QRSS

An experimental radio mode code for communicating around the world with *milliwatts*

Scott Harden AJ4VD | August 20, 2020 | Presentation for The Villages Amateur Radio Club K4VRC

» What is QRSS?

Tx: W2VV (New York, USA)

"After building it I hooked it up to the dipole on the roof and flipped on the power switch…

…My 100-milliwatt signal went up into the sky, bounced around between the ionosphere and the ocean a bit, and was picked up by a radio operated by ON5EX, in Belgium"

https://www.nycresistor.com/2010/06/26/crossing-the-pond-with-100-milliwatts/

» What is QRSS?

Tx: W2VV (New York, USA)

Rx: ON5EX (Belgium)

https://www.nycresistor.com/2010/06/26/crossing-the-pond-with-100-milliwatts/

» What is QRSS?

10.140 MHZ

W 2 V V

6 second dots

18 second dashes

5 Hz FSK shift

10 minutes

10140090
10140080
10140070
10140060
10140050
10140040
10140030
10140020
10140010
10140000
10139990
10139980
10139970
10139960
10139950
10139940
10139930
10139920
10139910 Hz

00:11 00:12 00:13 00:14 00:15 00:16 00:17 00:18 00:19 00:20 00:21

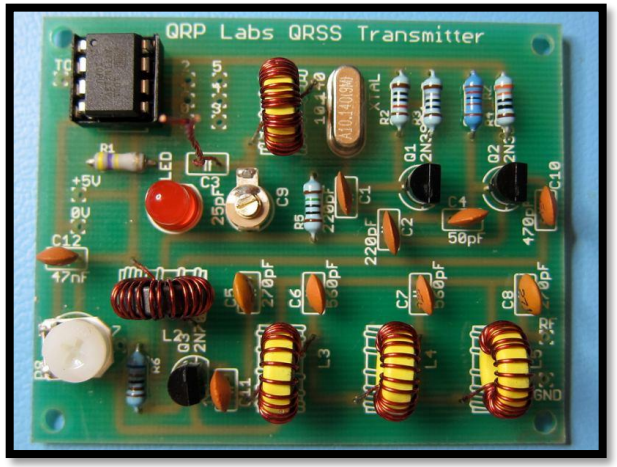
» What is QRSS?

QRSS is slow frequency-shift keyed (FSK) Morse code designed to be decoded ***visually*** by inspecting spectrograms

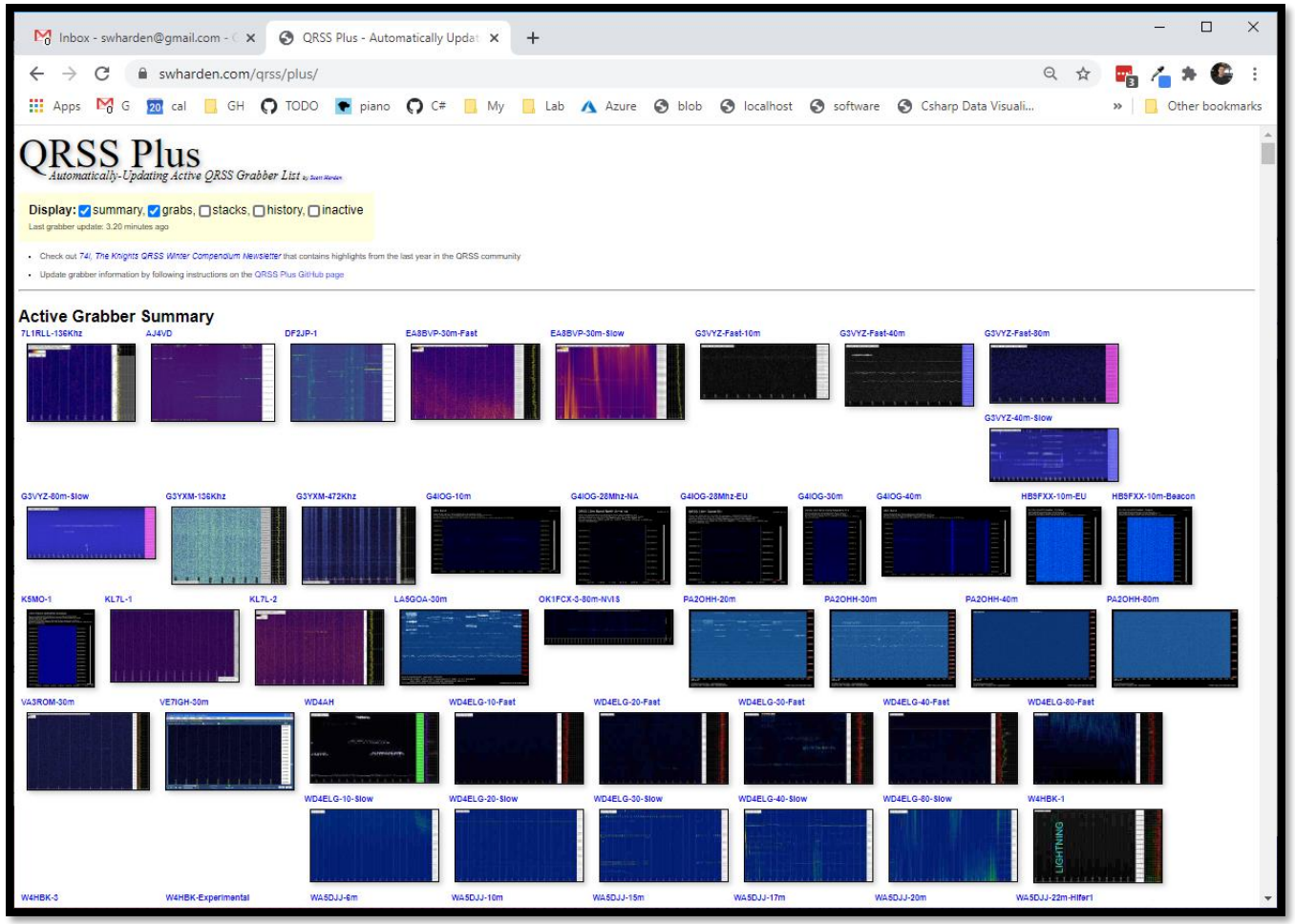
- "QRS" is the Q-code CW operators use to say "slow down"
- 6 second dots, 18 second dashes, ~5 Hz shift
- Spectrograms (QRSS "grabs") are typically 10 minutes
- Popular frequency: 10.140 MHz (≈200 Hz)
- Transmitters can be extremely simple

» Discovering QRSS

QRSS Transmitter Kits
https://www.qrp-labs.com/



QRSS Plus: Live QRSS Grabbers Around the World
https://swharden.com/qrss/plus/



» Knights QRSS

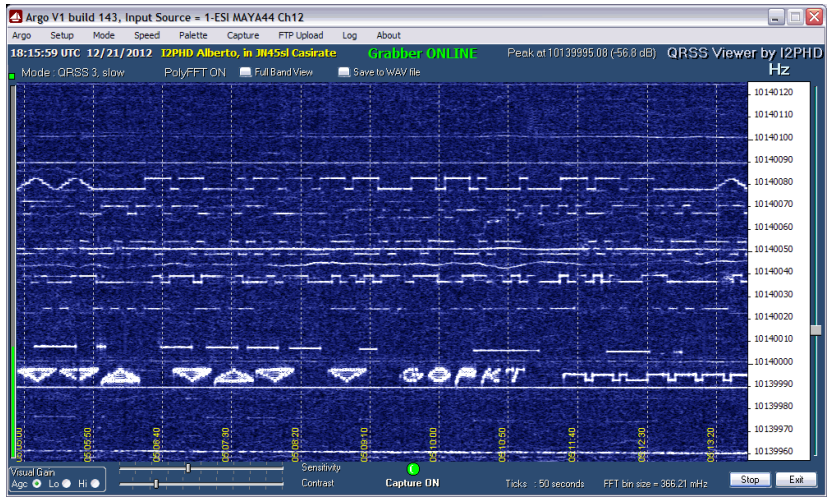
Join the **Knights QRSS** Mailing List
https://groups.io/g/qrssknights

This group is very active

Message History

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	315	256	239	376	463	412	317					
2019	309	368	275	395	342	318	395	375	400	279	211	235
2018	250	145	447	253	304	204	427	338	472	333	272	379

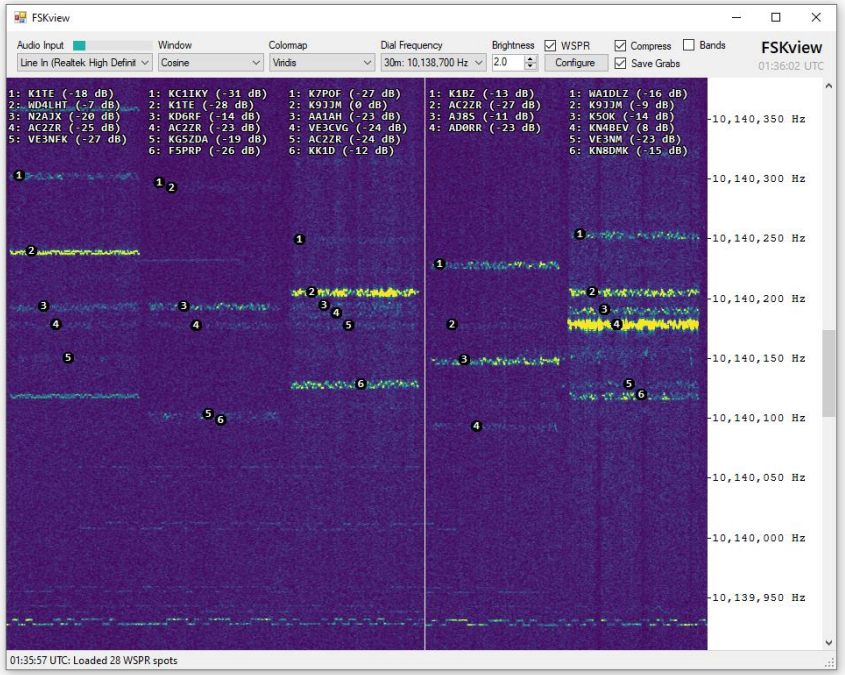
» QRSS Reception Software (Windows)



Argo

2000-2015

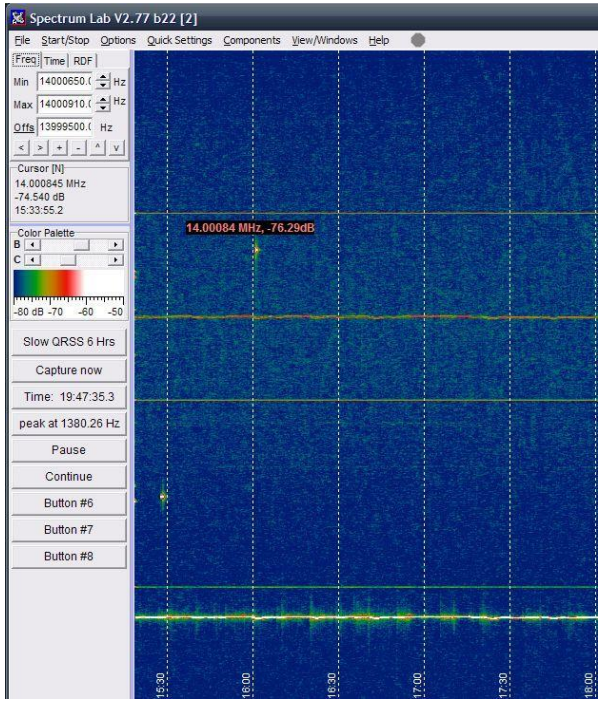
https://www.i2phd.org/argo



FSKview

2020-present

https://swharden.com/software/FSKview/

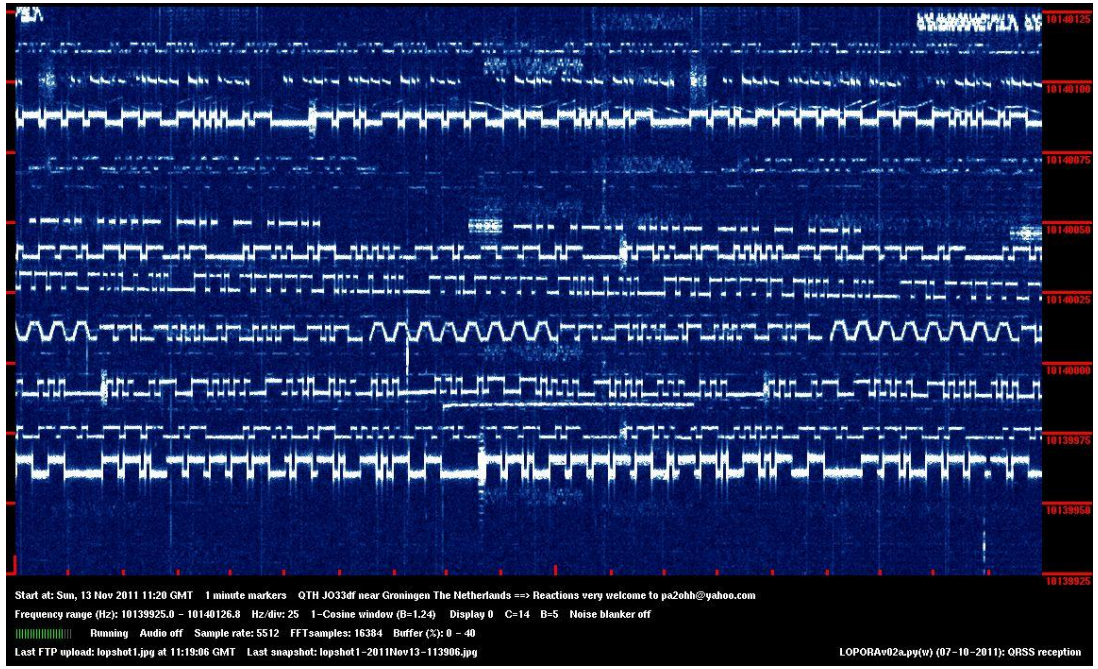


Spectrum Lab

2000-present

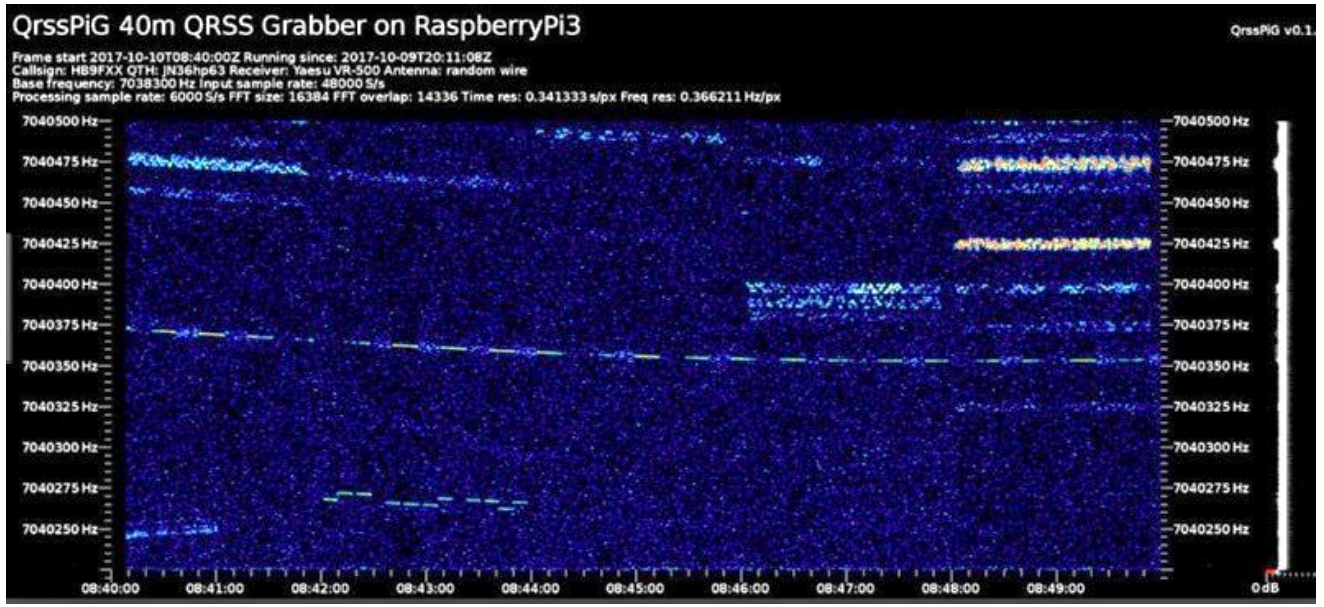
https://www.qsl.net/dl4yhf/spectra1.html

» QRSS Reception Software (Cross-Platform)



LOPORA

http://qsl.net/pa2ohh/11lop.htm

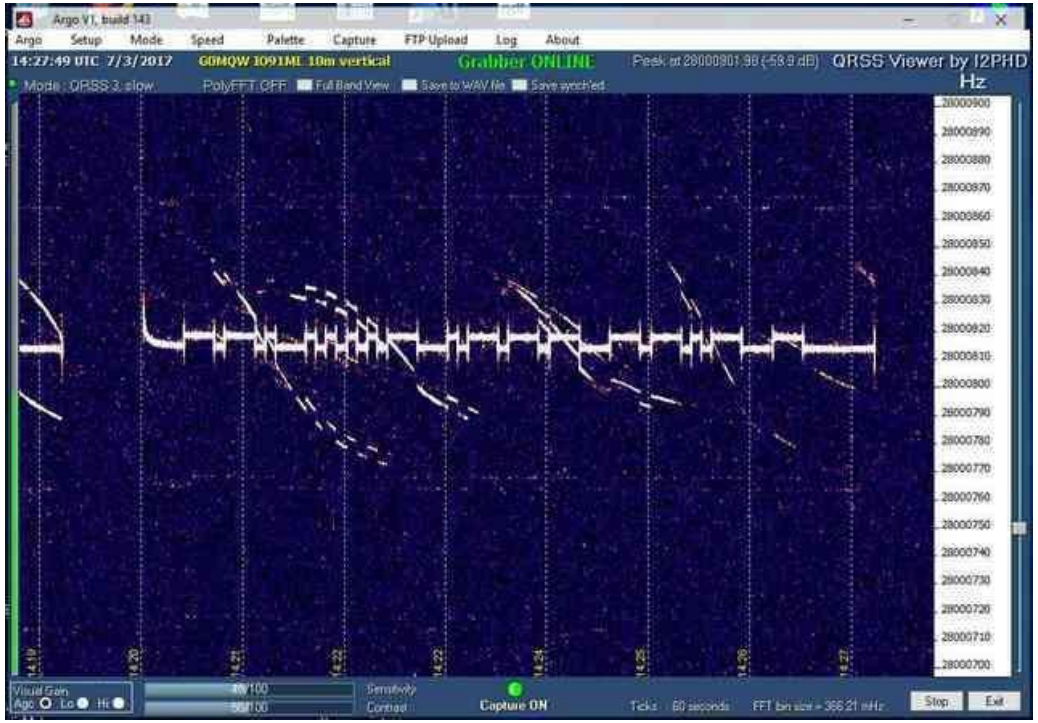


QrssPIG

https://martinherren.github.io/QrssPiG/

Aircraft Reflections

https://sites.google.com/site/andyg0ftd/28mhz-qrss



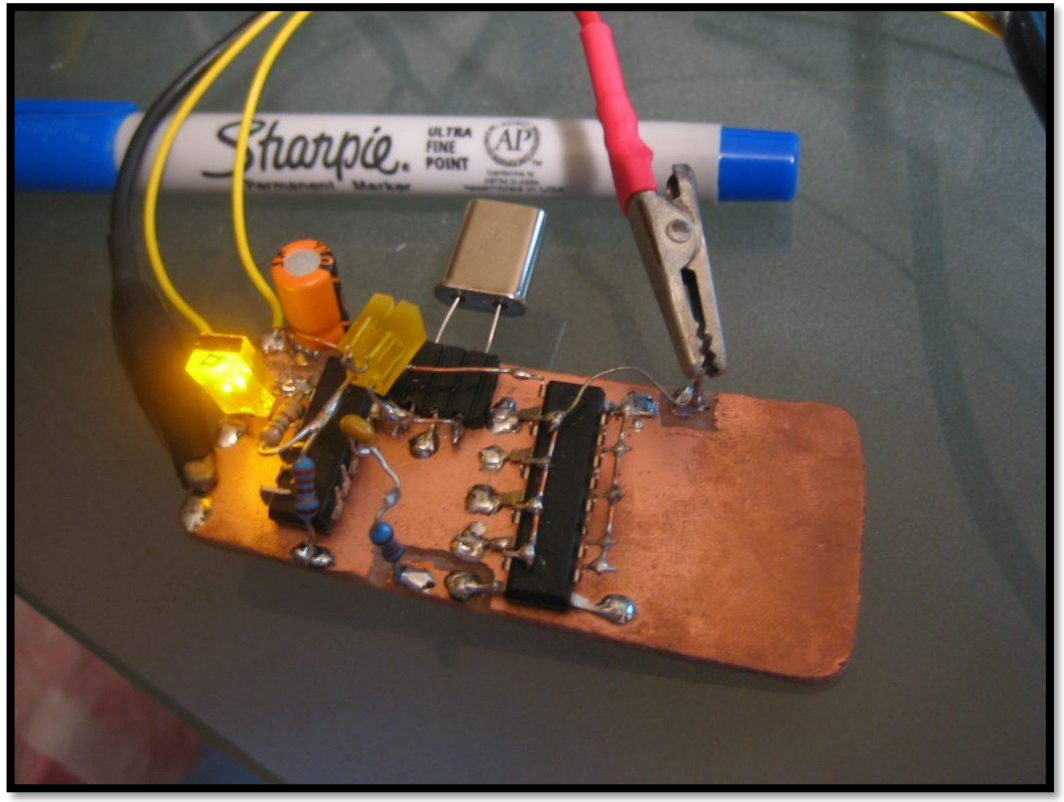
reflection

direct path

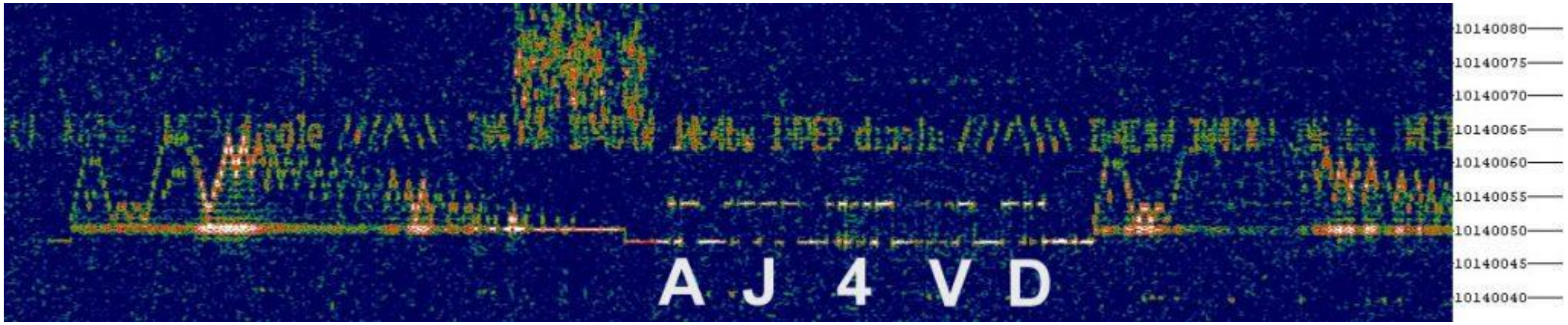
Transmitter
???

Receiver
PA2OHH (Spain)

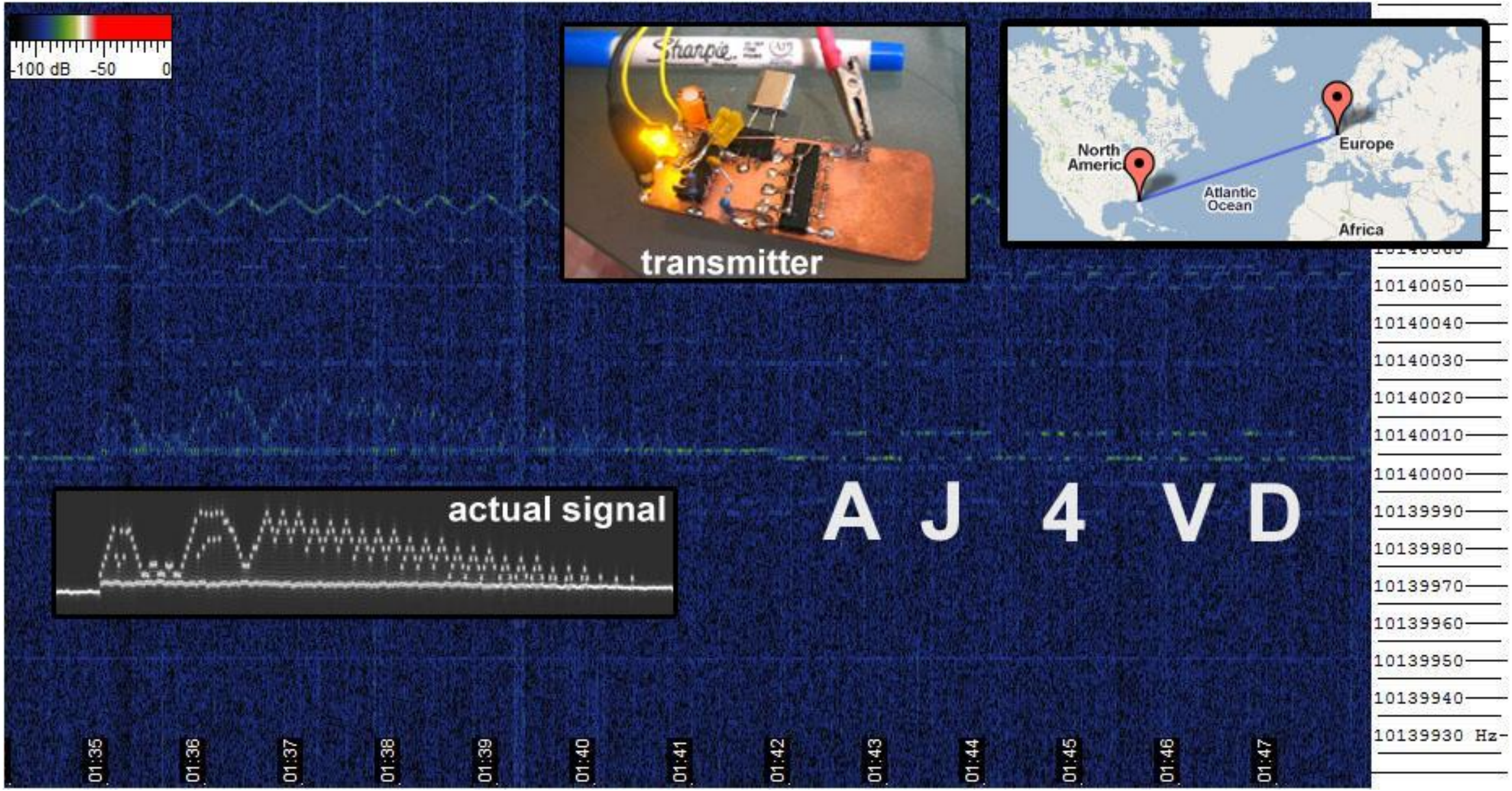
Special Shapes



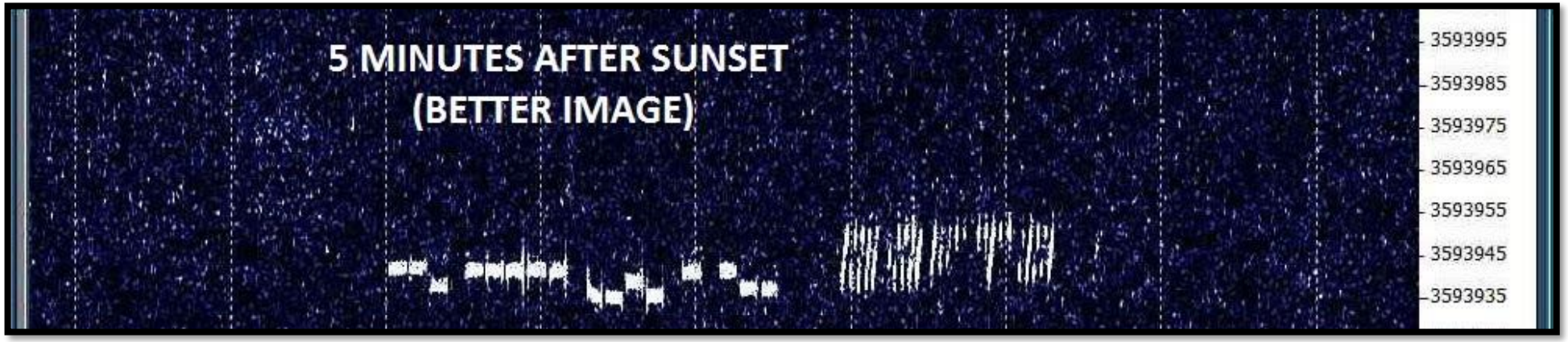
May 22, 2010



Special Shapes



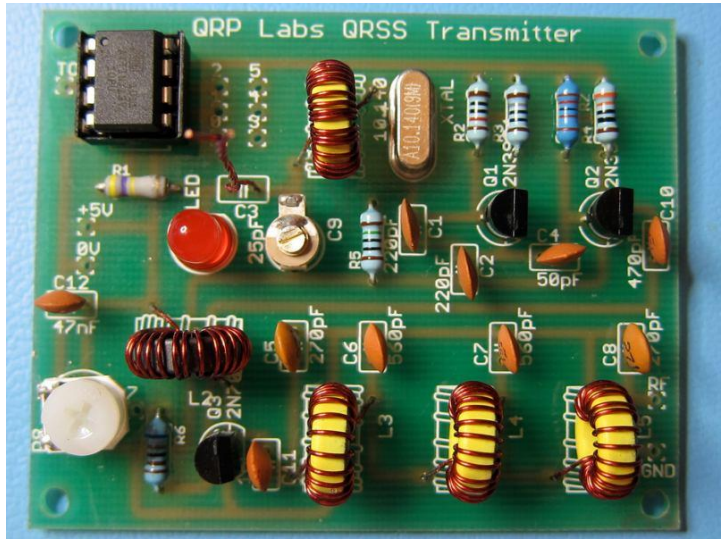
Multi-Path

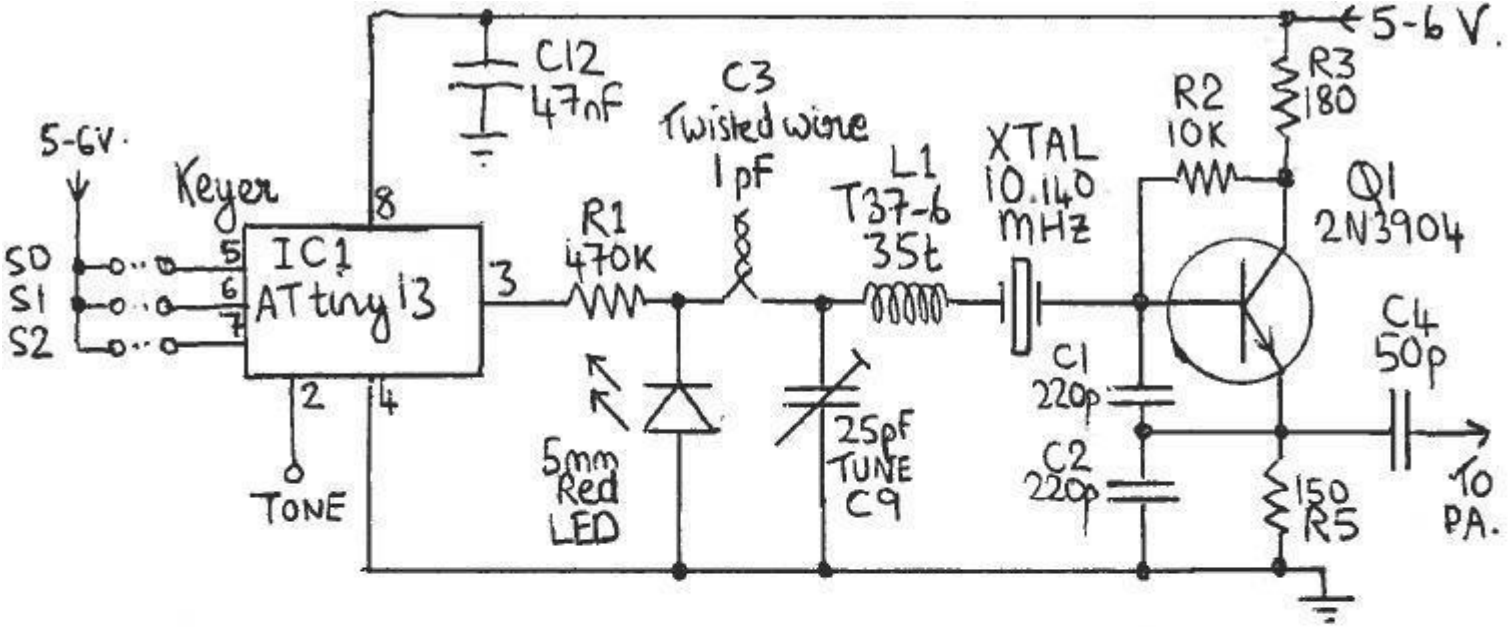

5 MINUTES AFTER SUNSET
(BETTER IMAGE)
3593995
3593985
3593975
3593965
3593955
3593945
3593935

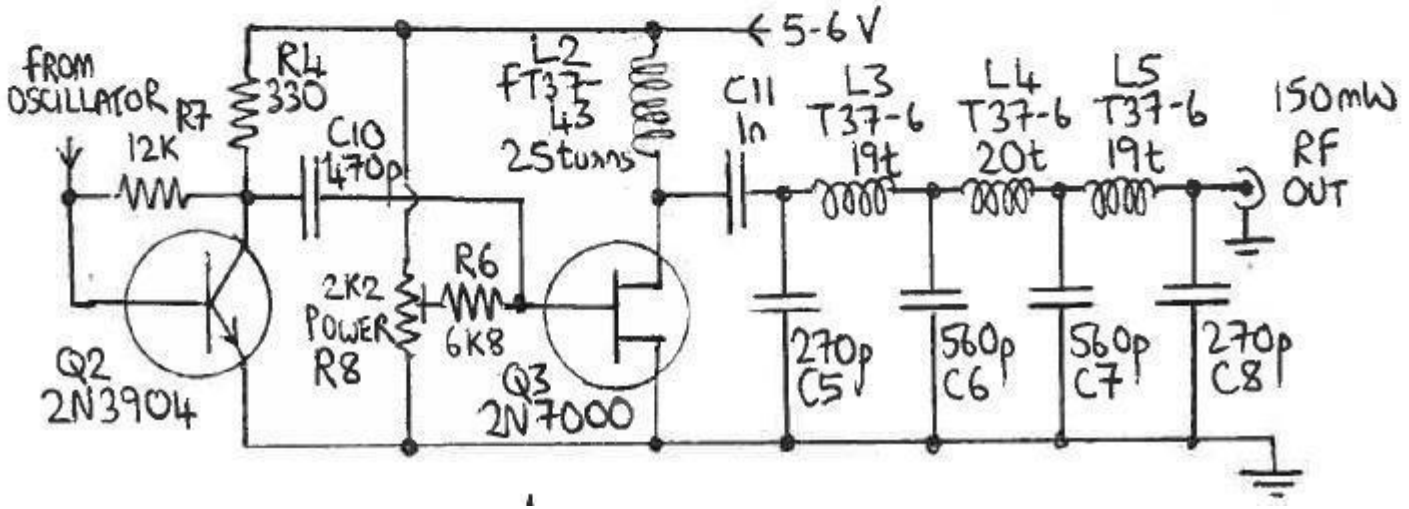
20 MINUTES AFTER SUNSET THE 2 PATHS ARE CLEARER.
SIGNAL RETURNS TO 1 PATH SHORTLY AFTERWARDS.
3593985
3593975
3593965
3593955
3593945
3593935
3593925

QRP Labs: 30/40/80/160m QRSS Kit

https://www.qrp-labs.com/qrsskit.html

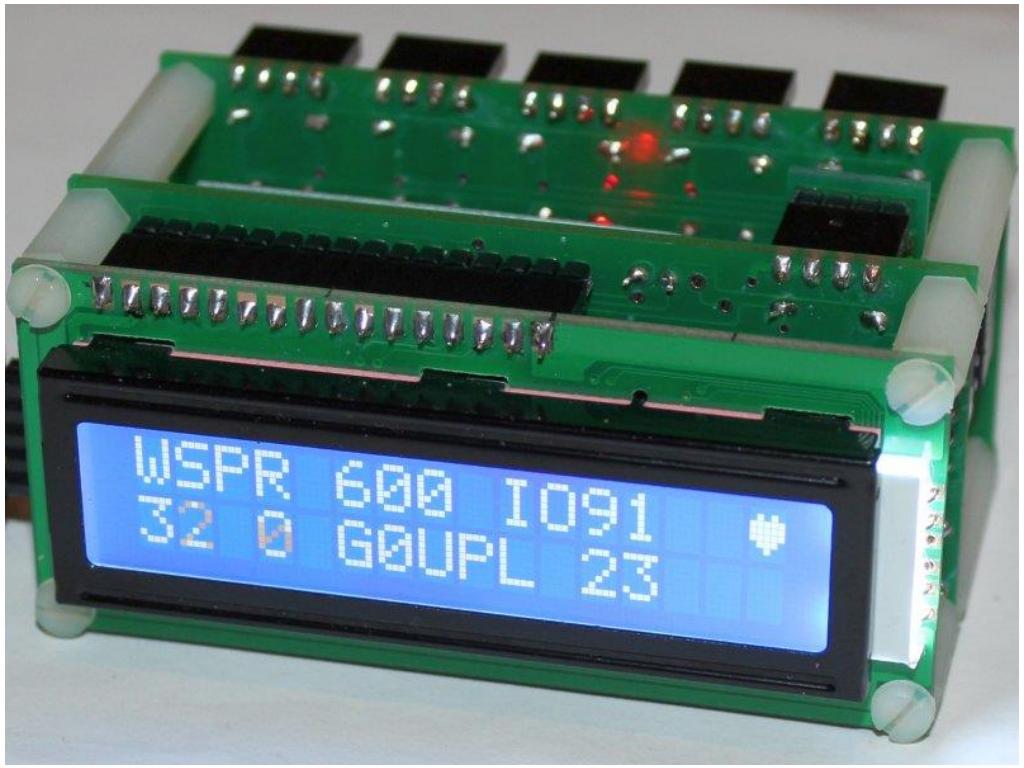


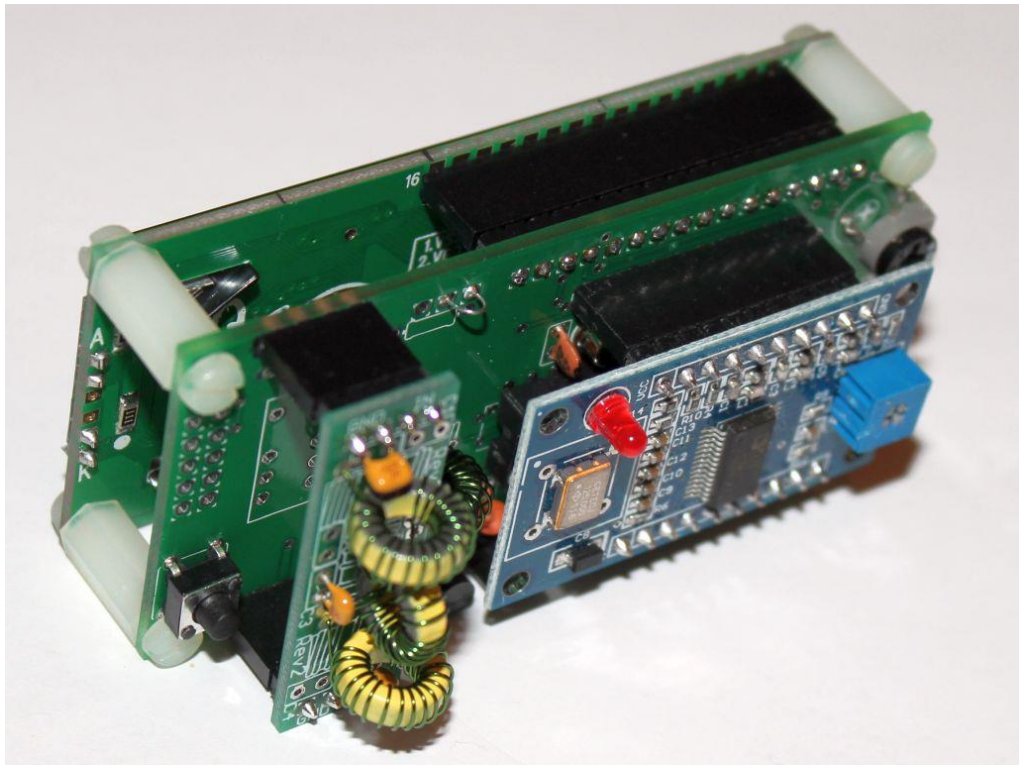




QRP Labs: Ultimate3S kit

http://qrp-labs.com/ultimate3/u3s.html



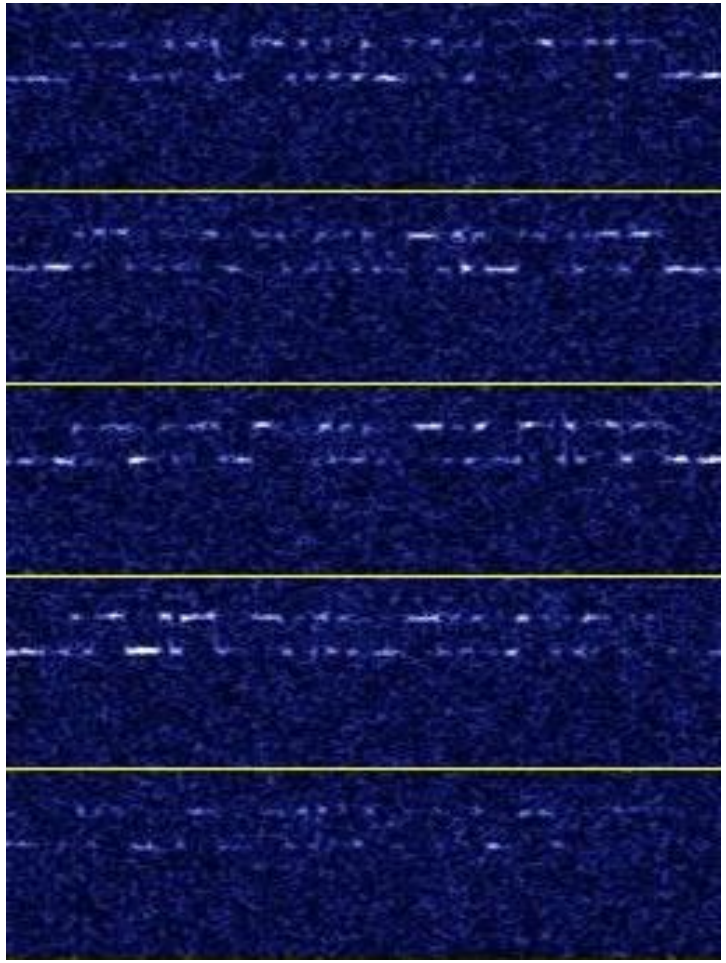


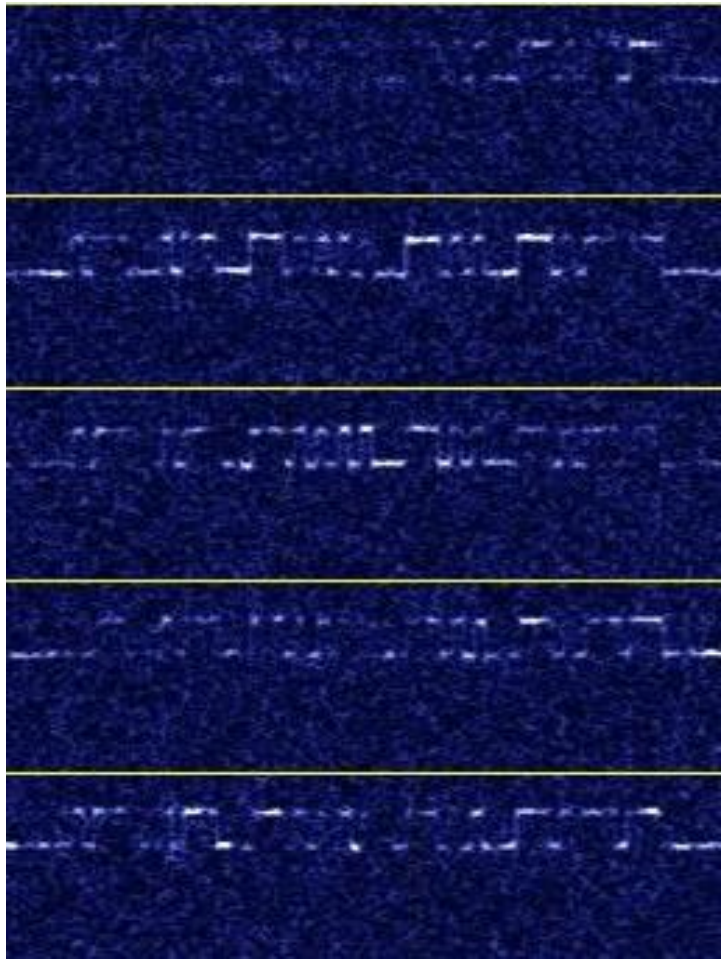
- Digital RF synthesizer
- GPS for time synchronization
- Extensive customization
- Transmission of additional modes like WSPR

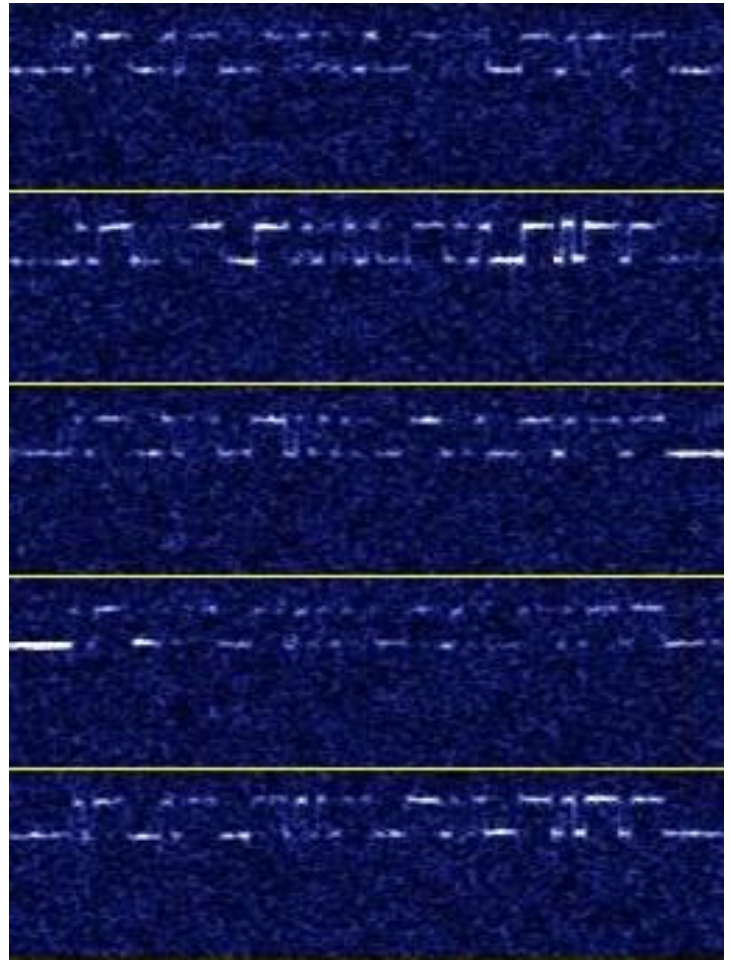
QRP Labs: Ultimate3S kit

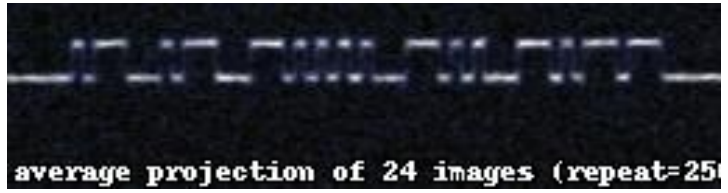
http://qrp-labs.com/ultimate3/u3s.html

» Image Stacking



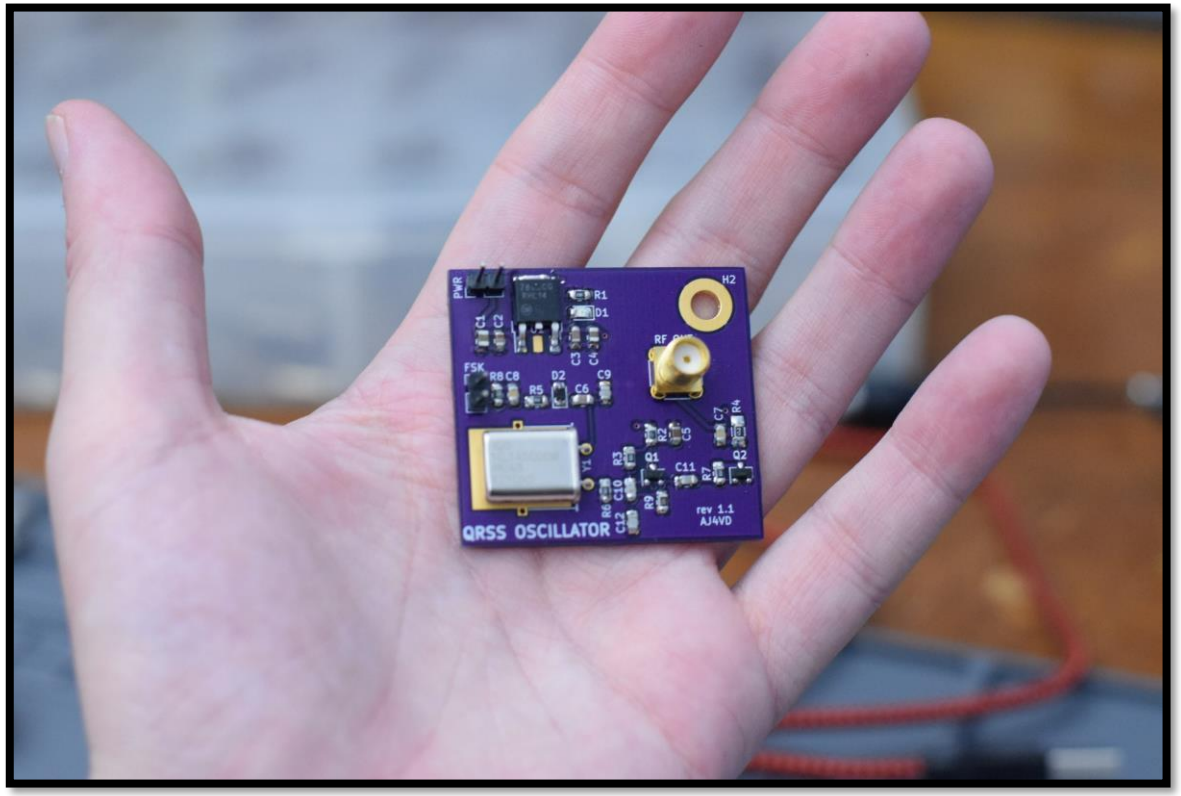


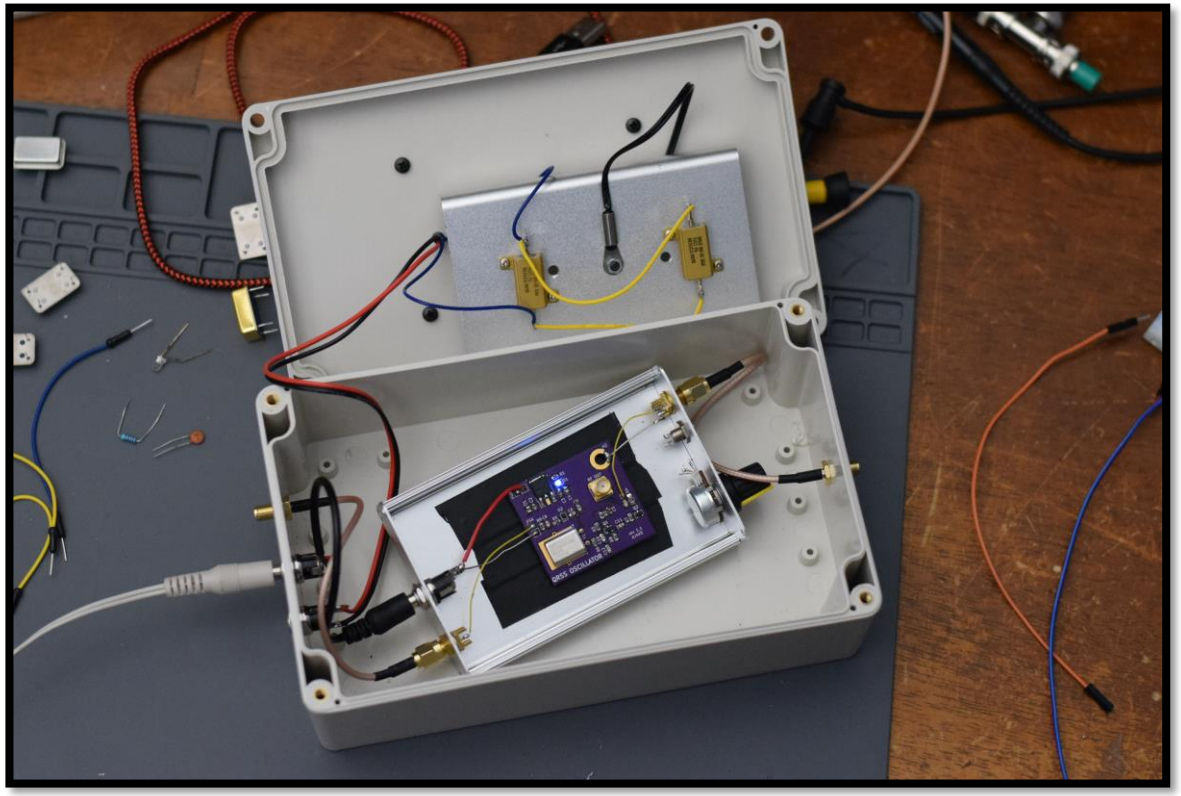


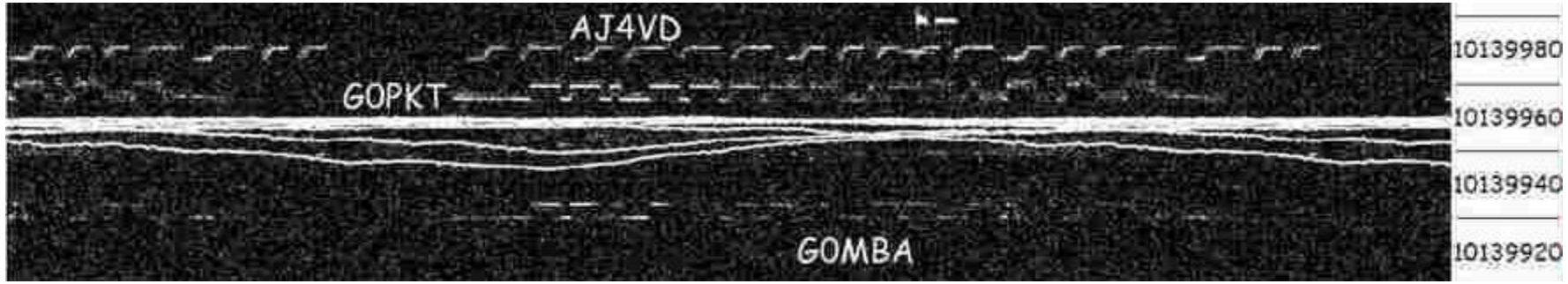


» Experimental QRSS Hardware

https://github.com/swharden/QRSS-hardware







HB9EHO in Ittigen, Switzerland