

SU S Microwave WebSDR

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What is it?

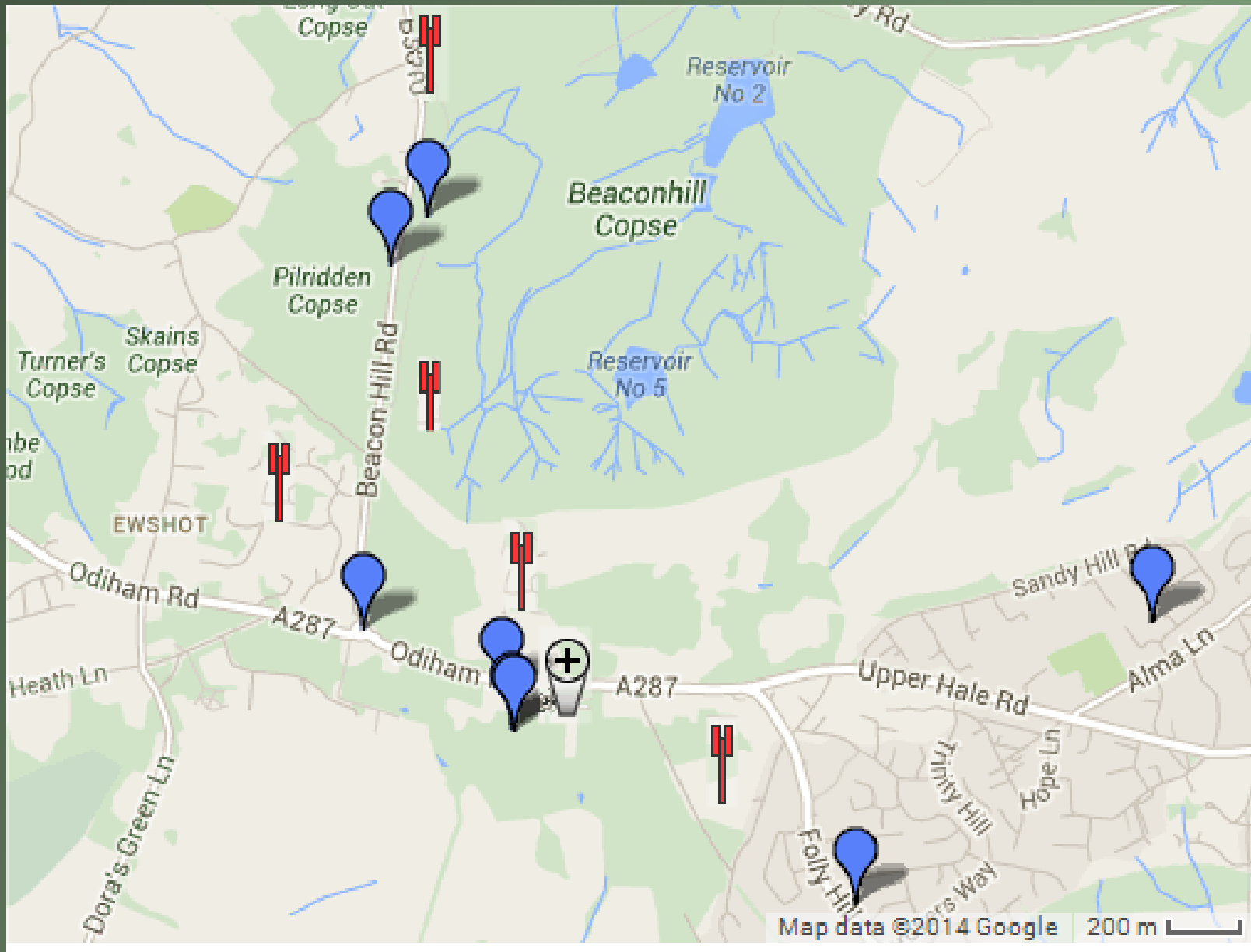
- A system of remote SDR receivers which are on the web
- Useable by anyone with a standard web browser
- All modes and many users!
- The system at Farnham runs s/w developed by www.sdr.org
- More than 30 systems around the world
 - Most cover HF but Farnham covers VHF/UHF

Where is it?

IO91OF - Latitude: 51.23, Longitude: -0.82



The site



Farnham SDR is different!

- Most websdr cover HF and VHF using sound cards
 - Only 96 KHz band coverage
 - Just like Softrock
- OK for HF but no good for VHF / UHF
- Farnham uses the cheap £5 RTL dongles
 - Covers 2 MHz band!
 - 50 MHz up to 2 GHz!
 - And we run 6 of them!
 - But the rx performance could be better....



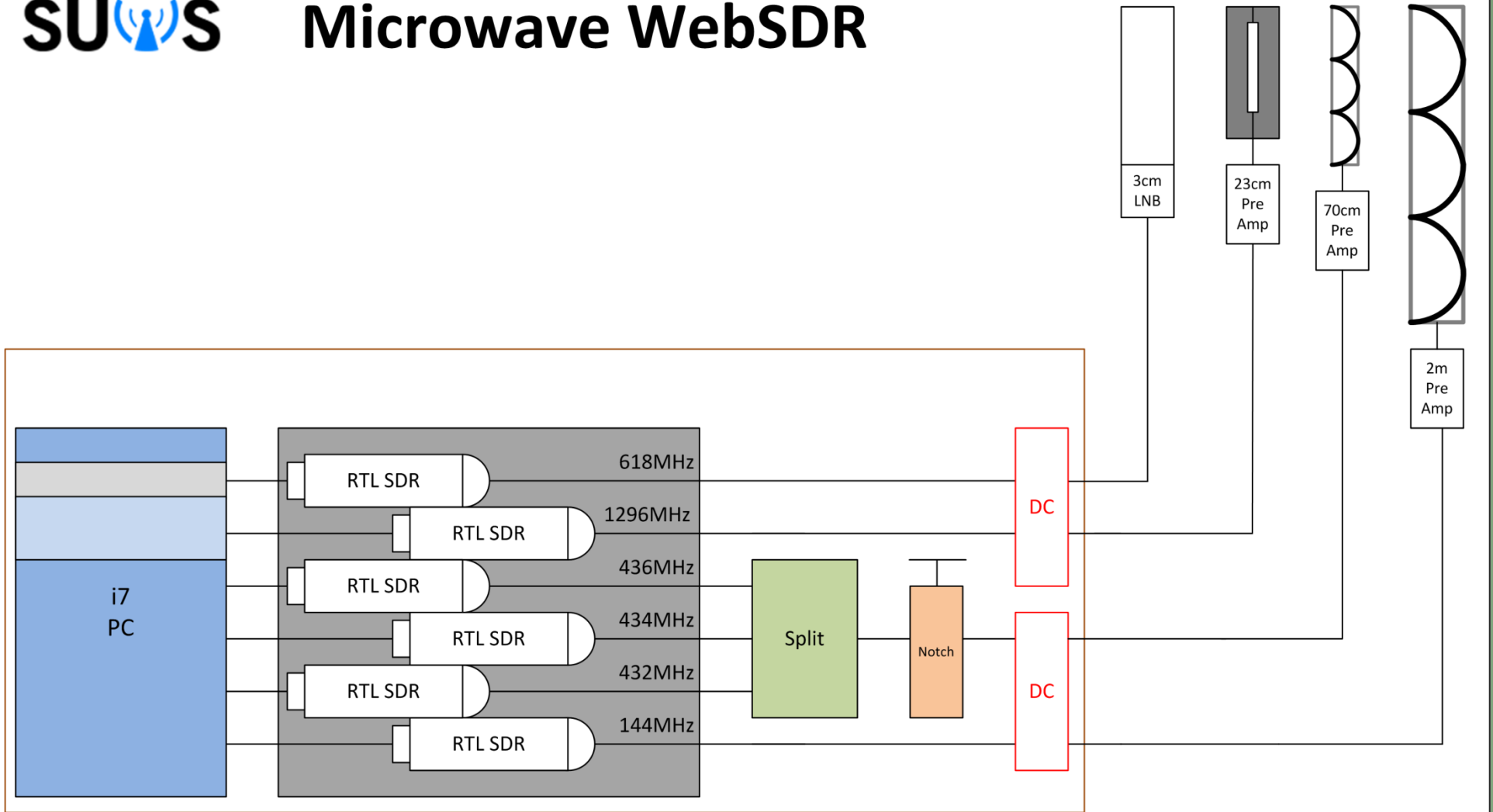
So why 6 receivers?

- So we can cover lots of bands!
 - 144 – 146 MHz = 2mts
 - 432 – 434 MHz = 70cms Narrowband and beacons
 - 434 – 436 MHz = 70cms FM & HAB & Satellites
 - 436 – 438 MHz = 70cms satellites
 - 1296 – 1298 MHz = 23cms NB and Beacons
 - 10368 – 10370 MHz = 10 GHz NB and beacons (via LNB)

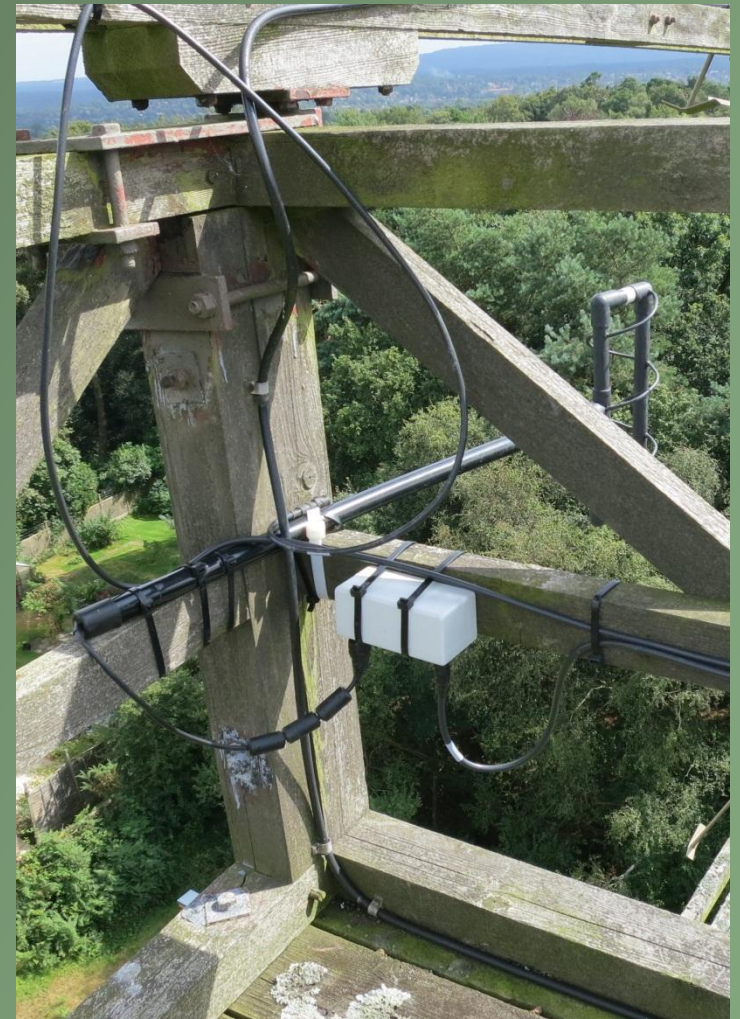
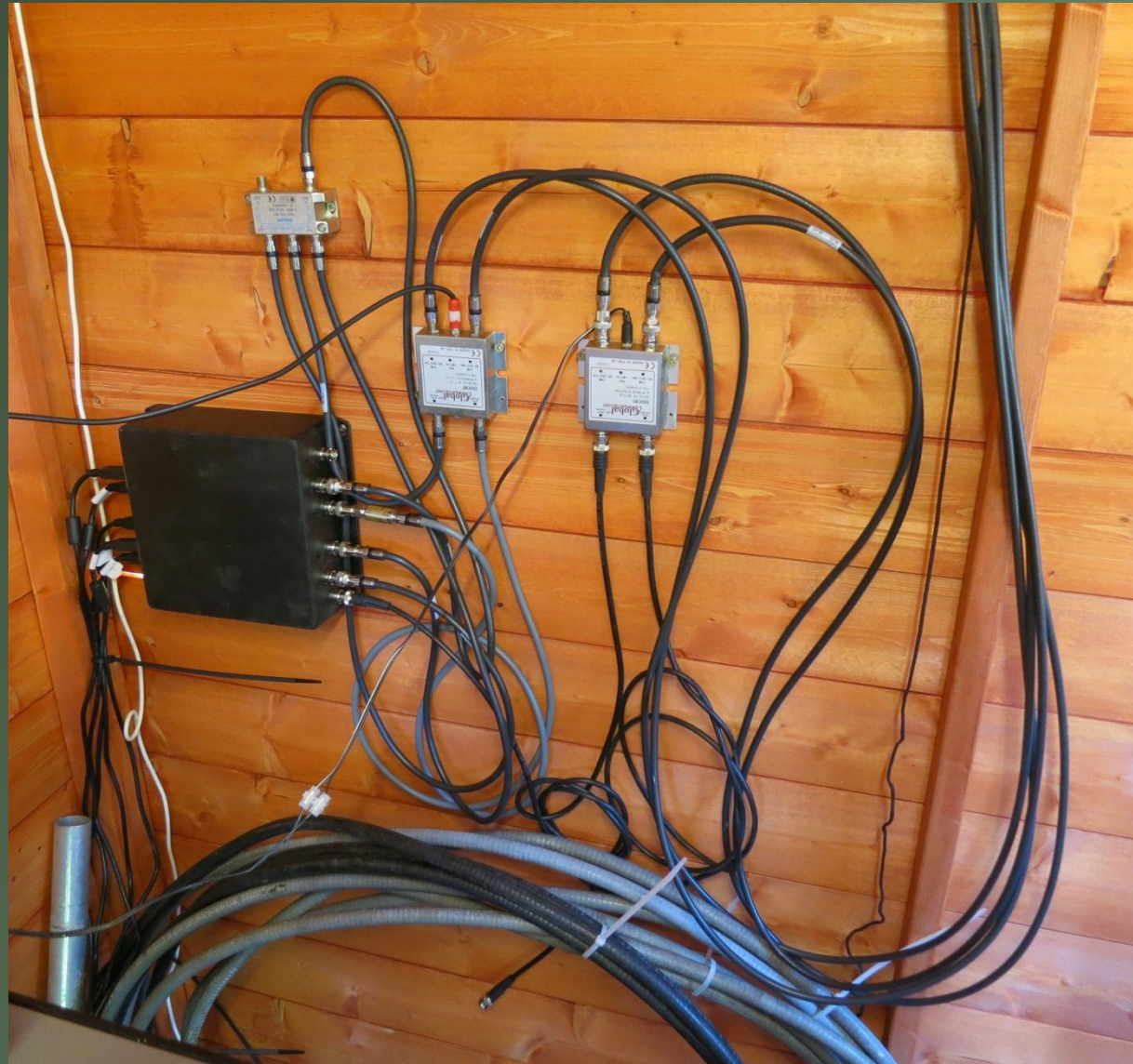
System Configuration



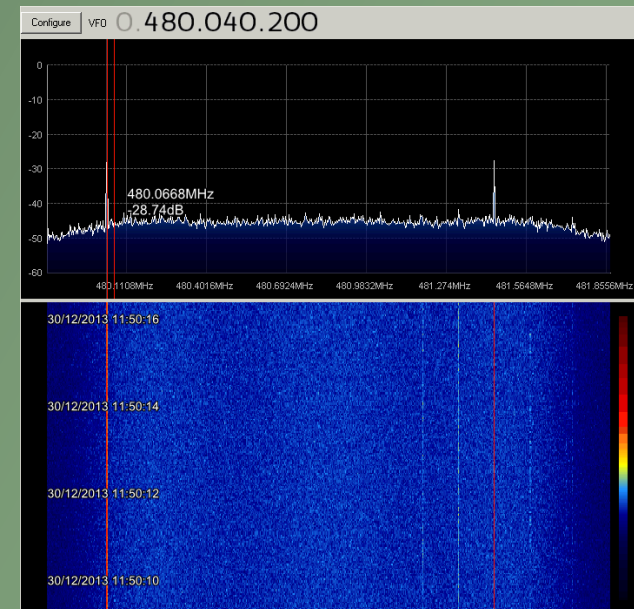
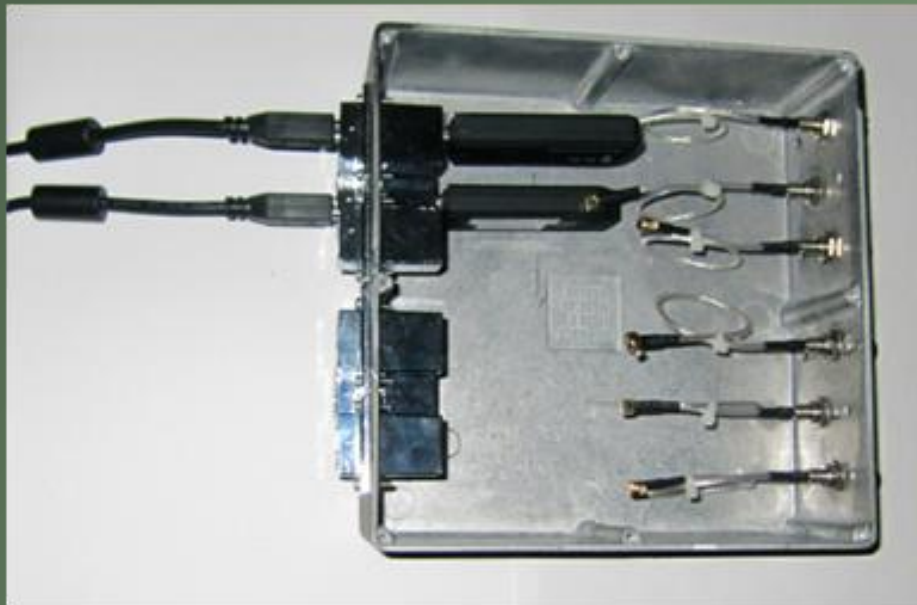
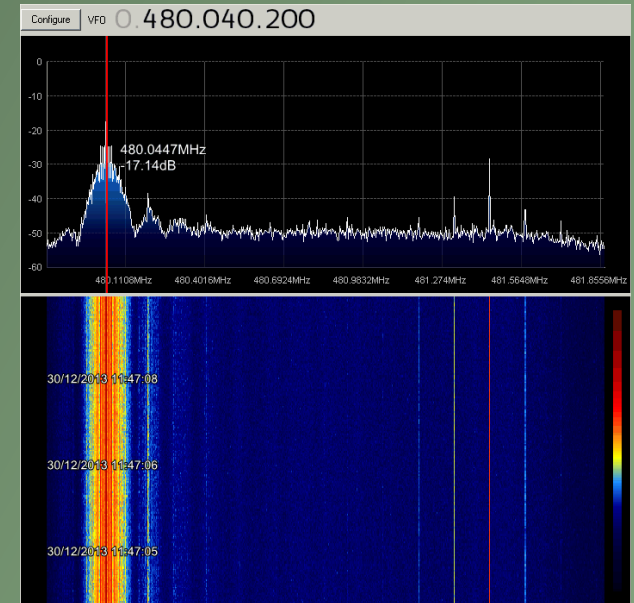
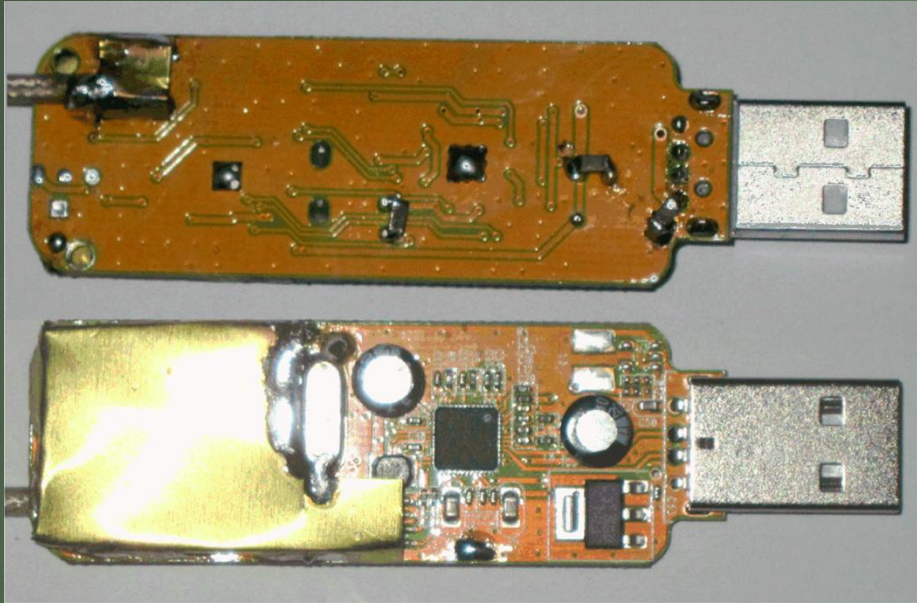
Microwave WebSDR



The RF in the shed



RTL-SDR Modifications



10 GHz rx for less than £25!

- 144, 432 and 1296 all just use the RTL dongle
- On 10 GHz the £5 RTL dongle is fed from a PLL satellite LNB
- Available from ebay for £15
- A stable sub 1dB NF rx on 10 GHz for less than £25



uWave Antennas



VHF & UHF Antennas (Martin – G8JNJ)

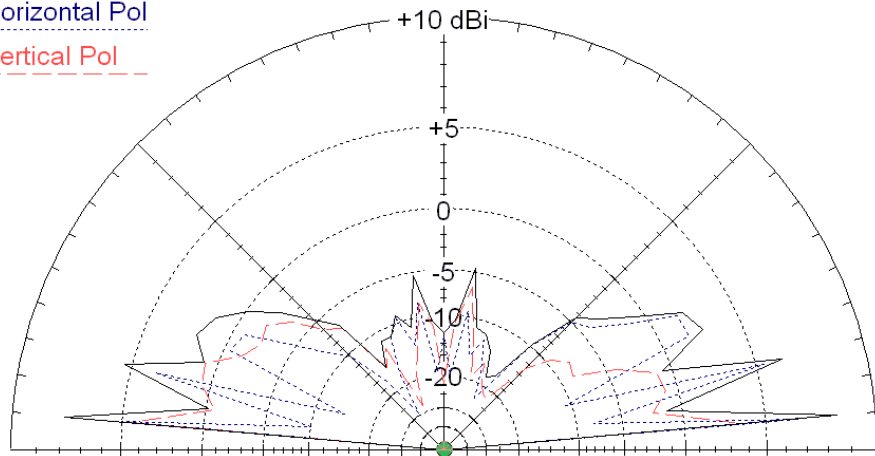


* Total Field

EZNEC+

Horizontal Pol

Vertical Pol



3 Turn stretched helix fed with gamma match at centre at 10m above ground with coax

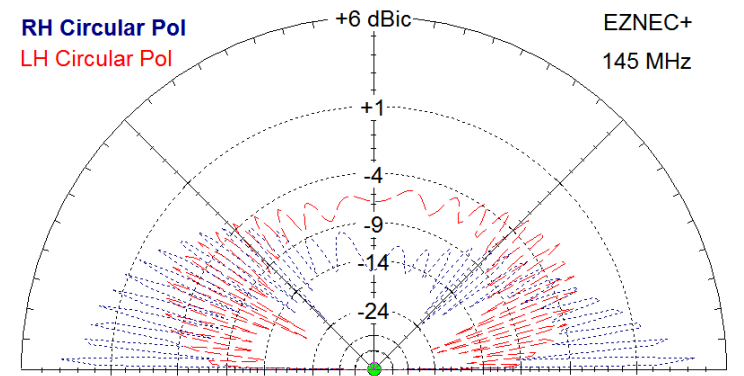
437 MHz

RH Circular Pol

LH Circular Pol

EZNEC+

145 MHz



So can I use it?

- YES!
- Go to <http://websdr.suws.org.uk>
- You will instantly hear APRS on 144.800 MHz
 - The default start frequency
- But what if someone else is using it?
 - No problem – it can support 25+ simultaneous users all tuned to different (or the same) frequencies and modes!

And then....




- Log in with your call sign or name
 - You do not need to be licensed to use it
 - You will then appear on the scale and others can see what frequency you are listening to
- What will I hear?
 - Anything on VHF / UHF that you would expect to hear on a 90ft mast on Farnham hill!
- Why can I hear GB3FN everywhere?
 - Because it is VERY strong and the rxs are cheap but...
 - We do have a big notch filter inline but...

WEB GUI

Your name or callign: 1

2 View: all bands others slow one band blind Allow keyboard: 3

4 Waterfall: Java HTML5 Sound: Java HTML5



5

6

Frequency: kHz 7

Band: 3cm 437 435 433 2m

8

Bandwidth: kHz @ -5dB, kHz @ -50dB 9

Waterfall view: zoom out zoom in max out max in 10

Speed: Size: View: Hide labels

Logbook: Call of station that you hear: 15

Comments, if any: submit

11

12

13

14

16

Chatbox: This chatbox is intended to discuss the operation of the WebSDR. The operators of this site disclaim any responsibility for text appearing in this chatbox. 17

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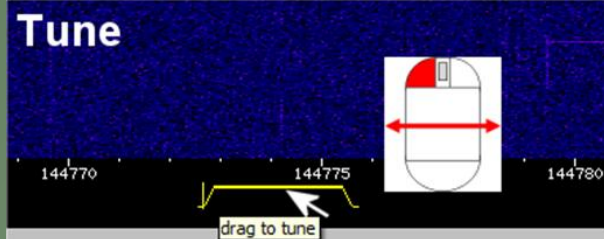
1807s ***** sorry not registered with the site yet- on way
1807s ***** Have noticed that if I been in the direction of the WebSDR on 2k it de-tunes by 160k. soon a 9 xie horizontal page
2008s G4DCV: Did a frequency calibration check yesterday using GB3VHF which is GPS locked and runs JF650
2008s G4DCV: If you tune to 141.1211 27450 should indicate DF = 5. I made the WebSDR 9.74kHz out (I realize it has been noted it is about 10kHz out)
2008s G4DCV: Sorry that's in USB mode- I had to tune the WebSDR to 141.121 to get GB3VHF DF= -11dB
2020s G6JWJ: We still have to calibrate the frequency but may not be able to get it spot on as we are only using a 15 degree i-1)
2021s G6JWJ: Done! bar 40 dB dynamic range we have optimized for weak signals so don't be span at us i-)
2023s G6JWJ: Now waiting for ISS pass at 20:130 GMT
2023s G6JWJ: Excellent visible pass in Southern UK really bright at 20:130 GMT a
2040s G6JWJ: Just got some photos of the pass I think... i-)
2050s G6JWJ: Photos of the ISS passing over: https://www.facebook.com/media/set/?set=pa.1015261181421387,1078741833,1066228384;user=141114678204f
18 Aug 0744s G6JWJ: ISS faaaaa UK today at 14:11, 16:26, 16:53, 19:40, 21:16 4 22:15 GMT
0744s G6JWJ: Russian spacewalk is planned for today and hand launch of Cubesat
0749s G6JWJ: ISS pass at 21:16 from West to East with peak at 17 degree elevation in the SW should be visible
0749s G6JWJ: More info about Chesqui-1 cubesat at http://amsat-uk.org/
0750s G6JWJ: More info about the ISS and amateur radio operation at http://www.issradio.com/
    
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chatbox submit 18

Statistics: Past 10 seconds: CPUload=50.0%, 7.00 users, audio 325.5 kbps, waterfall 253.7 kbps, http 9.0 kbps 19

WebSDR HTML5 sound - Copyright 2007-2014, P.T. de Boer. pt@ptboer.nl 20

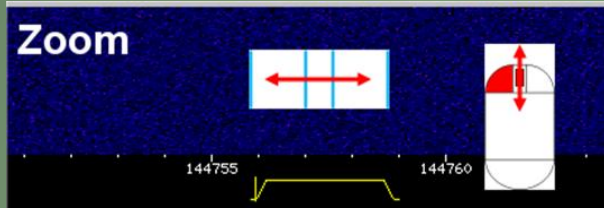
Tune



144770 144775 144780

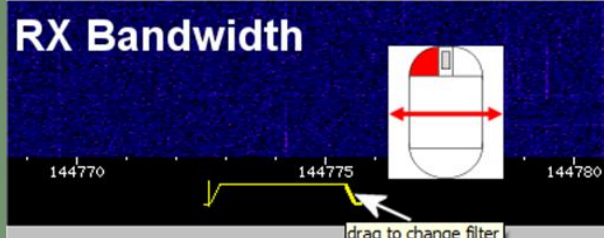
drag to tune

Zoom



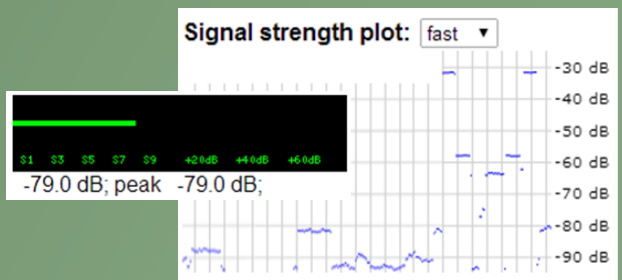
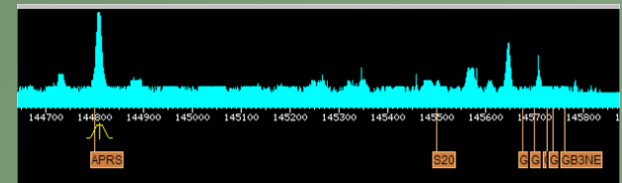
144755 144760

RX Bandwidth

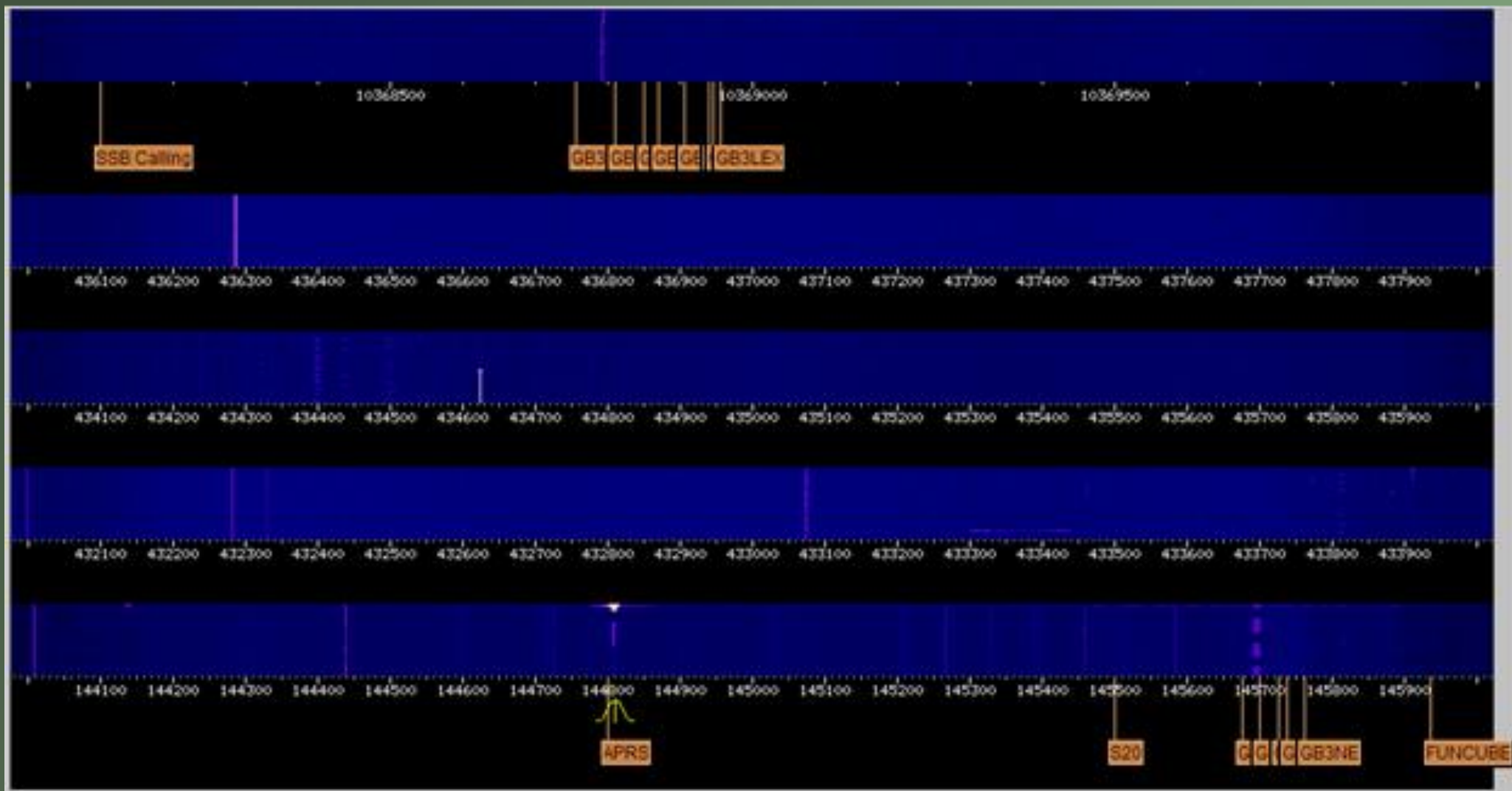


144770 144775 144780

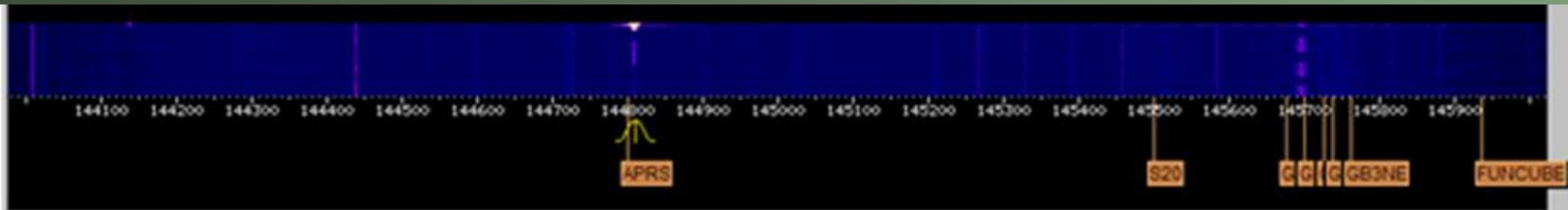
drag to change filter



Who is on the band ?

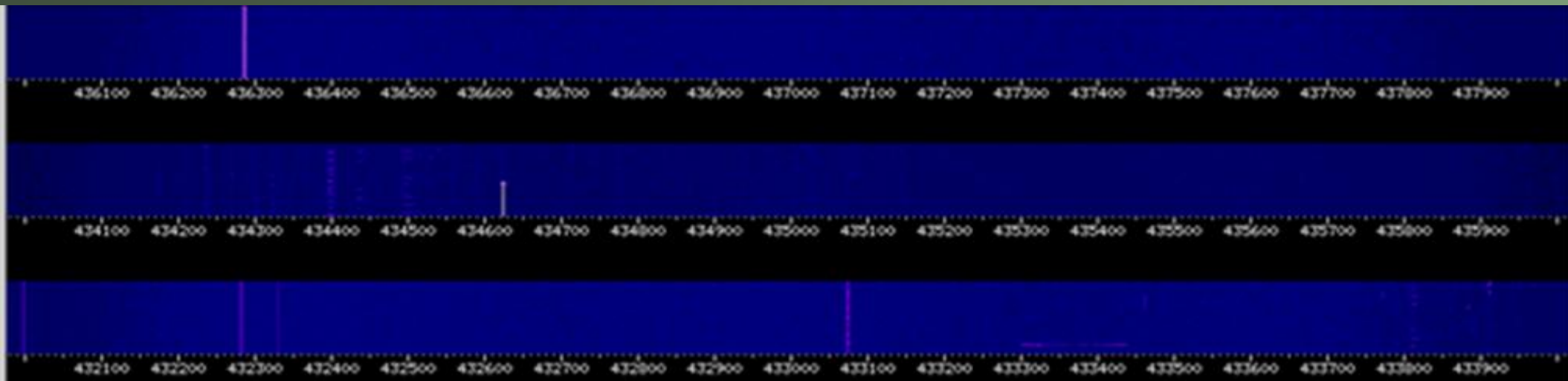


2 metres



- GB3VHF beacon = 144.430
- 2m FM simplex = 145.500
- 2m repeater outputs = 145.600-145.7875
- International Space Station FM = 145.800
- ISS Packet Digipeater = 145.825
- FunCube-2 = 145.930 – 145.950
- AO-73 (FUNCube-1) = 145.950 – 145.970
- AO-7 (Phase-2B) = 145.975-145.925

70cms



- 70cm SSB, CW & beacons = 432.000-433.000
- 70cm FM repeater = 433.000-433.400
- 70cm FM Simplex = 433.400-434.800
- Short range radio devices (Licence free) = 434.900
- High Altitude Balloon RTTY = 434.000-434.800
- FO-29 (JAS-2) =435.900-435.800
- Cubesat beacons (40+) 436.800 - 437.700

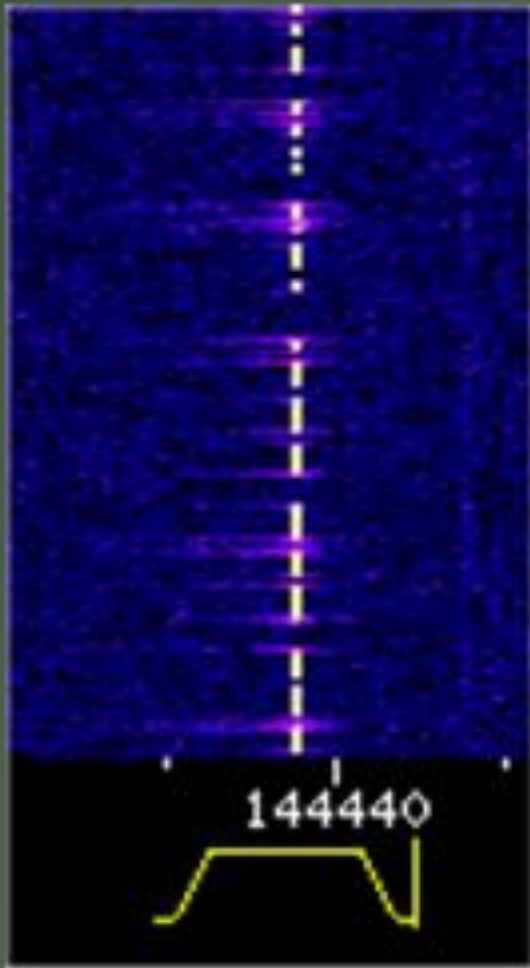
23cms and 10 GHz



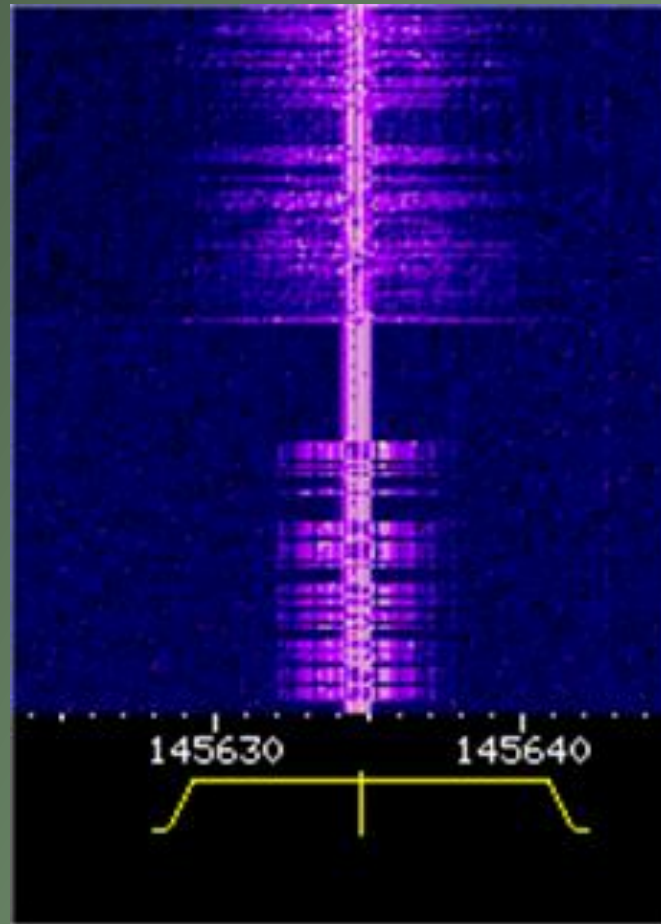
- 23cm NB & beacons = 1296.000-1297.000
- 23cm FM repeaters = 1297.000-1298.000

- 3cm NB modes = 10368.100-10368.250
- 3cm beacons = 10368.750-10369.000
- GB3SEE (visible at all times) = 10368.850
- Other beacons via Rain scatter!

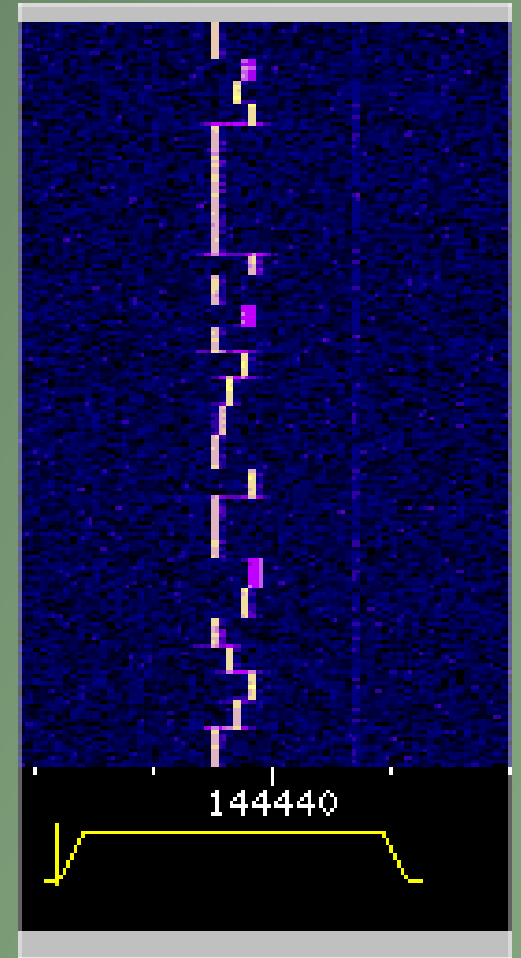
Different modes



CW

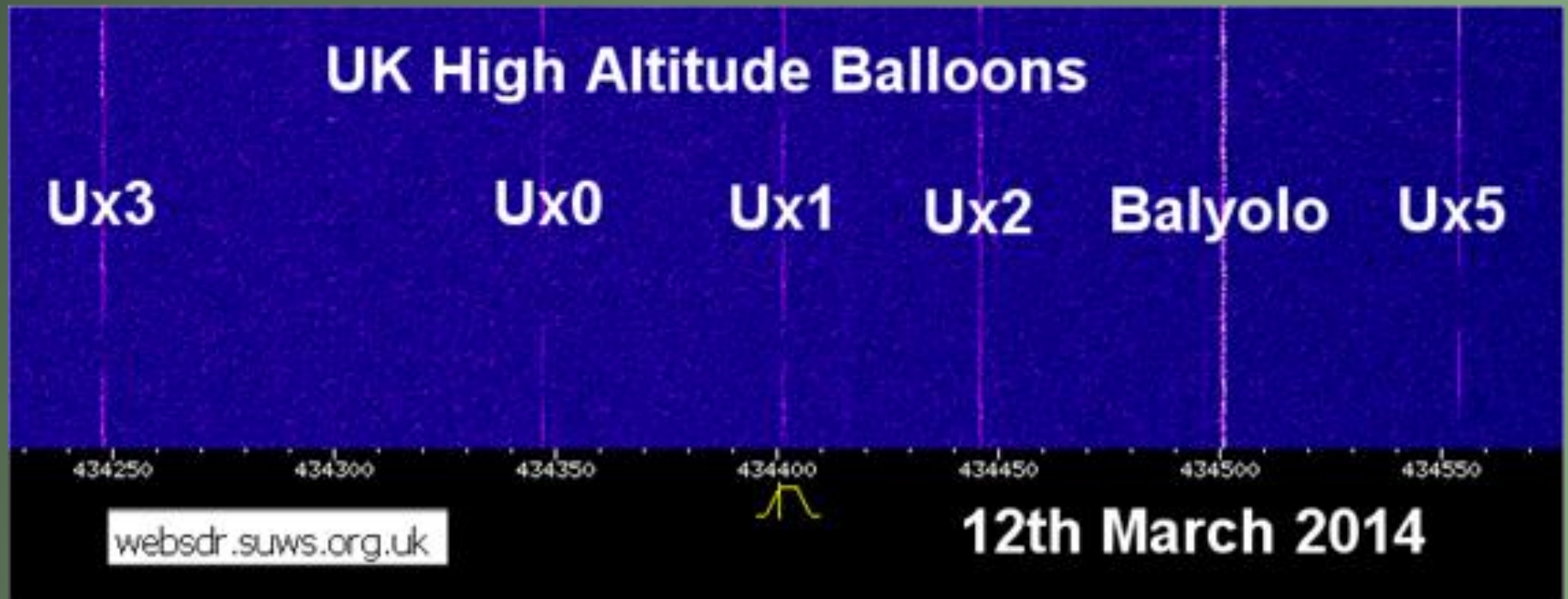


FM

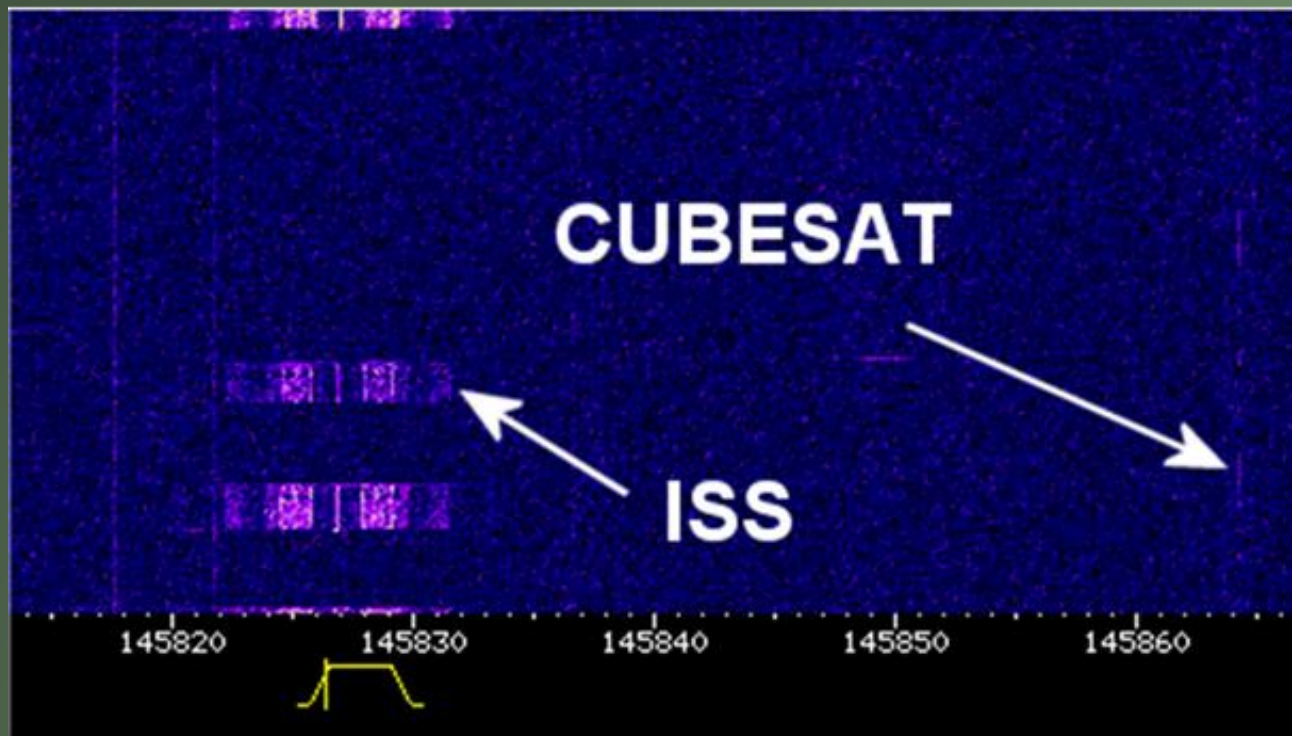


JT

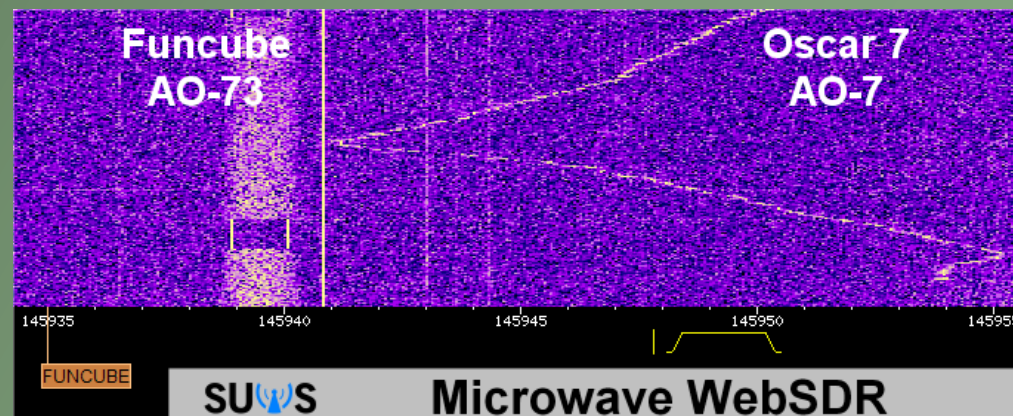
Receiving balloons - UKHAS



Satellite users



```
RS0ISS audio level = 41 [NONE]
[0] RS0ISS>CQ:>ARISS - International Space Station
Status Report, --no-symbol--
ARISS - International Space Station
```



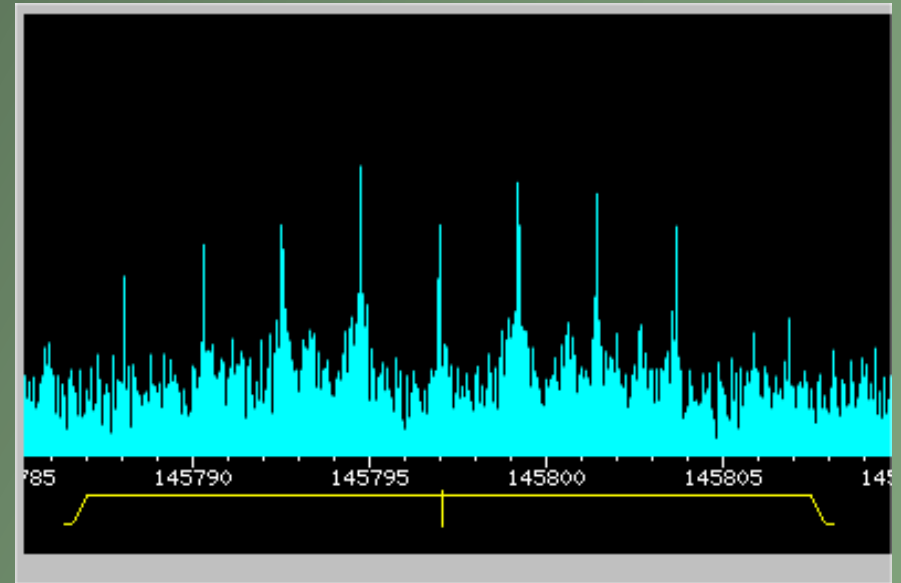
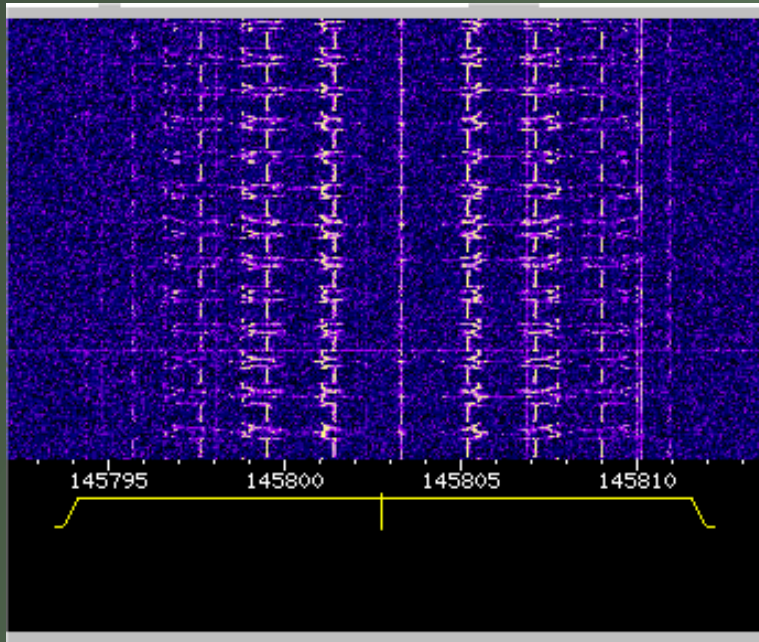
LitSat-1



“The Southampton University Wireless Society (SUWS) Web-based software defined radio (SDR) has been used to receive signals from the new amateur radio LitSat-1 satellite.”

“The Lithuanian satellite LitSat-1 was deployed from the ISS on February 28 and the builders of the satellite have been able to use the [SUWS WebSDR](#) to receive the satellite when it is out of the range of Lithuania.”

Different ways to see the signal



How do I decode signals?

- The SDR does not decode SSTV, RTTY etc signals
- You need to run the decode software on your PC
- Feed the audio out from your soundcard in to the input
 - Cable, VAC, Fbaudio
- Then you can decode what you hear
- You record and download the audio as a file!
- But remember the rx location is IO91OF!!!



ISS SSTV received at Farnham and decoded in Southampton!

Any Questions?

