Factor.** The UK's only professionally produced online TV show about amateur radio.

<http://www.txfilms.co.uk/txfactor/>

### **What Went Wrong with Maplins?** (Article)

<https://www.retailgazette.co.uk/blog/2018/03/maplin-what-went-wrong/>



## Aspects of Quarter Wavelength Transmission Lines

By John GW3GUX

Quarter wavelength sections of transmission line, either ladder line or co-ax, have many uses, such as matching transformers, notch filters, etc.

One of the well known properties of such a line section, is to exhibit the opposite input impedance to that of the output. In other words, if the 'output' end is open circuit, then the 'input' end will look like a short circuit, and vice versa. This is at the electrical quarter wavelength, taking the velocity factor of the feeder into account, and only at that specific frequency.

One use of quarter wavelength ( $\lambda/4$ ) sections of co-ax, when used with high Q cavity resonators, is to enable a number of transmitters (or receivers) on different frequencies to use a common aerial.

Cavity Resonators are a form of very high Q tuned circuits, which due to the physical size limits are normally only used at VHF and above. Cavity resonators are often used in repeaters. There are various designs for home construction on the internet!

The circuit (Fig.1) shows just two transmitters but up to six can be connected to a common aerial, with very little loss, depending on overall bandwidth of operation and frequency separation of the transmitters.

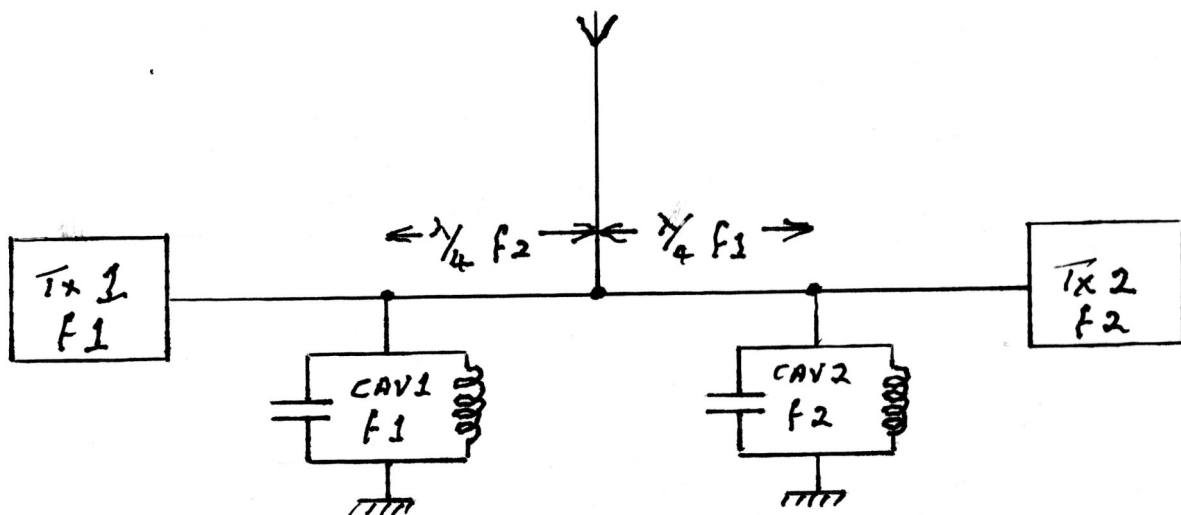


Fig.1 The Use of Cavity Filters to Allow More than One Transmitter to Share a Common Aerial



## Aspects of Quarter Wavelength Transmission Lines Concluded

The principle of operation is as follows;

For transmitter 1, (tuned to frequency  $f_1$ ), its cavity, being in effect a parallel tuned circuit, acts as a very high impedance across the co-ax line and so has no effect on the transmitter. Cavity 2, being tuned to the transmitter 2 frequency,  $f_2$ , will show a low impedance to frequency  $f_1$ , but due to the transforming action of the  $f_1, \lambda/4$  section of co-ax, both cavity 2 and transmitter 2 will be invisible to transmitter 1.

Similarly for transmitter 2.

Providing no multiples of a quarter wavelength are involved, the overall length of feeder from each transmitter to the common aerial point is immaterial.

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## Drones

Back in April, Dragon ARC was treated to a fascinating talk by Steve MW6KGY on the subject of drone technology and it's uses. From surveying rooftop damage, filming weddings, to modern warfare! The talk was informative, entertaining and an opportunity for members to get a close look at Steve's quality equipment. A great evening at Dragon ARC!



## 70MHz Fun!



Last September, Kevin MW1CFA and Simon MW0NWM took part in the Practical Wireless annual 2017 70MHz Contest. As you can see from the certificate, we managed 'Leading Station in IO73' Maidenhead Square... however we were the only station in that square!

We did however have great fun, with the QRO (high power) station working well, and in spite of indifferent band conditions we worked stations across the UK including southern Scotland.

We shall be trying again this year on Sunday 23rd September 2018, from 13:00 to 16:00 UTC. If anyone wants to join us, let Simon or Kevin 'CFA know.

## The Grimeton (SAQ) Very Low Frequency Transmitter

By Simon MWONWM



On the 1st of May this year, the Alexanderson VLF transmitter, call sign SAQ based at the Grimeton radio station, Marberg, Sweden successfully made a Very Low frequency (VLF) test transmission at 10:00 UTC on a frequency of 17.2kHz CW (Morse). This was SAQ's first transmission since December 2016.

The equipment is quite fragile (old!) and therefore transmissions are never guaranteed, so listeners around Europe and further afield have their finger's crossed prior to every scheduled transmission. Subject to issues with the transmitter, or maintenance, scheduled transmissions are normally made twice a year on Alexanderson Day (end of June) and Christmas Eve. On occasion additional transmissions are made on special occasions, maintenance and sometimes for training purposes. The site of the transmitter was originally chosen as it offers unobstructed 'line of sight' to New York and most of North America. Today the station is designated a World Heritage Site and is looked after by the Alexanderson Association, web page listed below.

<http://alexander.n.se/?lang=en>

So what is all the interest in the Alexanderson Transmitter? Weighing in at a hefty 50 tons, it is unique as it is the only transmitter in the world that uses a rotating machine (Alexanderson Alternator), rather than valves (or transistors). The transmitter consists of three main elements, a 500 Horse Power, 2200 Volt motor rotating at 711.3rpm, which is connected to a gear drive, raising the speed to 2115rpm. The gear drive in turn drives the high frequency generator (alternator). When first commissioned, the high frequency generator nominally produced a frequency of 16.1kHz, but this was soon changed to 17.2kHz. The derived 'high' frequency is very unusual for an alternator / rotating machine; hence its design is something quite special.



*Pic.1 General view of the Grimeton Alternator Set.*



## The Grimeton (SAQ) Very Low Frequency Transmitter Ctd



*Pic.2 The driving Motor*



*Pic.3 The Gear Drive*



*Pic.4 The High Frequency Generator, with its 1.6 metre diameter rotor.*

The antenna system has six towers which are 380 metres apart, the are 127m high and a 46m arm at the top of each tower. Eight wires are attached to all six towers, however at these dimensions, the aerial is very inefficient compared to the frequency wavelength.

Designed output power is 200kW, although it was regularly used for telegraph transmission to the USA with less power than this. Until the mid 1950's it was used by the Swedish Navy for transatlantic transmissions to their submarine fleet.

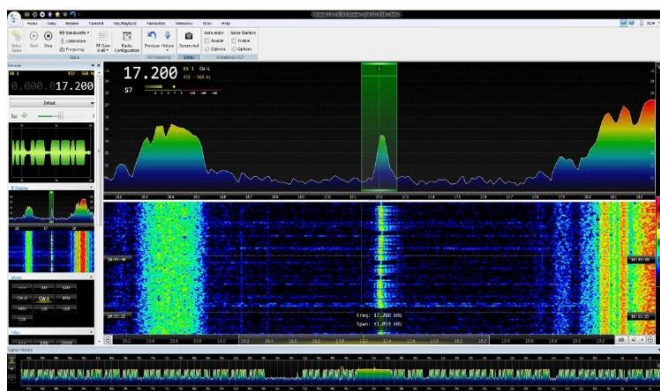
## The Grimeton (SAQ) Very Low Frequency Transmitter Concluded



*Pic.5 One of the six Grimeton antenna towers.*

A friend of the author received the Grimeton (SAQ) transmission on the 1st May 2018, using a PA0DRT active antenna which was 20ft up a tree. The receiver used was Perseus SDR, utilising SDR Console V3 Software (free), see *Pic.5* below for a screen shot of the received signal in the Telford area. Take a look at the Alexanderson Transmitter web page, link shown earlier in this article. Good luck receiving these historic signals in future, if like me you don't read CW, then perhaps use some free CW decoding software, there is plenty freely available. GOOD LUCK!

*Pic.6 Screen shot of the SAQ signal received in Shropshire on 1st May 2018*



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## Do We Have Your Correct Email Address?

By Paul GW1PCD

Most communication about club business (other than over the radio!) goes out by email. DARC is using an email mailer to send to all its members and we've already sent out two updates on the following month's events as not all members are on Facebook. I've been able to see that a lot of the emails haven't been opened. Either they've found their way into your spam box or we have an old email address for you. The most recent was headed "Dragon ARC July meetings" and was sent on 29 June.

Please email me [gw1pcd@gmail.com](mailto:gw1pcd@gmail.com) if you have a new or preferred email address.

**SWR – fact or fiction?**

By John 'VVC'



Now that might seem a silly question... After all we all know that swr exists, don't all the ham radio emporiums sell nifty little meters to actually measure it?

Here I must admit that when I was first licensed I didn't possess an swr meter - I don't have any recollection of seeing one being advertised – they were not an item one could just buy off the shelf. I operated quite happily for a number of years without one. So is swr a new thing – is it something that appeared when we 'imported' CB from the States or has it always existed since man started squirting rf up coax...?

Let's go back to basics. Imagine water from a tap running down a length of hosepipe. If the pipe diameter is half an inch and we carefully hold a second piece of pipe of equal diameter against the remote end then virtually all the water will flow from the first pipe to the second pipe. This happens because their diameters are the same, or matched. This equates to feeding rf up a length of coax cable to an antenna system that is matched, i.e both the coax and the antenna feed point are exactly 50 ohms. All the power goes from the coax into the antenna and is radiated. If however our second pipe had a different diameter, for example a quarter of an inch, then the pipes would not be matched and we would not get all the water to transfer from one pipe to the other, some would get through but a lot would be lost. Exactly the same happens when we transmit into an unmatched antenna system, only some of the power gets to the antenna and is radiated. The water analogy may bring a smile to a couple of faces but it just may make the business of antenna matching slightly easier to understand.



## SWR – fact or fiction?

So we can see that the amount of power we can put into our antenna and which is subsequently radiated depends on how well it is matched to the coax. It would be nice if we had some means of measuring this match. Now we can measure the power the rig is putting out by placing a power meter in the coax near the rig. If we had a way of measuring the reflected power i.e. the power the aerial is not radiating because of a mismatch and comparing this with the ideal situation where we have a perfect match and all the power was radiated, we would have a nice convenient numerical measure of the system's overall match. If we now reverse the connections at the rear of our power meter, that is connect the rig to the socket marked antenna and connect the antenna coax to the socket marked transmitter the meter will now show our reflected power. Now we can do some simple arithmetic to define the 'goodness' of our antenna match. Imagine we measure the power coming out of the rig as being 100 watts, then when the power meter connections are reversed it shows 50 watts, this is power that is not being radiated i.e. it has been reflected back down the coax because of the mismatch.

Now let's do some simple arithmetic to try and find a way to define the match between the coax and the antenna.

- (a) Add the forward and the reflected powers, in this case  $100 + 50 = 150$
- (b) Subtract the smallest power from the largest, in this case  $100 - 50 = 50$

Now if we divide (a) by (b),  $150 \div 50$  we get 3. If our reflected power was zero because our antenna was perfectly matched and all the rig's power was radiated and we did the simple arithmetic in (a) and (b) we would get 1 i.e a perfect match. So for our figure of 3 to be meaningful we must be able to compare it against something. In this case we compare it against 1 - the perfect match – so we can write our 3 as 3:1. This simple figure immediately tells us how good our antenna match is and is referred to as the swr or standing wave ratio – the ratio of the reflected power to the radiated power. Try substituting some figures of your own, you'll be surprised just how easy it is to understand and get a clearer understanding of what is happening. If the arithmetic gets a bit difficult use a calculator. Incidentally an SWR of 3:1 is a good figure to remember, here only half your transmitter power is actually being radiated, the rest is being reflected back down the co-ax.

SO, we've proved – well I have tried to and hopefully you're convinced that swr does actually exist. The way we present the figures just makes it easier to understand.

## SWR – fact or fiction?

Oh and I mentioned at the beginning that I operated my station for years without an swr meter without any problems... Well I was lying. One day during a qso there was an almighty bang and the rig went off. I checked and found the fuse had gone. I replaced the fuse, switched on and was rewarded with another bang. On opening the rig up it became obvious that the PA (final stage power amplifier) had got so hot that the glass had melted in one of the valves and caused an interesting effect we used to call 'suck in'. The glass having melted had been sucked inwards by the vacuum within the valve and the various electrodes had become shorted – and blown the fuse.

When I did my homework I found I had an horrendous swr which the rig had tolerated for a long time, eventually calling it a day and blowing up! I'd got away with it for a long time simply because valves are generally more tolerant and can usually be partly matched to the antenna impedance, with solid state rigs we need to be more careful

SO. SWR – fact or fiction? Definitely fact. We need to be aware of it at all times and obviously keep it down to a reasonable level – courtesy of our little friend – the swr meter. By reasonable level I'd suggest trying to keep it below 2:1. It's not necessary to become paranoid over it – reducing your swr from 1.3:1 to 1.2:1 may make you feel better but it will not make any difference in how your station operates.



## Coming Next Issue.....

- ♦ Introduction to Software Defined Radio (SDR)
- ♦ The Dipole Antenna
- ♦ A report on International Lighthouses and Lightships from Penmon

**Issue number 119, will be issued in Medi / September 2018.**  
**Any material for inclusion to be sent to the editor.**

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## Gwybodaeth am y Clwb / Club Information



- ◆ Cynhelir cyfarfodydd y clwb yn Neuadd Ebeneser Lon Foel y Graig, Llanfairpwll ar Nos Lun y cyntaf a'r trydydd yn y mis am 7.00 at gyfer 8.00 o'r gloch. Croeso i ymwelwyr ac aelodau newydd.
- ◆ Club meetings held at Ebeneser Hall, Lon Foel y Graig, Llanfairpwll on the evening of the first and third Monday in each month at 7.00 for 8.00. Visitors and new members welcome.
- ◆ Pob gohebiaeth at yr ysgrifennydd / All communications to the Secretary John Pritchard MW0JWP.  
Tel: 07515 031025 Email: mw0jwp@yahoo.com

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**We're on the Web!**

**[www.dragonarc.org.uk](http://www.dragonarc.org.uk)**

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