

Horndean & District Amateur Radio Club Journal

Volume 5

Number 6

February & March 2021



We can all dream

*Happy New
Year*



Horndean & District Amateur Radio Club
Founded in 1975

Club President

Lt Cdr Doug Hotchkiss MBE QCB RN (ret'd) G4BEQ

Club Officers

Chairman Ken Lindsay GØJWL MA

Tel 02392 170548

e-mail: chairman@hdarc.co.uk

Secretary Stuart Swain GØFYX

Tel 02392 472846

e-mail: secretary@hdarc.co.uk

Treasurer Bill Kenway 2EØWGK

Tel 07976276304

e-mail: treasurer@hdarc.co.uk

Committee Members

Membership Secretary

Tel: 07976276304

Bill Kenway 2EØWGK

e-mail: treasurer@hdarc.co.uk

Social Secretary & Exam Secretary

Tel: 02392 785568

Julia Tribe GØIUY

e-mail: juliatrife@ntlworld.com

Training Manager

Ken Lindsay GØJWL

e-mail: chairman@hdarc.co.uk

Station Manager

Tel: 07724048212

Chris Jacobs MØKTT

e-mail: oldbikenut1@gmail.com

Editor (ex-officio)

Ralph Heslop 2EØHES

e-mail: landscape@sky.com

Printer (ex-officio)

Tel: 02392 256768

Peter Tagg G8PIQ

e-mail: g8piq@btinternet.com

Awards Manager

Please contact Stuart GØFYX with any award applications or enquiries

Webmaster (ex-officio)

Neil Stone 2EØLNx

e-mail: neil.stone@gmail.com

Committee member

Jon Dunster MØXUE

e-mail: jond@protonmail.ch

Committee member

Alan Waller 2EØFEZ

e-mail: alanwaller82@gmail.com

CONTENTS

Club Officers and Committee members			page 1
Contents			page 2
Editorial			page 3
Advert			page 4
Nuggets from the net			page 5
Adrian Buswell getting to know you	Adrian	G0WEJ	page 6
Discovery of the Strait of All Saints	Stuart	G0FYX	page 9
CAAn We Find Resonance?	Mike	M0CAA	page 11
KiwiSDR Update	Rob	M0RZF	page 14
On the road	Ralph	2E0HES	page 17
Tech Tips	Chris	W7AMD	page 18
Tech Tips 2	Chris	W7AMD	page 21
RCR chairman;s message	John	K7RLD	page 22
Shack Share	John	K7RLD	page 23
Club Information			page 25
Club News/Diary	Stuart	G0FYX	page 26
Nevada Ad.			Back Cover

Articles, letters of interest, photographs are always needed and should be sent to the Editor :- landscape@sky.com

I use Microsoft Publisher to produce the journal so am happy to accept articles/photographs via email. A Word document or Picture attachment. Just use Journal article or Journal picture as the subject matter.

Opinions expressed in the journal are not necessarily those of the HDARC. The editor has the right to reproduce the articles for our affiliated club journals/newsletters. The Editor decision is always final.

Closing date for next journal is : April 2nd

Editorial



Hi Everyone

As the front cover says we can all dream, but what to dream for, health, wealth, happiness, the latest radio from Nevada, I imagine 99% of the population want just one thing, a return to normality, it's some way off I fear, who would have thought 1 year ago life was a dream

My thanks to the people putting forward articles for publication always appreciated

Thanks

Ralph 2E0HES

Club Clothing

Sweatshirts Polo-Shirts T-Shirts Fleeces

Sizes: Small = 36 - 38" - Medium = 38 - 40" - Large = 40 - 42" - XL = 42 - 44"

Available with club logo only or logo, name & callsign

Cap - One Size only: with adjustable strap - Stitching in Yellow

Available with callsign only or callsign and/or name

Some items available in various colours, see **Stuart G0FYX** for details

All articles appreciated



Any articles you think you have that will entertain your co- members then please send them in to Ralph at landscape@sky.com

Nuggets from the net



"On FT8, no one knows you're a dog."



Radio Amateur to Radio Professional :

A radio auto-biography of Adrian Buswell G0WEJ/KE4ZVM ex G7EWG

Little did I know attending a youth recruitment evening run by the Horndean club in 1987 that it would turn into my career. The club had invited local schools and colleges to attend a recruitment evening at the Horndean School....unfortunately only 3 youths attended, Chris, the nephew of G4TST, my current girlfriend and I. We chatted to the members, and found out where to take the RAE course (with G6NZ). After taking the RAE in May 88 (I think) I was licensed as G7EWG, Chris G7EYS, along with another of his school mates Andy G7FEO. All 3 of us were from Denmead, and we soon got into running the JOTA and TDOTA stations for the Denmead scouts and guides. During these early days I was still doing my A levels, Chris was an apprentice electrician, and Andy was doing a Btec.

Chris and I soon got into 6m and great fun it was in the 100w erp days. The order of the day was a 10w radio and a BIG antenna with the best coax we could 'acquire' (I still have that 25m of LDF250). we soon got into contesting on the band, this was helped by the club acquiring the mast around this time. The other 'in thing' at the time was Packet radio on VHF/UHF, and I spent many an hour downloading stuff from the local BBS and using the DX cluster....yes it started on packet radio. I hold the first and possibly still only HDARC award endorsed for DATA only at VHF.

After 'A' levels I spent a year studying in Birmingham, unfortunately I academically bit off more than I could chew and returned south the following June and into late 80s un-employment for a year. This had mixed blessings as I was able to visit many of the older, wiser, club members and was great friends with G1TDQ and G0ASZ who I'd visit weekly to check up on, drink their coffee and play radio. I also got involved with the Solent Forts group around this time activating several of the forts on VHF. It was during this unemployment period that I met Paul G6GTM (G0VEP), who gave me and a mate a tow home after a breakdown. Paul invited us round to his shack, and I discovered that he worked for the Radio Communications Agency and what his job entailed, well I wanted this, so back to college I went, this time studying for an HND in communications electronics at Southampton Institute. (now Solent University). I got my HND and stayed in touch with Paul during this time, he said there would be some jobs coming up in the near future, so make your CV look good.

After finishing my HND I worked for an small electronics manufacturing company who made CCTV multiplexers; I learnt a lot of practical construction, about soldering processes including surface mount using screen printing and reflow ovens, along with fault diagnosis to component level...all professional stuff.

It was during this period that a job came up in West Sussex Fire brigade for a communications technician.....well it looked good on the CV but unfortunately the job wasn't that hands on. I spent 3 years programming the odd hand portable and removing brick dust from the retained fire fighters pagers, however the main element of the job was managing the contractors who actually did the job of fixing and maintaining the wide area radio scheme, an old AM low band quasi-sync system with uhf hill top links...all very 70's and Home Office. It did mean that I had to talk radio to real radio engineers at a professional level.

Then came the call from Paul...'remember those jobs I was talking about, well the advert is going into the national press, phone up for an application form' ...and so started the process of interviews and vetting that goes with the civil service. I was offered a job at RST grade (radio specialist trainee) being promoted to RS2 after a year's probation. The only down side was that this job was based in Kenley (just inside the M25 near Croydon), So at the age of 30 I was also taking on my first mortgage, Oh the responsibility. So I was in, and officially started with the Radio Communications Agency on 2nd April 2000.

Now work in the civil service was a little different to what I was used to, and work in the field never started without breakfast, so I soon learnt only to have a coffee when I got up. We did a lot of enforcement work against the broadcast pirate radio stations that are based in London, some got prosecuted others got away, it was a game of cat and mouse. Other routine work was to inspect all the business radio users equipment to make sure they were operating within their terms and conditions.

Then there was 'Domestics'. These were reports of interference being experienced on broadcast TV/radio by members of the public. These jobs were often not as they seemed, with either no interference being present, or the complainants installation was very poor, One job where the complainant had a 50m roll of cheap TV coax at the back of his TV, stating 'I didn't want to cut it in case I moved the TV to a different part of the room, putting a 2m lead from his wall socket to the TV miraculously cleared the problem.

One of the most fun elements of the job (and still is) is tracing falsely activated Emergency Position Indicating Radio Beacons or EPIRB's; we get a handful of these jobs a year, and one such activation is still memorable. I was in a team meeting, along with Paul and other colleagues when our manager's phone went off...'hey chaps got an EPIRB going off around Crawley, that's your patch Adrian...off you go'. Well I didn't get to work with Paul that often, so Paul came along for the ride and off we headed towards Crawley, taking in the small airfield of Redhill on the way,

Well the EPIRB wasn't there, so we continued to the next airfield, yes you've guessed it GATWICK. We were able to pick up the beacon on our RX now, and using the specialist vehicles Direction Finding system traced the signal to a Virgin Atlantic 747 just the other side of the security fencing at the top end of the airfield away from the terminals. This then became a 'not what you know but who you know' job, as neither of us had our passports to go airside, so we visited colleagues from NATs (National Air-traffic services) who work in the old control tower....the conversation went something like 'Hi Chaps, is this a social call?...er no, there's an EPIRB going off in that 747....oh s**t....I'll make a 'phone call....we haven't got our passports....don't worry I'll sort that', so Paul and I and our DF vehicle got airside without a passport, and onto a 747. The beacon was quickly found and turned off by the Virgin engineers who were a bit embarrassed by the event.

Then during mid 2002 there were rumours about something called Ofcom which was going to merge all the communications sector regulators (there were 5 of them at the time). As a result of the 2003 Communications Act Ofcom came into being on 29th December 2003. It didn't change our work for a few years, it just meant different headed paper etc, but soon enough there were changes and I managed to keep my job through 2 rounds of redundancy, mainly because the older chaps wanted to be paid off.

The next highlight in my, now Ofcom, career was the 2012 Olympics. I was a team leader running Ofcom venue support at Greenwich and Woolwich Olympic venues. In essence we were there to be radio fire fighters, responding to any in venue interference that occurred. Fortunately due to brilliant spectrum planning by the spectrum planning team, and pre-event inspection work everything went to plan, so we managed to watch most of the equestrian events from the press boxes....perks of the job.

In a similar vein to the Olympics we were also required to assist at the rugby world cup in 2017, this was a lot of pre-event inspection work, but we were onsite if something happened during the game. Again all went to plan due to good preparation and planning.

As time progresses so does our business, as usual work and the frequencies we investigate. At the start, it was very rare to have a complaint for frequencies above 1Ghz, and certainly complaints from the mobile operators, Now most of our complaints come from the network operators, with 50% being above 1Ghz. We have had to adapt and learn new techniques and technologies as systems evolve....roll on 5G.

15-ish more years to go!!

Discovery of the Strait of All Saints

By Stuart GØFYX adapted from QRZ.COM page

Aim of the activity

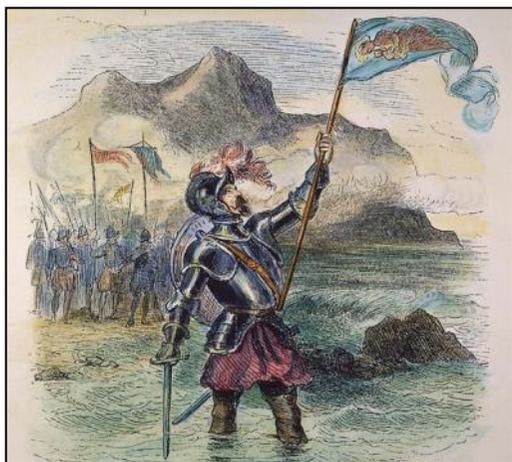
The Regional Section of the Union of Radio amateurs of Spain in San Fernando (EA7URF) has wanted to join up the different projects that over the next three years will contribute to the dissemination of a unique calendar in the history: the first Circumnavigation. That is why we present a project entitled "COMMEMORATION OF THE 5th CENTENARY OF THE FIRST ROUND THE WORLD THROUGH AMATEUR RADIO"

Four activities have already been completed, which have been AM7PVM, AM500SEV, AM500SAN and AM500ISJ.

Now EA7URF is celebrating the main milestones of the Magellan-Elcano Expedition until 2022, and is now commemorating another important milestone of the journey to the Moluco: the discovery of the Strait of All Saints, the present Strait of Magellan. It will be with the Spanish AM500ETS special event station.

Brief history

As the Fleet progressed in the search for the Moluco, concern grew among the authorities for not finding the much desired passage to the South Sea, which had been discovered in 1513 by the Spanish explorer, Extremadura of Jerez de los Caballeros, Vasco Núñez de Balboa.



After his long stay in Puerto de San Julián, due to poor weather conditions, Magellan is forced to seek an area that could give refuge to his

expedition ships. This place was Puerto Santa Cruz where they would stay 53 days.

Thus on October 18th 1520, the ships again set sail in search of the long-awaited passage to the other side of the "Americas" and three days after leaving the coast of Puerto Santa Cruz, they reached what they called Cabo Vírgenes, at which time would follow numerous explorations that led to the discovery of the "gateway to the South Sea". The southern spring brought that same day October 21st 1520, a great storm that had consequences to the Starfleet. The San Antonio and the Conception begin to move away from the rest of the ships entering sheltered waters, which appeared to be part of a bay. After this, a new bay was opened that they began to explore. After three days, they reunited with Victory and Trinity.

During this episode there is the demise of the San Antonio, a ship with the largest logistical capacity of the Fleet and which was a severe setback for Magellan. With only three ships, its transit through those waters, from whose shores you could see the smoke released by the large campfires lit by the natives of the area, although it is true that they did not see any inhabitants. This prompted this area to be christened Land of Fire.

The Expedition continued its navigation through very narrow canals without reaching the South Sea. On November 1 1520, Magellan christens the name 'Strait of all Saints'.

It was not until November 27th 1520, after more than thirty days of his departure from Puerto Santa Cruz, that the Fleet reached the South Sea. This navigation reached the long-awaited passage in search of the Moluco, but also allowed the exploration of the lands near the Strait. The Strait of All Saints later became known as the Strait of Magellan, which is the main natural passage between the Atlantic and Pacific, and which has a total length of about 330 miles.

The Strait of Magellan, is a navigable sea route in southern Chile separating mainland South America to the north and Tierra del Fuego to the south. Magellan's original name for the strait was Estrecho de Todos los Santos ("Strait of All Saints").

Operation

The station AM500ETS will be on the air between 31 October and 8 November 2020. Contacts will be made in the HF, VHF and UHF bands in all possible transmission modes (SSB/CW, plus digital modes), as well as via DMR, C4FM and via satellite.

It would be good if the system tuned across each amateur band using the entire range of the capacitor. Well you know the range of the variable capacitor and parallel resonance is given by the formula: $1/(2 \times \text{PI} \times \text{F} \times \text{L})$. So you might think all you need to do is to wind a coil of the calculated inductance till you get the value, right?

Well no, because the driver valve has anode capacitance, as does the next stage of the circuit. Also the coil is wired to a big rotary switch which introduces both inductance and capacitance and the whole lot is on a chassis next to other components. It's incredibly difficult to calculate any of this and very hard to modify the coil once it's bolted in. You find the coil you carefully made is rubbish and miles off frequency. What's needed is a way of measuring the resonance of the tuned circuit with it in situ before you finish it and without the high voltages.

Technologically Groovy Equipment!

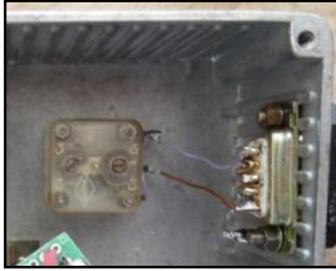
Now I've got a fancy antenna analyser (SARK100) which uses a DDS oscillator and a microcontroller to very accurately set the frequency, so it's possible with a bit of cunning to set this up to detect the resonant frequency of the circuit. But changing the frequency means using menus and up/down buttons and is very tiresome to use.

Forward to the past!

Years ago, before digital stuff, some bright spark figured out that if you had a tuned circuit and put an oscillator with an exposed coil near it, at the resonant frequency it would absorb energy from the oscillator. If the oscillator was adjustable and had a calibrated frequency dial it would be possible to easily find the resonant frequency of a tuned circuit by measuring the oscillator energy. At the time valves were the active device and resonance was detected by a change in the voltage at the grid, so the device was called a grid dip oscillator or GDO. Obviously I wanted something small and battery powered but the operation of a junction FET transistor is pretty similar to a valve, so is a good choice.

A Practical Instrument

There are many examples of homebrew GDO circuits on the internet using different oscillator designs. I used parts from my 'junk' box, so the unit I built uses the popular 2N3819 N-channel JFET. It's configured as a Hartley oscillator, as this uses a single variable capacitor which came from an old transistor radio.



As with any oscillator it works by feeding back some of the output to the input of an amplifier. This causes the signal on the tuned circuit to be maintained and generates an oscillation at its resonant frequency. It needs a coil with a tapping or feedback winding, but this means turns can be changed to provide just the right amount of feedback, as too much will cause a distorted sine wave. The feedback causes a negative bias at the gate of the FET, that's why the meter appears to be the wrong way round. Different frequency bands are covered by coils of varying sizes.

I used 9 pin 'D' plugs and socket for the coils as I had some. The coils were wound on plastic conduit tube and glued to the sockets with epoxy. I've put a buffer amplifier and a BNC socket so that a frequency counter can be connected. This allowed a dial readout to be created on the PC and fixed to the front under the capacitor knob pointer.



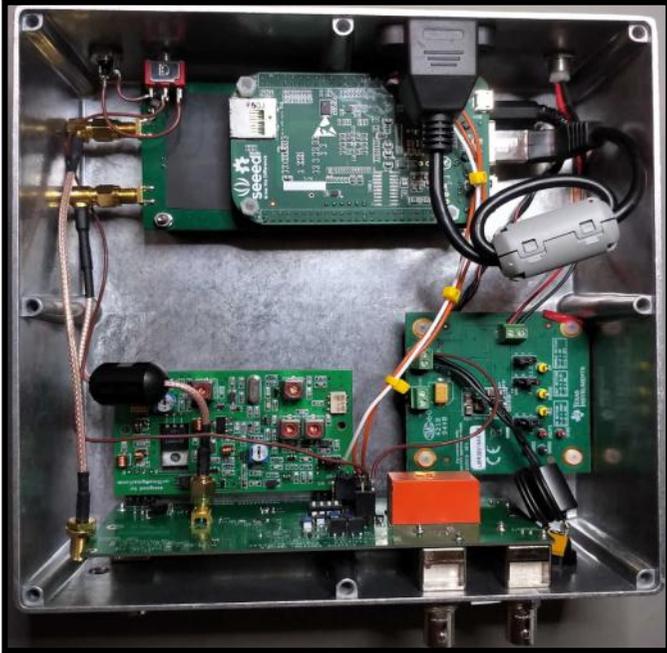
Does it work?

The device has proved very useful when building tank coils. The meter sensitivity has to be adjusted for a maximum reading for each of the 5 coils, but the resonant point can easily be detected even from a few inches away. There is a certain amount of oscillator 'pulling' when the device is near a high Q coil, which makes the printed frequency scale a bit inaccurate, but then the frequency counter can be used to get an accurate result.

73/88 M0CAA and M0BOZ.

Recent Changes

It was 2 years ago an article was in the club journal about the online receiver. Many things changed since, so high time for an update. Here's a photo of the present hardware.

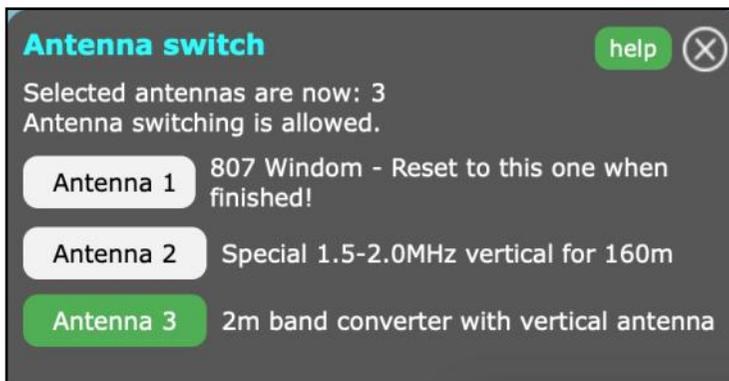


The unit was rebuilt in November 2020 to add a 2m converter board. The kiwiSDR and BeagleBone assembly went into a new compact die cast box, 175mm square. In the photo the BeagleBone/KiwiSDR is at the top and the converter board bottom left. The other boards are a TPS63850 buck power regulator and my bespoke PCB for signal switching at the bottom edge. The signal switch PCB is my own design and plugs into the 2m converter. The signal switch changes over to an Icom IC9100 during transmit, so I can transmit on club nets without having to manually switch back to receive.

The switch PCB also filters out LW/MW bands to reduce overload from those strong signals. A 3-5MHz tunable notch filter set to 3.95MHz knocks out the strong signals there, which often cause overload. The notch filter uses microscopic voltage-variable capacitors, remarkable new devices. Another new part is the TMUX1121 analogue switch, that handles routing from the antenna switch extension. At the bottom of the photo is a set of BNC connectors where all the antennas plug in.

2m Converter

The converter is reached from the antenna extension, selection 3 as shown here.



Changing to antenna 3 requests a page reload. Accept this and the frequency scale changes to show the true frequency the converter is receiving on. The converter is attached to a vertically polarised antenna. Unfortunately there is some interference from pager signals across the 2m band, The converter also works outside the 2m band, it has fair performance from 138-150MHz. Note that all facilities of the HF receiver are available on 2m. So all modes including FM, SSB and WSPR are there.

For receiving FM I recommend setting 'de-emphasis' to 75us, for slightly smoother audio.

The converter draws an extra 45mA, so please when you're finished set the antenna extension back to 1. It does save the battery quite a lot during the dark winter months.

Vertical Top Band Antenna

Antenna 2 is dedicated to 160m. Selecting it gives a 12dB more signal. You may notice on some signals the signal/noise gets worse. Remember the main antenna (1) is a 40m long type 807 Windom. The top band antenna is just 8m tall but is 12dB better than a 40m long piece of wire. Someday I may start selling these 160m verticals, but for now it's a technology demonstrator and comparison.

"Metamaterial" antenna for 10m

By the time you read this a 4th option is available from the antenna switching. This one is situated inside my loft. It's 1.6m x 0.8m and operates best from 28.0 - 28.5MHz.

Metamaterial is a word used for anything with manufactured properties, but in the sense of this antenna, it's just a new loading system.

Despite its small size this antenna has no loading coils or capacity hats. I once worked Australia on this with 10W, albeit at the last solar maximum. You may find that despite its indoor location, this outperforms the external antennas across a small bandwidth. There is a 16dB gain preamp because the KiwiSDR is rather deaf above 20MHz. Eventually I hope to build a more robust metamaterial vertical and put it up outside.

Software Additions

I get the feeling people are not using it to the full capability because the extensive documentation at KiwiSDR.com is rather intimidating. So here are a few other additions made by the designer of the KiwiSDR, John Seamons. The admin pages have been greatly expanded over the last 2 years, and can be reached by adding admin to the end of the web address. The password is sent to club members in the weekly email. Most usefully under the first tab 'Status' you can kick off other users to prioritise people from the club.

You will see under the GPS tab my true location and a list of satellites. The GNSS reception is used for accurate timing. The TDoA (time difference of arrival) facility provides direction finding so you can locate, with fair accuracy, the position of any transmitter.

The 'Mode' tab allows up to 8 receivers, but loses the waterfall display on each. If the club needs extra slots, they can be enabled.

Numerous other things were added; Clicking LSB/USB/CW twice narrows the filter bandwidth; the waterfall has an auto scale button; Noise reduction under the 'Audio' tab; Reception of DRM digital audio broadcasts; Reception of SSTV, and with the 2m converter it can now show SSTV broadcasts from the ISS; Synchronous AM reception.

Future Additions

The KiwiSDR.com website offers extensive documentation, and further new features will be available by the time you read this. The KiwiSDR powers a worldwide network of receivers at <http://rx.kiwisdr.com> of which ours is just one. When you start listening to these receivers, the effect is several hours pass by unnoticed!

My next update will be adapting the KiwiSDR to the Icom IC-705. I'm hoping to roll my own 2m converter and power regulator on one PCB. The Ukrainian 2m converter has too much gain and some parts in it are semi-obsolete. The layout of the units as shown in the first photo needs tidying up, and absorbing 3 PCBs into 1 will allow a yet smaller box.

On the road - Ralph 2E0HES

I was asked to put down my thoughts about driving for a living and didn't think it related too much to radio but I did have a radio in the cab and used it more than I thought.

When I was a working man, which wasn't that long ago, I kept myself occupied when not actually driving by playing with the FT-897 HF and VHF plus UHF, an excellent choice for mobile work giving all the bands needed including dare I say CB bands English and European channels.

My set up was complemented by an auto tuner attached to the side of the FT-897 which was essential for almost all transmissions, because the antenna was a CB whip on a Magmount on the back of the cab as a 20 metre vertical was out of the question obviously. I had a separate 2 metre antenna also on a Magmount on the back of the cab; Magmount's only as putting a hole in the cab was out of the question.

I finished late one Wednesday night in Chichester and managed to get into the 2 metre net, I was surprised and delighted.

One night in Shoreham (parked on the seafront) I put up the Pro-whip, which was an absolute disaster with the wind bending it over allowing it to hit the trailer of a passing lorry, Luckily he was going slowly as not to damage the antenna.

Back to the CB whip, and a successful contact to Puerto Rico was made. The saltwater ground plane worked a treat. in the morning a VK was heard but unable to confirm the contact as he only heard part of my callsign before he disappeared in the ether.

Eastleigh depot was another contact of note, Oman, not bad for being stuck in the middle of other lorries surrounded by trees bigger and older than most of the people reading this article.

The best of them all was my first USA contact made whilst waiting in a service centre in Southampton for a repair to the truck. As an M6 I was over the moon, not literally, short path HI HI.

Thanks for reading

Message from the Club Chairman of the Radio Club of Redmond, Washington state, USA sent to us by Chris W7AMD past member of HDARC and Chairman. I shall pick a couple of articles to reproduce. Anyone who wants to see their journal in its entirety send me an email. Ralph.

Tech Tips.....Chris Heavens W7AMD

Simple long wire antennas, size does matter for good efficiency and operation

If you want to have a great DX antenna then size does matter; however with Home Owner Association (HOA) restrictions and small urban gardens it's not possible to put up high towers or masts and large rotatable HF antennas. Inevitably the limit of suitable "sky hooks" and the desire to be stealthy leads tenured and new operators alike to consider using a "simple long wire" because it's cheap and potentially multi-band capable.

There are basically two "simple" long wire configurations, the Random Long Wire (**RLW**), and the End Fed Half-wave Dipole (**EFHWD**) however, as similar as they may look to each other they are **completely different antennas** and need to be sized and fed correctly for efficient operation. I'm not going to go into the details of actual physical construction for each of them, the internet has all of that in great detail. This tech tip serves to remind operators to select the correct wire length and the type of matching transformer for each "simple long wire" antenna.

The **RLW antenna MUST be NON-Resonant** if it is fed traditionally by a 9:1 UNUN. This is because a non-resonant long wire end impedance is going to be a few hundreds of ohms impedance and that needs to be transformed down to close to 50 ohms to match your transceiver system. So a 9:1 UNUN transforms 50 ohms to 450 ohms if correctly terminated, and often it's possible to get the resulting match close enough to match your transceiver even without any further tuner unit, at least on a couple of bands. True all band operation will need an additional tuner, built in or external, in order to get a good match. Also it needs to be operated with a couple of counterpoise wires, a simple earth rod isn't adequate. Use a good 1:1 current isolator as well as the 9:1 UNUN to keep RF off the coax shield.

Of course a good wide range manual or automatic tuner capable of tuning a single wire could also be used without the need for a 9:1 UNUN.

Here's a reminder of a few non-resonant wire lengths, use insulated wire if it's not up in the open air and sizes from 22 to 16 SWG are just fine.

Non-resonant wires 29 35.5 41 58 71 84 107 119 148

The **EFHW dipole MUST be resonant** for correct operation on the band of use or an even multiple long and must use a transformer that can convert the high impedance at the end of the wire (3k-4k ohms) down to 50 ohms, **NOT** a 4:1 or 9:1 UNUN or balun. Typical construction is an Auto transformer with a turns ratio of 7:1 (Secondary winding of 21 turns tapped at 3 turns or loop coupled at the bottom end with a 3 turn primary) or impedance transformation often described as 49 or 50:1. If you are making or buying see if you can use a design that has a way to switch out or isolate the coax ground from the antenna ground especially for 100W use. You may also need to use a 1:1 current isolator to prevent RF at the operator position. Attention to the matching unit construction and wire length should allow operation without any additional tuner unit. The same matching unit (auto transformer type construction) can be used for all resonant bands. Keep the ends off the ground or near objects as the resonance point can be changed as it couples to other objects. There are some interesting variations of design in addition to a simple wire only solution that aim to either shorten the overall length or help keep the resonant frequency in the desired part of the band for CW or SSB operation. Check the web for these variants, however the need for a large step down transformer/matching is the same for them all.

Resonant wire

132ft long for 80m (one half wave) 40m (two half waves) 20m (4 half waves) 10m (8 half waves)

66ft long for 40m, 20m, 10m

33ft long for 20m and 10m bands.

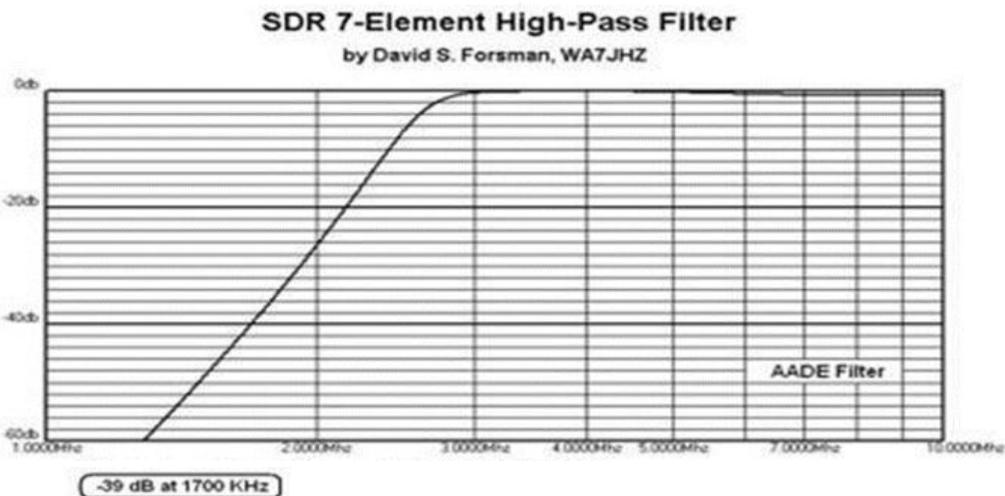
Note that wires for 15m and WARC band operation need to be individually cut to resonance.

Tech Tips 2.....Chris...W7AMD

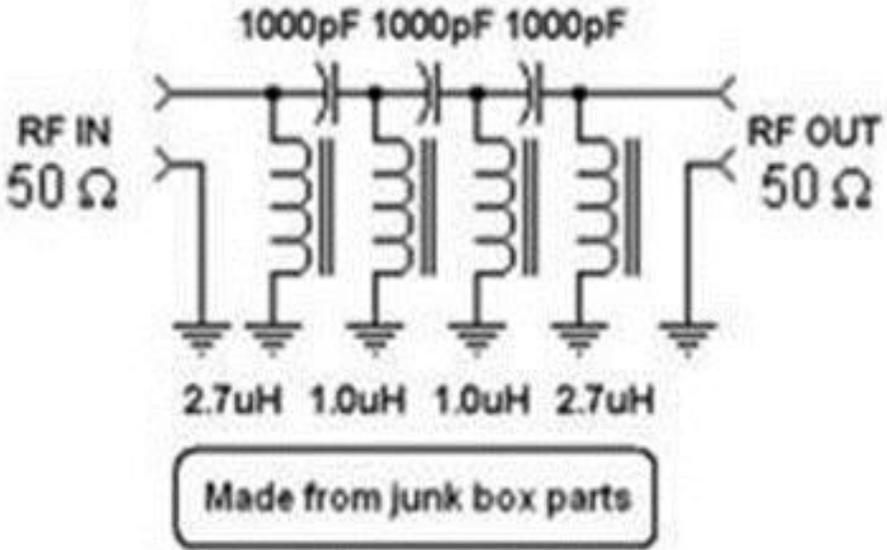
Those of you who may be playing with “low end budget” SDR dongles might be less than encouraged with the results. You see noise, and spikes and hear AM carriers and intermodulation in all kinds of places across the display. More than likely this is due to overloading the front end of the dongle, or dongle plus up-converter. .

Build a simple HF band High Pass filter (HPF) to dramatically improve your listening pleasure using these cheap SDR. Here’s a very simple HPF design I found on the internet to save me the time of using a calculator. My scrap box had the capacitors and I wound the inductors on 1Meg Ohm resistors also from my scrap box. I used my AIM 4170 analyzer to get the correct number of turns using some wire I took off an old transformer secondary, probably around 24swg or so...this was the longest part of the whole build Attaching the filter in the feedline from my low band doublet made my SDR dongle system highly usable, I could now see ham activity on the ham bands as well as my local QRN noise signal all perfectly clearly on the screen.

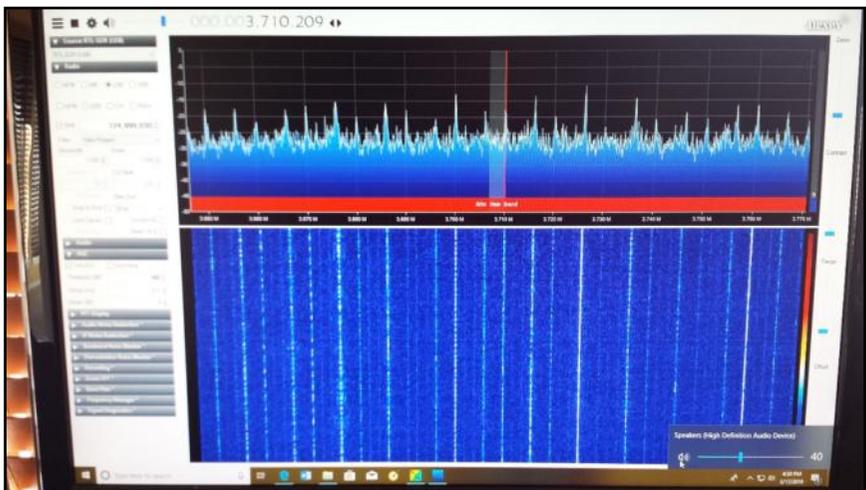
Here’s the filter design and calculated performance:



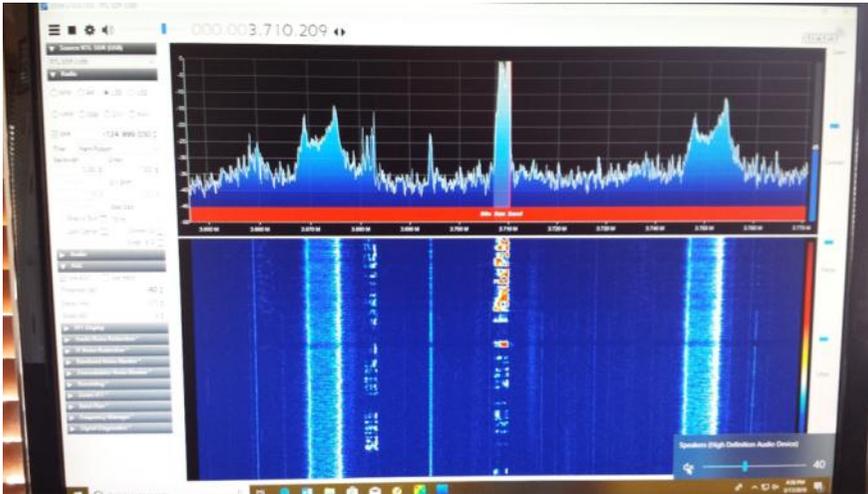
The SDR 7 Element Filter Circuit



This is what the Dongle SDR screen looked like before insertion of the HPF into the feedline, carriers and noise galore. There is actually a strong ham signal tuned in but you can't see it, or my local neighborhoods QRN noise source.



Here's the screen moments later without any changes to the SDR controls after putting in the HPF, now you can see the SSB signals and my local QRN switcher PSU harmonics displayed perfectly on the screen. Give this a try you'll be amazed at the difference. I don't have to play with the RF gain control now either, just set it on max and enjoy monitoring the HF bands with my eyes!!



Radio Club of Redmond, Washington state, USA

President's Message

Hello RCR Members.

We are entering into yet another month of unknowns. Uncharted waters is another description of what lies ahead but all signs are that things will start to open up in May and life may start to revert to something that resembles normality.

I feel very fortunate to have ham radio available as a way of keeping myself busy during these days of home confinement.

Whether it is with my early morning AM group on 75M, CW midday on 20M or FT8 at almost any time I seem to get my daily “fix”.

I've got several building projects that I've taken on that keep me busy as well. We are lucky to have mail order electronic parts houses available to us where orders show up in 2-3 days, and even a local distributor where you can fill out an order online and pick it up the same day, obeying social distancing guidelines of course.

Sprinkled in that schedule are times of working in the yard and enjoying the nice spring days we've had. Days evaporate pretty quickly.

May I suggest reaching out to local club members on the 'phone or possibly use meeting software to catch up on what's going on in their world.

They say to maintain a good frame of mind, the important thing is to establish a routine and follow that. I do my best.

73's John / K7RLD

Shack Share by John K7RLD QRP Labs QCX-40 CW Transceiver

This is a follow up to my previous mentioning of building, really repairing, a little QRP 5W transceiver from QRP Labs. The one I inherited was the model QCX40.

When I received the board it was in dreadful shape. The original builder misread resistor color codes and ripped some circuit traces so it was really a re-build rather than a build, which would have been easier. I spent a lot of time replacing resistors to the proper values and cleaning up solder bridges as well as replacing traces. I even had to install a breakout board in order to re-install a very small surface mount oscillator chip whose onboard trace pad was destroyed.

You might be able to see the little board almost exactly in the middle of the picture with a crystal attached laying on its side.

I will say that the QRP Labs io-groups site is immensely helpful.

There are some pretty smart people who frequent the site who bend over backwards to help. I won't go into all the features, but you can look at this and other kits they sell at <http://shop.qrp-labs.com/>

The little transceiver is working just fine now but it became apparent that I needed to put it into some kind of case in order to keep it from getting damaged. There are cases specifically designed for it made in Germany that cost nearly \$45 and take a couple months to get. Then there is one person who 3D prints one that you can buy for \$30 shipped. But, since I had only about \$15 in replacement parts into it, I hated to spend more for the case than I did for the radio itself.

Here is what the bare transceiver looks like all re-assembled and working.



Horndean & District A.R.C Information.



Club Call signs ***G4FBS (Held by MØKTT); G6RST (Held by G4WQZ)***

Club Website **<http://www.hdarc.co.uk>**
(Maintained by Neil 2E0LNX)

Club Groups.io site *Administrator is Stuart GØFYX*

Club Facebook Page **<https://www.facebook.com/hdarc1975/>**

Club Twitter Account **@HorndeanARC**

Club Meetings *Held at Deverell Hall, 84 London Rd, Purbrook,
Waterlooville, Hants. PO7 5JU, on the 1st and
3rd Friday of each month. Commencing at 1900.*

Club Nets ***All times are local and frequencies plus/minus QRM.***

Sunday *0900 CW until about 0930 then SSB on 1950 kHz.
Net controller:- Stuart GØFYX*

*2000 FM 433.450 MHz
Net controller:- John G4WQZ*

Monday *1930 SSB 1950kHz
Net controller:- Stuart GØFYX*

Wednesday & Friday
*1930 FM 145.375 MHz
Net controller:- John G4WQZ*

Club Membership

Joining fee £2 . Annual fee £26. Those aged 10-18 pay half this rate, and under 10's have free junior membership. For Europe and rest of the World fees please contact the Membership Secretary. All annual fees payable on November 1st. If fees not paid by the following January 31st, membership is ended.

News of club members

Another reminder about the HDARC 2m nets, now Wednesday and Friday on 145.375 MHz at 1930 local time. An ideal chance to keep in touch with other club members. Please give it a go, and all are welcome.

Diary

Tuesday February 2nd Club Zoom meeting at 2000.

Tuesday February 9th Club Zoom meeting at 2000.

also February 16th, 23rd, March 2nd, 9th, 16th, 23rd and 30th.

The link for all the club zoom meetings is:

<https://us04web.zoom.us/j/77825040776pwd=eHpreHVCVkVjRMW5s5RG9SaTFtMTF5UT09>

Meeting ID: 77825040776

Passcode: dU2Px2

But you shouldn't need either of these if you click on the link above.

This 'n' that

In the RSGB AFS contests in January, HDARC came 36th out of 67 in the CW leg (G3LIK and GØFYX took part), and we came 45th out of 77 in the SSB leg (GØFYX, 2E0HES, G3LIK and M0CAA took part for the club).

The RSGB series of Club Championship contests starts in February. Dates are

February 1st SSB

February 10th Data

February 25th CW

March 1st Data

March 10th CW

March 25th SSB

All contests are on 80m from 2000-2130.

For the rules and details see:

<https://www.rsgbcc.org/hf/rules/2021/r80mcc.shtml>

For club clothing enquiries and RSGB book orders, please contact me (Stuart GØFYX).

NEW **Yaesu FTdx10** HF/6m/4m SDR 100W Transceiver

A winner – receiver already rated number 3 in the Sherwood Performance chart!



The features of the new FTDX10 include:

- Spectrum display: 3 dimensional
- Full-colour display: 5 inch
- Roofing filters: 3 types
- Band pass filters: 15 in all
- QRM rejection with IF DSP
- RF & AF transmit monitor
- High speed auto antenna tuner
- Super stable final amplifier
- Aluminium heat sink
- Low-noise cooling fan
- Microphone Amp. with parametric Eq.
- Transceiver band stack function
- Remote operation (with optional LAN)
- SP-30...Optional Loudspeaker...£94.95

£1549.95



Yaesu FT-991A

Full coverage HF/VHF/UHF Transceiver

£1239.95



Yaesu FTM300DE

Dual Band Digital/FM Transceiver. Latest updated version!

£399.95



Yaesu FTdx-101MP

New 200W version

£4199.95



Yaesu FTdx-101D

SDR HF/50/70MHz 100W Transceiver

£3149.95



Icom IC-705

VHF, UHF, HF, D-Star all mode 10W QRP portable transceiver

£1299.99

- LC192 Optional Carrying Case.....£156.00



Icom 9700

2/70/23cms Transceiver
The Boss's choice!

£1795.95



Icom 7300

Top selling HF/50/70MHz
100W SDR Transceiver

£1195.95



Icom 7610

SDR HF+6m 100W transceiver
7" full colour touch display

£2999.95

nevada®

www.nevadaradio.co.uk



023 9231 3090

MUCH MORE on our WEBSITE 24/7 Showroom Opening Hours: Monday - Friday 9AM - 5:30PM Closed Saturday
Email: sales@nevada.co.uk • Unit 1 • Fitzherbert Spur • Farlington • Portsmouth • Hampshire • PO6 1TT