

Ridgeway Repeater Group Newsletter - First Quarter 2023

Messages/Notices

Message from our Secretary, Rob - G4XUT

On 1st February 2023, at around 14:00 the mains electricity power to the GB3TD, GB7TC and MB7UR site failed.

All repeaters continued to operate normally using automatic backup battery power thanks to improvements carried out in 2022.

GB3TD and MB7UR continued on batteries until the power returned to normal around 01:00 on the 2nd February 2023.

GB7TC continued to operate on its own UPS power unit until 19:00 but failed until 01:00 when the site power supply was restored.

This is the first time that we have been aware of any long power outages and it was a good test of the backup batteries. We will seek to improve the GB7TC emergency battery backup system in the future.

The supply failure was believed to be a fault on an 11kV cable to the local site transformer. Thanks go to SSEN for fixing the problem.

A final thought is that; if you do hear the courtesy tone "P" (•-•-• dit dah dah dit), this indicates that GB3TD, and likewise GB3WH, are on battery power and perhaps you would ask someone on the repeater if they are aware of it.

The sooner the RRG know, the sooner we can investigate!

This Quarters Articles.

There are two articles this quarter:

- One produced by myself, in collaboration with Robin - G8VVY.
- One that Rob - G4XUT sent in about an aircraft authored by Clynt Perrott.

Hope you enjoy both articles!

Articles

This article is by myself - G1NCG, in collaboration with Robin - G8VVY

Software Defined Radio - SDR Receivers

I want to take a look at the merits, or not, of setting up and using SDR receivers.

Virtually all amateur radio enthusiasts will have experienced using a 'hardware' receiver, as part of a transceiver most likely, or perhaps in the form of a scanner; but I would like to look at the popular RTL-SDR device. These devices use the RTL2832U chipset; hence the RTL bit in the name!

Most commonly, they have the shape and style of a USB flash/storage key and plug straight into a computer USB port. They fall into the form factor category of 'dongles'. It's a good idea to use a short patch cable between the computer and dongle as they can be quite vulnerable; presenting a significant physical load on the USB port if stressed. I have seen these in use in TV programmes and wondered if I could achieve similar results.

Unlike a hardware receiver, the SDR dongle does require a bit of setting up before it will work, and I think this might be why some people are put off the idea of experimenting with one. I do have one knocking about my shack somewhere, currently resigned to the "needs more investigation" pigeonhole, as I have had varied success with it!

The advantages are that all the range have wide coverage, (currently 500 KHz to 1.77 GHz), and use direct sampling below 24 MHz.

I have both MAC and Windows computers to connect to the SDR but, to date, have only followed the MAC route – with seemingly only limited software options - which didn't impress me. The Windows software appears to be more plentiful and I will base my comparisons on that platform.

My intention is to do this on a very limited budget and hope I can make it work like I think it could. After reading a fair deal about these devices; most reports I've come across seem to say a lot of good things about them.

I know, ideally, that I need an outdoor antenna and do have an older discone type one laying around in my shed; so that could be put into service. This would be ideal due to its wideband RF coverage.

I'll now take a look at some of the software that I found easy to download. It is all fully freeware, and not trial-ware, so will not have any time limits on its use.

The applications that I'm looking to trial will include HDSDR, SDRuno from SDRplay, SDR# (SDR Sharp), SDR Console and Linrad.

I'm thinking that SDRuno may well be a pay for product in the future, but it is currently free of charge.

In order not to reinvent the wheel; the following website will give you all the low-down on the RTL-SDR; its range; resolution; requirements etc.:

<https://www.rtl-sdr.com/about-rtl-sdr/> (just paste this link into your browser)

There are a lot of imitations for sale out there on the Internet, which I suggest you read as if you buy a cheaper product it probably won't work as well as the proper one.

This webpage is a good guide to differentiating between the genuine and the fake 'clone' devices:

[Buy RTL-SDR Dongles \(RTL2832U\)](#)

Review of the HSDR program

HSDR is a free SDR application which will run under all versions of Windows™ client software from 2000 onward.

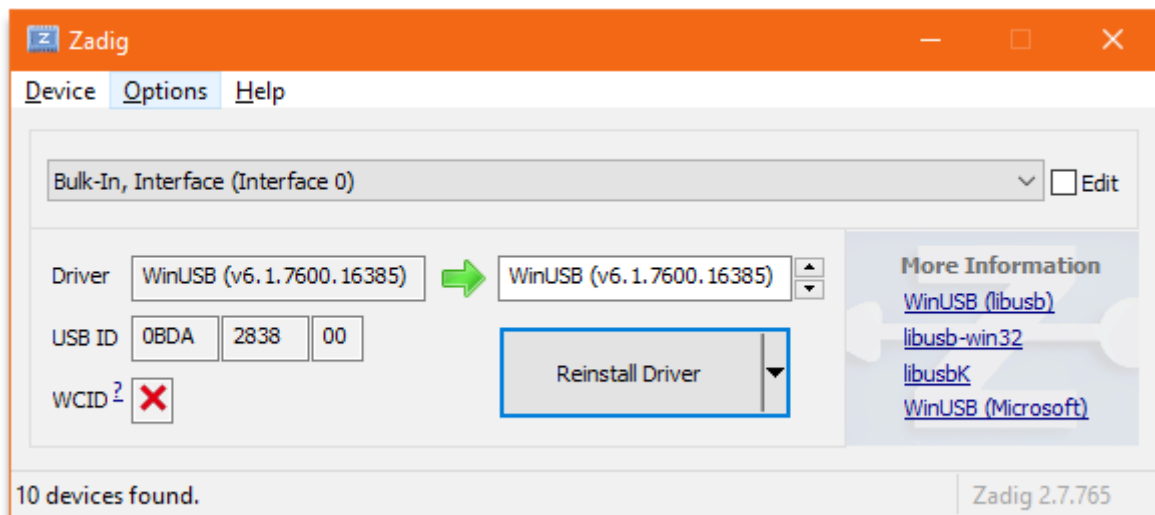
It is a relatively 'no frills' programme, which makes good use of screen space, and provides a degree of automation with regard to spectrum zooming and default bandwidth settings according to the chosen demodulation protocol.

When installing HSDR to use with an R820T/R820T2 based RTL-SDR dongle, make sure you *don't* install any of the software that came with the hardware.

Plug in the dongle and then install and run 'Zadig'. 'Zadig' is a generic Windows™ USB driver installer which can be found at:

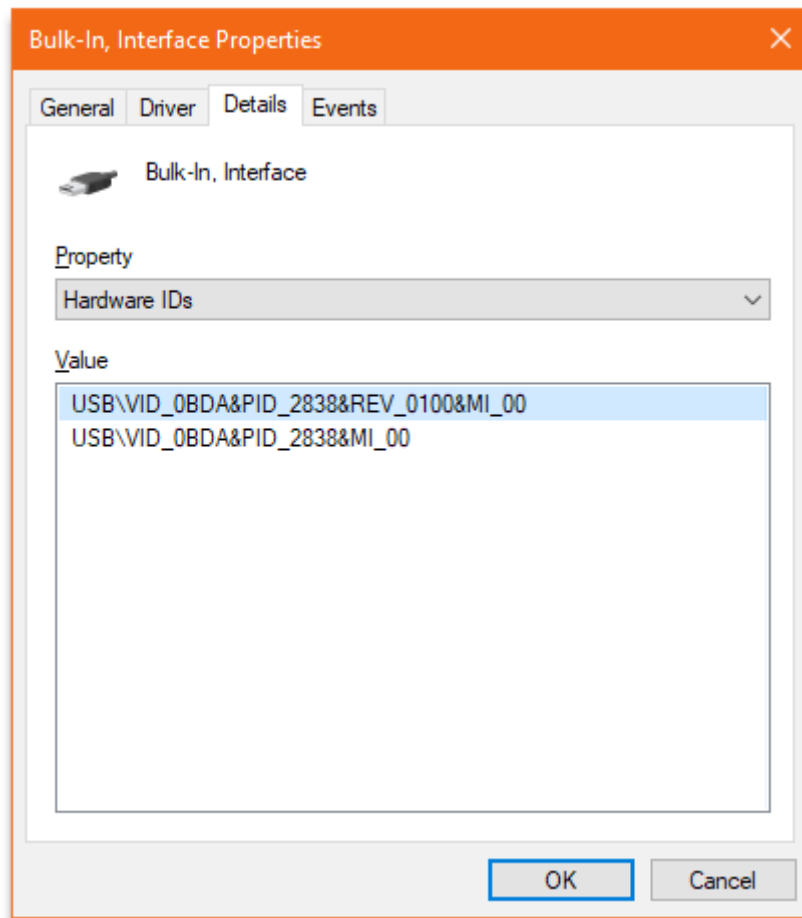
<https://zadig.akeo.ie/>

You need to select 'Options' and List All Devices, then select the "Bulk-In, Interface (Interface 0)" from the drop down list; or the RTL2832UHIDIR or RTL2832U options if you cannot see Interface 0.



All USB devices have a unique hardware identifier and you should be looking for the one above as confirmation that you are about to install the correct driver for the dongle; anything other than this ID could mean you are about to overwrite your existing, mouse, keyboard driver etc.!

If all goes well, you should see the new device under Universal Serial Bus devices in Windows™ Device Manager.



You are now ready to download and install HSDR. At the time of writing, this can be found at:

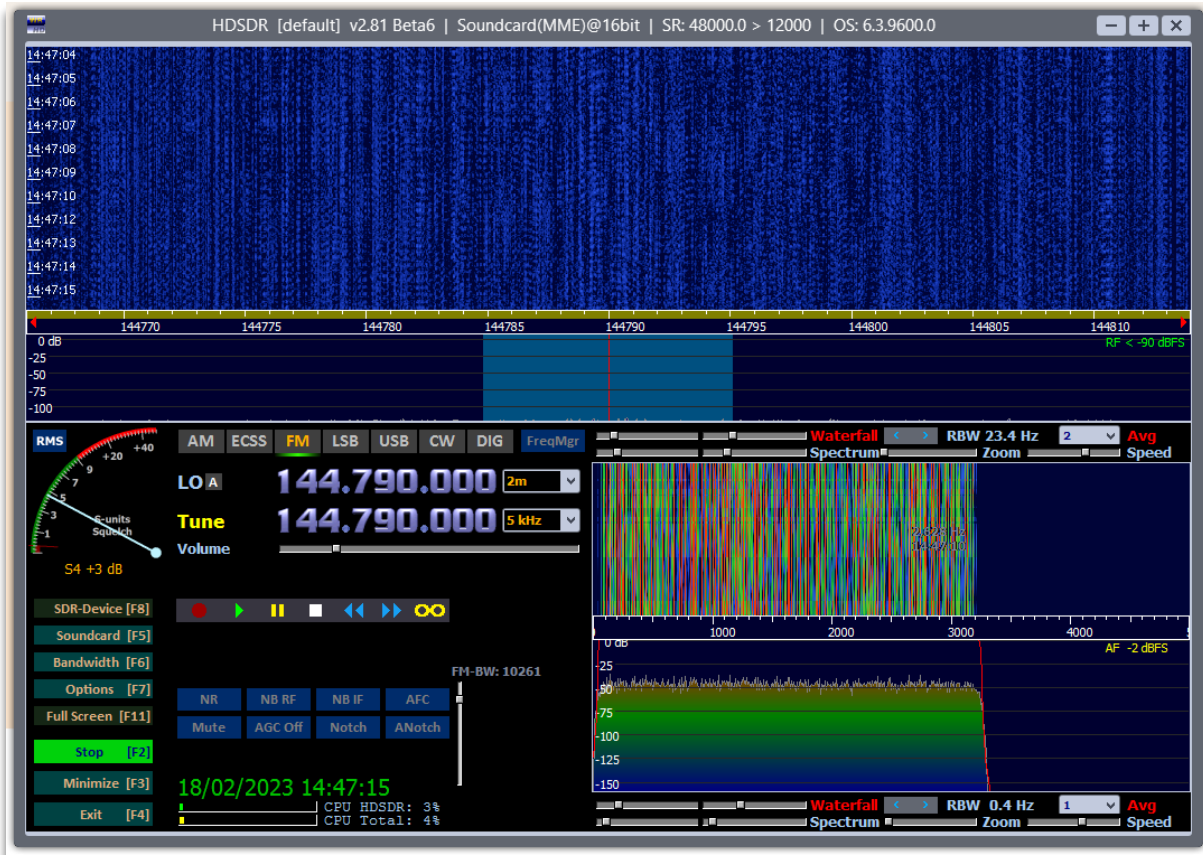
<https://www.hdsdr.de/index.html>

Also required is the specific .dll file for the RTL dongle. The link for this can be found under the 'Hardware' tab/button:

RFSPACE SDR-IQ7/SDR-14	Download	April 11, 2013
RTLSDR (DVB-T/DAB with RTL2832) USB	DLL How-To	March 20, 2017
RTLSDR (DVB-T/DAB with RTL2832) over Network (rtl_tcp)	DLL#1 DLL#2	

The .dll needs to be copied to the HSDR installation folder. It is a 32-bit programme and, by default, will be in C:\Program Files (x86)\HSDR

You are now ready to run HSDR. It might call for you to confirm the .dll file you wish to use the first time you run it. It's always a good idea to keep a copy somewhere too. HSDR could become corrupted at some time, or maybe the file location moves on the Internet.



The HSDR screen – even though it is one of the less complex SDR applications - is still quite dense in its layout and difficult to screenshot and display with any great clarity.

The general basics of the control functions though are as follows:

- The bulk of the display is devoted to the 'waterfall', with the 'spectrum' sitting beneath it. You can 'grab' the frequency scale bar with the left mouse key and slide it left to right to bring to the centre the frequency you wish to receive.
- You soon become familiar with the shapes of various signal modes, SSB, FM, satellite data etc.
- There are sliders for brightness, contrast, scaling and minimum level for both the waterfall and the spectrum.
- The resolution bandwidth and number of samples averaged over can be changed for the waterfall.
- Hovering over the Local Oscillator (LO) and Tune frequency digits puts a yellow highlight bar above and below them and allows you to change frequency directly with the mouse scroll wheel. It's a good idea to put some 'space' between the LO and tuned frequency to avoid any de-sensing.
- As you tune different parts of the frequency range available on the RTL-SDR devices, HSDR will cleverly choose the most appropriate mode and bandwidth.
- Manual adjustment of bandwidth can be made using the vertical slider control, or the Bandwidth button to the bottom left of the screen.

- Notch and Auto Notch filters have proven useful when listening on the air bands where there are occasional adjacent carrier signals to where you are tuned, and they are very effective.
- Another useful function is Squelch which you can set by clicking the mouse pointer directly on the S-meter scale at the level you wish to set it. Clicking back on zero effectively turns it off again.

I have found the combination of a relatively cheap dongle – the Nooelec SMART 4 was just over £33 delivered – and HSDR to be excellent for receiving a whole host of VHF and UHF transmissions.

Its predecessor, also from Nooelec, sadly proved to not be quite so robust. The Mini 2 did not have the Aluminium housing of the SMART device and – possibly together with some physical stressing due to the plug-in arrangement into the computer – lasted only a few months. It continued to function but the sensitivity was greatly reduced.

One area has proven to be a little disappointing; FM broadcast radio reception. I have struggled to find strong enough signals to carry out RDS decoding. A typical FM stereo broadcast signal will have +/- 75 kHz deviation and 15 kHz audio response. That occupies 180 kHz bandwidth. Setting the bandwidth in HSDR to maximum at 192 KHz seems to considerably reduce the overall performance and dramatically affects the sensitivity.

I did find that things can be improved by installing on a better specification PC. An i7 processor, with the same 8 GB of RAM, gave much better signal levels on FM than an i3 with the same memory.

And this article, about Britten Norman Islander G-AVCN, is by Clynt Perrott

BN Islander – G-AVCN

In 2000, BN Islander Serial No. 003 laid abandoned at Isle Grande Airport in Puerto Rico. It was rescued and brought back to its birthplace at Bembridge on the Isle of Wight with the intention of restoring it to airworthy condition. This never happened and in 2009 it was once again abandoned, this time in the car park of the Britten Norman Aircraft factory.



In 2010 a group of mainly ex BN employees formed the Britten Norman Aircraft Preservation Society - BNAPS - with the aim of restoring G-AVCN, its original registration. I became involved with the project in 2010 - it's a long story.

In 2011 the airframe and parts were moved to the BNAPS workshop at Harbour Farm and the work to restore "Charlie November" began. In 2016, VCN was moved again into a larger workshop at Brickfields and the aircraft slowly began to take shape. Even though some grants were available for heritage products, it became clear that the costs of restoring VCN to an airworthy condition were beyond the means of BNAPS and the decision was taken to restore it instead to a high quality static exhibit.



Work proceeded at Brickfields but was of course halted during the lockdown. In Dec 2020, the almost completed aircraft was partially dismantled and transported to what we think will be its final resting place at the Wight Heritage Museum at Northwood on the Island. VCN was re-assembled and work has continued to return it as it was when it was the first of many BN aircraft to be delivered to Aurigny Airways for service in the Channel Islands.

In September 2022, at an open day at the museum, G-AVCN was the star attraction and some of the restoration team posed in front of Charlie November for the local press.



At the same event, a commemorative plaque was unveiled on the side of VCN showing the names of the Restoration Team.



We have also "gained" the front fuselage of Islander VQ-SAC which was written off in an accident. This is being re-furbished and I had partially fitted some flight simulation Kit for the open day so that visitors were able to "fly" an Islander out of and (hopefully) back into the airfield at Bembridge without hurting themselves - or me! Over the coming months the full Sim Kit will be installed.



Charlie November itself is now 98% complete and the full "un-veiling" is planned for early 2023. I will of course include a report on that in the Newsletter.

Clynt Perrott