



Ridgeway Repeater Group. Newsletter Second Quarter 2022

Messages/Notices

RRG Annual General Meeting 2022

The AGM of the Ridgeway Repeater Group will be held on **Wednesday 11th May 2022** at Thrings Solicitors, 6 Drakes Meadow, Penny Lane, Swindon, Wiltshire SN3 3LL at 19.30.

Please ensure you book in on entry to the meeting.

The AGM is also the time to renew your membership for 2022/23 please see our website www.rrg.org.uk for more details.

GB3TD Update April 2022

After a long and protracted effort to change GB3TD to a widesplit frequency split, this was achieved on Sunday February 20th 2022.

The new channel is UR63 with the repeater Tx being on 438.3875Mhz and the Rx on 430.7875Mhz. The CTCSS frequency remains the same on 118.8Hz.

This went ahead without any issues using the filters which had been previously used when UR67 was used last.

Tests on the receive sensitivity of TD indicated a gain of around 10db compared with the old RB3 setup.

This has been noticeable on most transmissions including the GB3TD-L Echolink where I can quite happily run 50mWatts instead of 500mWatts on the link to give the same results.

I for one, think that the change of frequency was for the good of everyone and to get away from the QRM in the 433Mhz - 434Mhz section of the band.

Some stations experienced problems with the -7.6Mhz shift and programming their radios in general but I now think that this has been largely overcome by most of the users.

Thanks go to those at the SDARC who helped out reprogramming some members radios at club meetings.

We would still like to complete our long-awaited antenna change job and as mentioned before and will require planning in with the site owners and mast climbing persons.

I will update you more at the AGM

73 Rob

The two following articles has been submitted by Robin G8VVY.

“Receiving & Decoding of Satellite Telemetry Data” and the second one is an article he wrote for the R.A.T.O magazine OTNews.

RECEIVING AND DECODING SATELLITE TELEMETRY DATA

I am indebted to both Mike Rupprecht/DK3WN, Andrey S. Kopanchuk/UZ7HO and George Rossopoylos/SV2AGW for providing the means to achieve this, by way of their telemetry decoders, KISS frame compatible software TNC and high speed sound-modems.

I am not going into the complexities of how each of these components work but will detail what I needed to do in order to pick up and decode the data from a small, currently, number of low earth orbit satellites. The described method is for the WindowsTM operating system only.

It is also assumed that you will have already installed a suitable software defined radio and associated virtual audio cable (VAC). The VAC is necessary to ‘pipe’ the audio to the software packet terminal node controller which uses the computer’s soundcard as a modem.

A suitable VAC can be downloaded from the Internet; e.g. <https://vb-audio.com/Cable/index.htm>, and installation and set-up details are provided.

The beacons received on the satellites I’ve monitored have all been in the 430MHz range, and I have found that a 2 element 70 cm HB9CV has been more than adequate for the job.

I have to point out that all reception is carried out indoors, in a coach house, with the antenna hand held and accurately ‘pointed’ according to the relevant pass details ... which can be found from a number of different websites.

My computer is an i3-3220 CPU with 4Gb RAM and this is sufficient to run my SDR software of choice – HDSDR – and an inexpensive RTL-SDR – the Nooelec SMART IV.

One function of HDSDR, without which all this would be virtually impossible, is the fact that you can record the received AF and then – at your leisure – replay it, convert it to ASCII and then decode it at a later time.

It is not critical as to where the FM discriminator centre frequency is set as this can be adjusted when playing back the recorded wav file.

I’ll now describe the various files and software packages that I needed to install.

NOTE: I always virus check any data retrieved from the Internet regardless of its source!

As Mike/DK3WN's programmes have been written in MS VB6 and compiled for 32-bit Win, it might be necessary to install MS VB6 run-time files. VB6 is still currently supported by MS.

More critical, I found, was the need to install a number of ActiveX controls, which can be found at Mike/DK3WN's website at dk3wn.info. If you are running a 64-bit Windows version – I use 64-bit Windows 8.1 in this instance – you need to place the downloaded .OCX files in the C:\Windows\SysWOW64 folder.

Each file needs to be registered in the Windows registry server – using regsvr32 – and the programme version needed when registering 32-bit .OCX files on a 64-bit OS is the regsvr32 found in the C:\Windows\SysWOW64 folder.

This is done in command line and you need to run CMD as an administrator – right-click and select 'Run as administrator' – then from C:\Windows\SysWOW64 execute regsvr32 filename.ocx for each file. Next come the various packages, each of which can be found where indicated:

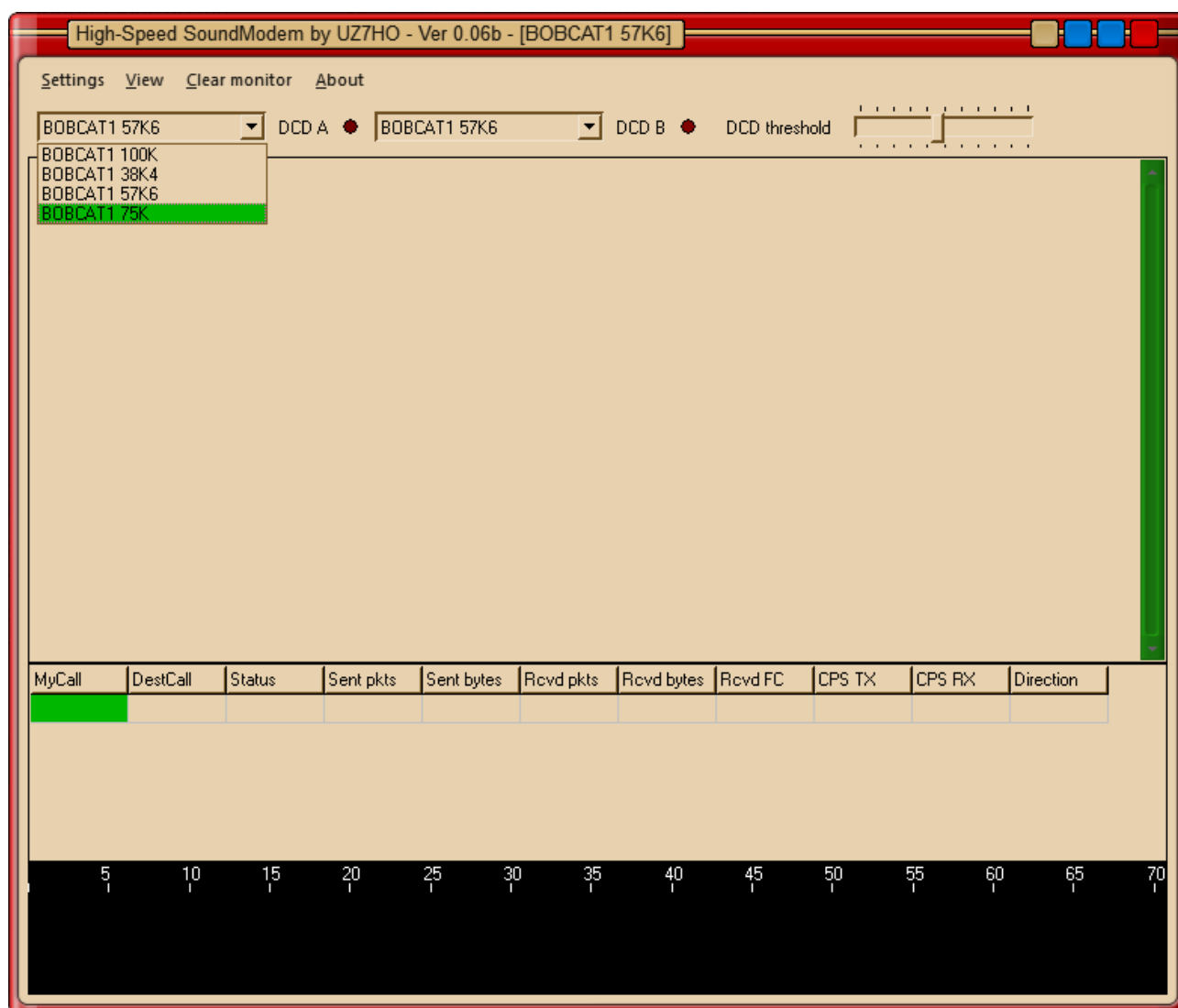
High Speed Sound-modem

This is a dual channel/port packet terminal node controller (TNC) that uses the computer's soundcard as a modem. There are a number of different 'flavours' on Andrey/UZ7HO's website and you will need to choose the right one for the intended satellite.

 Bobcat1	22/12/2021 08:32	File folder
 BPSK-9K6	22/03/2021 18:43	File folder
 DIY1	22/05/2021 10:00	File folder
 dstar-one	14/02/2019 20:38	File folder

BOBCAT-1 is one that I managed to receive and decode, and JAISAT-1 – using Mobitex, a narrowband short burst data packet – will work with the DSTAR-ONE sound-modem.




The only settings I needed to check/adjust were the baud rate one, only on Channel 'A', and the decode threshold level.



AGW Online KISS+

This works alongside the high speed sound-modem from Andrey/UZ7HO and enables decoding of the AX.25 packet format telemetry in KISS mode. The .KSS files can then be decoded using Mike/DK3WN's programmes.

AGW Online KISS requires a small amount of configuration once installed.

 agw_online_kiss_plus.exe	01/10/2016 17:16	Application	160 KB
 agw_onlinekiss.ini	22/12/2021 07:22	Configuration sett...	1 KB
 bobcat-1.txt	22/12/2021 07:21	Text Document	1 KB

There are an associated .INI and .TXT file.

This is my modified .INI file:

```
#
# This is the ini file for AGW_ONLINEKISS plus v. 3.2
#
```

```

#
PORT = 127.0.0.1:8000
#
# MIRROR_COM_PORT = 7
# MIRROR_COM_SETTINGS = 9600,N,8,1
#
FILE_PATH = c:\users\XXXXXXXXXXXX\downloads
#
TIMEFRAMES = YES
LOGFILE = NO
PAYLOADFILE = NO
#
CALLSIGN = G8VVY-15
#
# use QTH height in km
#
QTH_LAT = 51.4866
QTH_LONG = -1.757
QTH_HEIGHT = 0.092
#
TLEFILE = C:\Users\XXXXXXXXXXXX\Downloads\agw_online_kiss\jaisat-1.txt

```

I did not need to change any of the lines except for those that are highlighted.

The TLEFILE line refers to the two-line element set providing the satellite orbit details. These can be found from various sources on the Internet, including Mike/DK3WN's site.

This is my modified .TXT file:

```

JAISAT-1
1 44419U 19038F 21345.42220444 .00001726 00000-0 96789-4 0 9999
2 44419 97.6129 309.7844 0022289 63.6401 296.7115 15.14559073134577

```

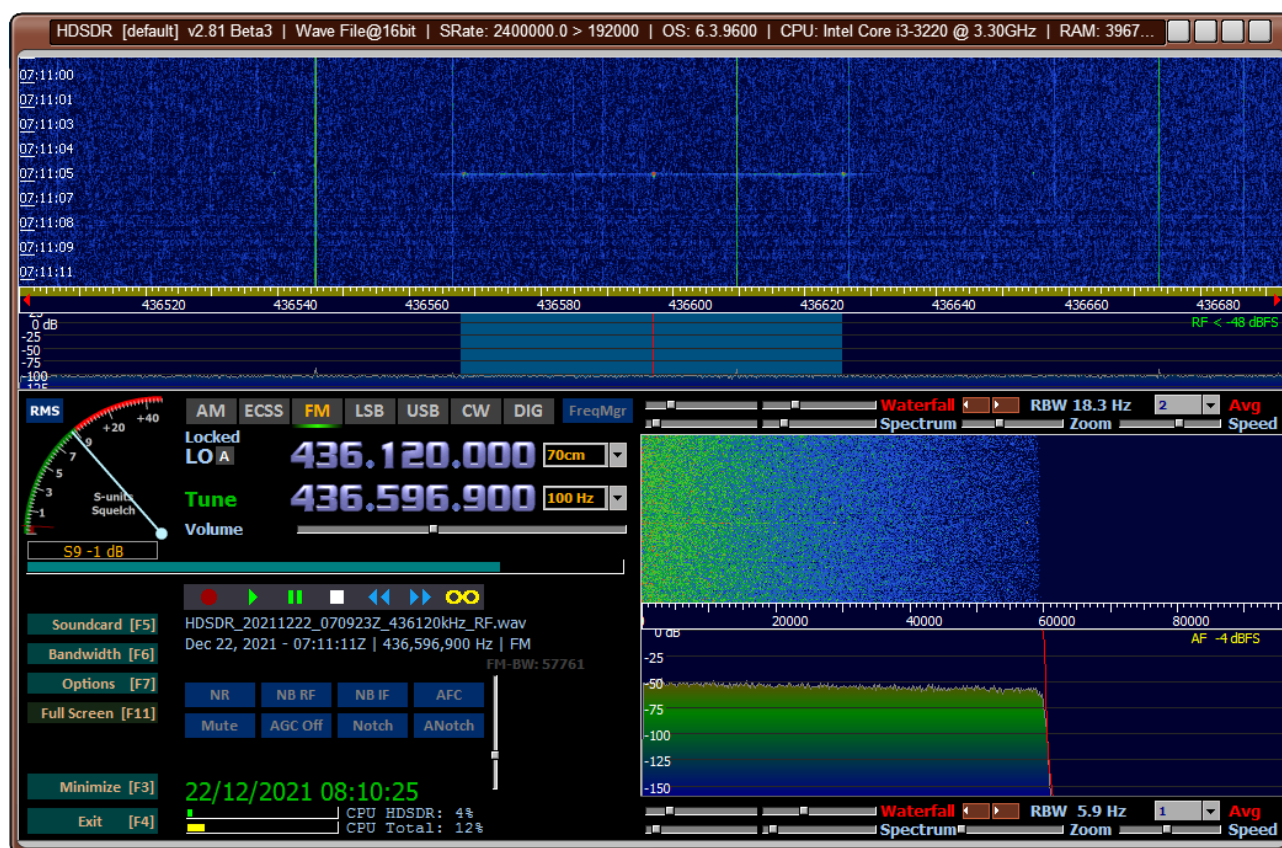
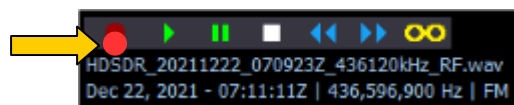
This being the relevant TLE data for the JAISAT-1 satellite.

Once you have a copy of the AGW Online KISS+ files, it's easy to just copy the folder for each different satellite you wish to follow and rename it accordingly.

Telemetry Decoder and overall procedure

There are a huge number of these decoders on Mike/DK3WN's website and so it's just a case of installing the correct one for the satellite in question.

Once you are ready to receive the satellite telemetry, be sure to remember to start the AF recorder!



In HDSDR the .WAV files are stored under 'My Documents' in a sub-folder called 'HDSDR'.

They are quite large and once the file-size reaches 1.86Gb, a new one is written, so you will need to be aware that storage space is used up quite quickly! Once I've finished decoding I usually delete the associated audio files.

Once the pass has completed, and you have hopefully seen some traces – see above example - you can re-play the relevant .WAV files and adjust the bandwidth and centre frequency correctly to enable the relevant HS

Soundmodem to convert the audio to create a KISS file. The KISS files are

stored in a folder, which is automatically created the first time the programme is run, as .KSS extension files. The folder will be appropriately named as per the satellite.

NOTE: AGW Online KISS+ and HS Soundmodem communicate over localhost port 8000 which you may need to allow in Windows firewall, or which you may already be using elsewhere. If it's in use, the relevant .INI file would need to be modified.

I usually carry out the above adjustments with the computer speakers still connected as the receive audio device, then I switch to the Virtual Audio Cable in order to send the signal to the sound modem.

With AGW KISS+ and HS Soundmodem running you should see the data hex dump appear in the UZ7HO window:

High-Speed SoundModem by UZ7HO - Ver 0.06b - [BOBCAT1 57K6]

Settings View Clear monitor About

BOBCAT1 57K6 DCD A BOBCAT1 57K6 DCD B DCD threshold

1: [BOBCAT1] [07:39:39R]
[priority:2 src:4 src_port:0 dest:27 dest_port:30 len:150 FEC_err:0 RS_err:7]
89 B7 80 01 01 03 02 07 0C C2 2C 61 C2 D2 19 00 04 57 38 50 5A 53 00 42 4F 42 43 41 54 2D 31 00 01 41 F4 D9 0D C2 68 18 14 48 B4 00 04 56 B4 32
1E 61 C2 D2 19 00 04 2F 66 6C 61 73 68 2F 63 66 67 73 2F 41 50 5F 4E 4F 41 55 54 4F 52 55 4E 5F 46 4C 41 53 48 30 2E 6A 73 6F 6E 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 BE 85 00 00 00 B3 00 C2 2C 61 C2 D2 19 00 04 32 34 48 72 4C 65 61 64 65 72 3A 57 37 4B 4B 45 00 93 4F C6 2E B7
2A 76 4B E4 90 81

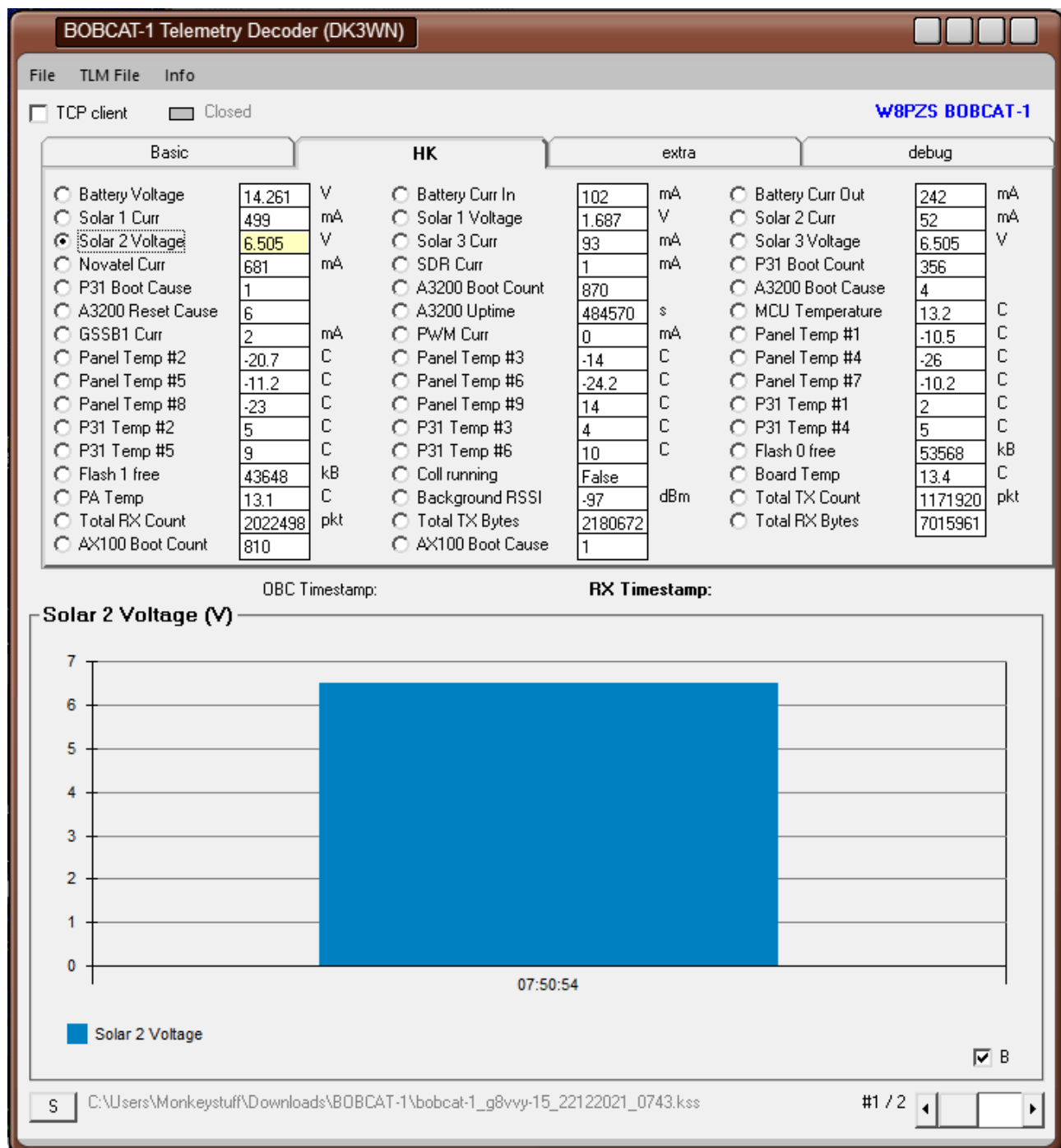
MyCall	DestCall	Status	Sent pkts	Sent bytes	Rcvd pkts	Rcvd bytes	Rcvd FC	CPS TX	CPS RX	Direction

5 10 15 20 25 30 35 40 45 50 55 60 65 70

and a .KSS file in the newly created folder:

 BOBCAT-1	22/12/2021 07:43	File folder	
 bobcat-1_g8vvy-15_22122021_0743.kss	22/12/2021 08:10	KSS File	2 KB

Then it is just a case of running the relevant telemetry decoder to convert the raw .KSS hex to readable formatted text.



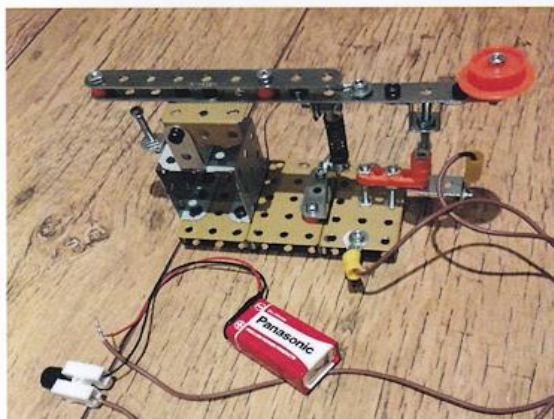
This is the second article from Robin G8VVY to whom I must thank him very much for the two articles this quarter hope you find this interesting as I have. This one is called "In Print Again"

The Journal of The Radio Amateur Old Timers' Association

OTNews



Maintaining the Traditions and Spirit of Amateur Radio Spring 2022 (Mar) OTN141



Another Meccano Key
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A new view on an old TX/RX
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My Sinclair Recollections
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Honour the past, enjoy the present, ensure the future

My Sinclair Recollections

By Robin Shelley - G8VVY/G4MRV/G2B (3020)

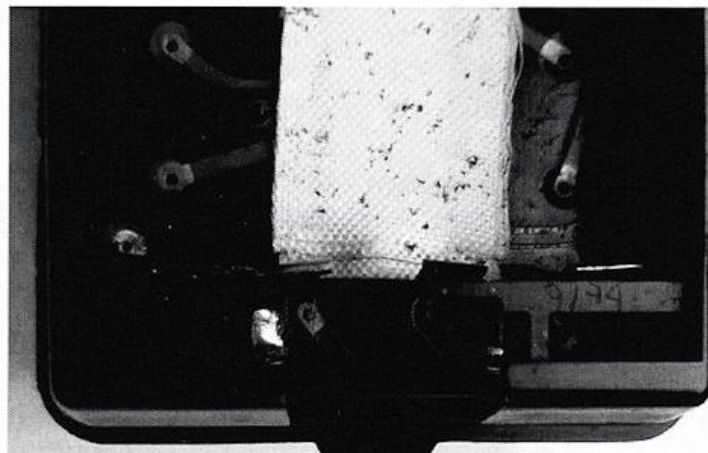
In response to the article reproduced from the RAOTC Australia by Clive Wallis/VK6CSW - and memories of Sir Clive Sinclair's products - I have recollection of a few that I was privileged to own over a period of time.

What lets me down is having a singularly sieve like memory, so I find putting together something like this extremely difficult! I hope you enjoy reading this and maybe it will trigger similar recollections!

In September of 1974 I constructed my Sinclair Cambridge calculator kit. I was 18 and in what was called the 'upper sixth form' at school.

My soldering technique wasn't particularly good at the time - it would change in the future to the point that I used to train others how to solder properly - so there were some bad joints that had to be re-done before I managed to get it to work ... but all was fine eventually. I remember bringing it into school on completion and the physics master - once he'd made his way through a group of other students all wanting a look at it - asking me if I would like to tell the class all about it in the upcoming lesson. I've always had to spend hours preparing for things like that, as a result of my atrocious memory, but I was fine with this

and managed to occupy most of the lesson period! The Cambridge worked fine for many, many years and has been joined by a small collection of electronic calculators over the years. Sadly it works no more but still looks the part!



Note where I scratched the date into the case!

I was given a non-working Sinclair Radionics DM-2 digital voltmeter, by my 'then' boss, sometime in 1976. He said I could keep it, but only on the understanding that I managed to get it working. By now I was 20 and this was a 'holiday job' whilst waiting to return to college. It had a carrying handle which doubled as a stand, angling the display for better visibility. I remember that one, or more, of the push button switches was sticking and not therefore routing the input signal correctly. Once that was rectified, I then set about calibrating it against the Company's Solartron DVM, after gaining suitable permission! I used the Sinclair regularly for a number of years until I could afford to buy my Fluke 77 in 1984 when the still partly working DM-2 was pensioned off.

I bought my first Sinclair Black Watch in 1976. I say 'bought' my first as that was exactly how it was treated by the Company. It came, fortunately, with a comprehensive returns warranty, which I took advantage of the tune of some 9 more watches! Sinclair covered all the return postage and so I continued to send back the watch as soon as it went faulty - usually within a few days of receipt - and waited for its replacement. Some had good readouts but you were never quite sure exactly where you had to push the front buttons, or how hard. Sometimes it was the reverse. I remember when the final parcel arrived I jokingly gave it a shake ... and it rattled! This particular poor old watch hadn't survived the journey. It was replaced with a Trafalgar watch which was much more reliable.

I could not afford to buy the ZX80 when it was first released, and maybe that was a good thing knowing the reputation Sinclair products had gained! I did save up and buy the ZX81 in kit form though. It was a much nicer to build than the calculator, with a professional screen printed PCB; and it worked first time! I used it together with the JVC CX610-GB - a small colour TV/monitor - and the image quality was fine. Although licensed by now, I didn't use it for any amateur radio related projects but did write a number of programmes to calculate water flow-rates over different type of open channel weir plates - my job at the time! I liked the idea of having complete BASIC commands on a single key. The membrane keyboard took a bit of getting used to but seemed quite robust. Programmes were stored on audio cassette tape. Sadly I didn't keep hold of the ZX81, but I still have some of the audio tapes, the Grundig player and the JVC TV! It was replaced with the Computers Lynx and then the BBC Micro Model 'B'.

My experiences with Sir Clive Sinclair's - Uncle Clive's - products have, overall, been very positive ones. They taught me a great deal about electronics, identification and soldering of small components and the basis of micro computer programming - and changed the way we did things, through their use, for ever.

The Last Word

For this quarters last words I don't have any radio stories or technical mishaps, just some hard work as a lot of my time has been taken up with preparing for our foray into this years amateur radio special events season with a trip to Ramsbury to put on airfields on the air at the begining of may 2022. Also have been doing a lot more volunteering work with our local community radio station which is beginning to take a lot more of my time, as it seems my presence is required more and more and looking at the outside broadcasts that are planned I think I'm going to be very busy this year but unfortunately not a lot of amateur radio stuff but I'm still going to go ahead with our planned amateur radio events.