

Introduction to the KiwiSDR and Bodnar GPSSDO

HamSCI Workshop 2019

Rob Robinett

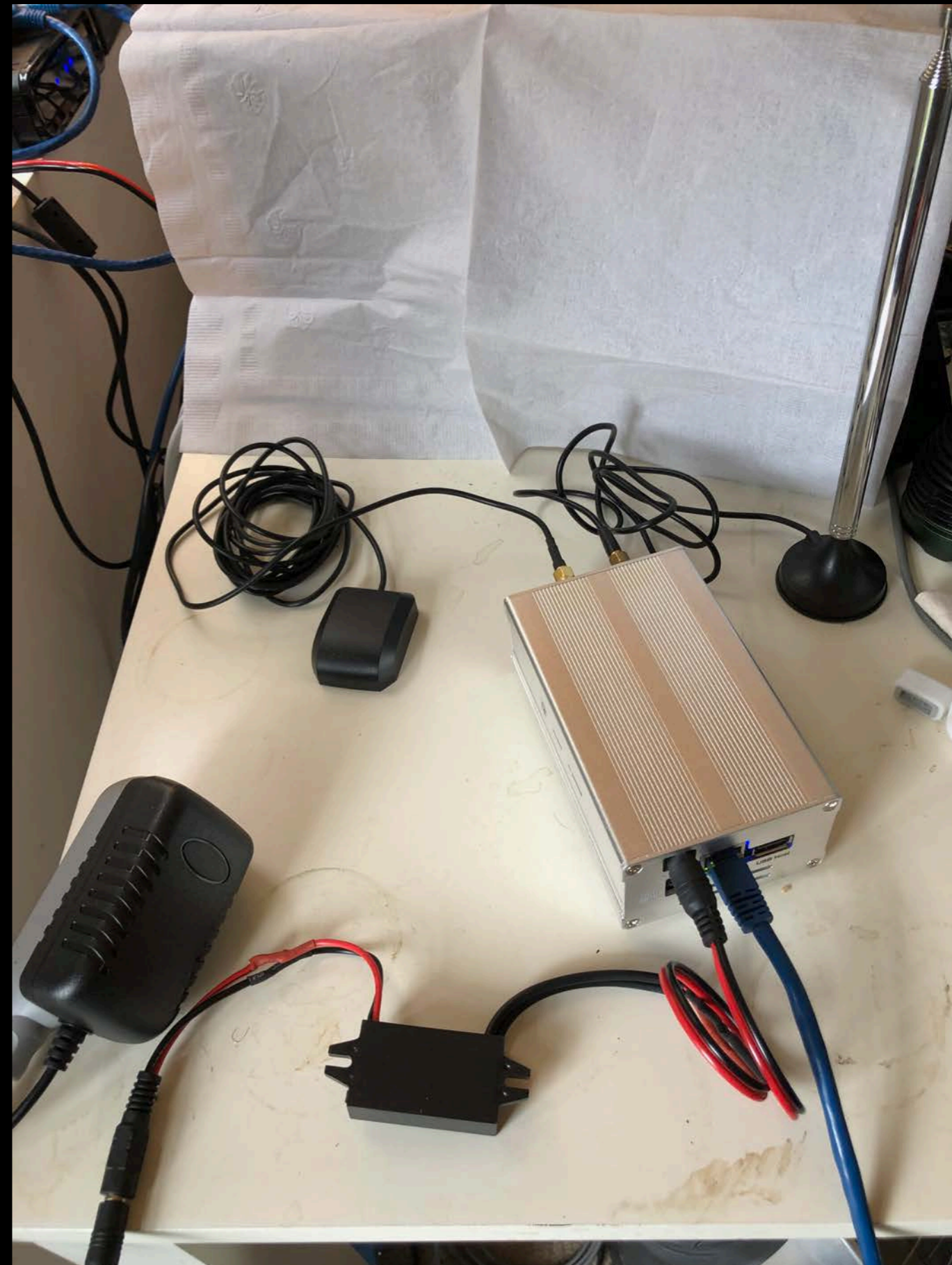
AI6VN

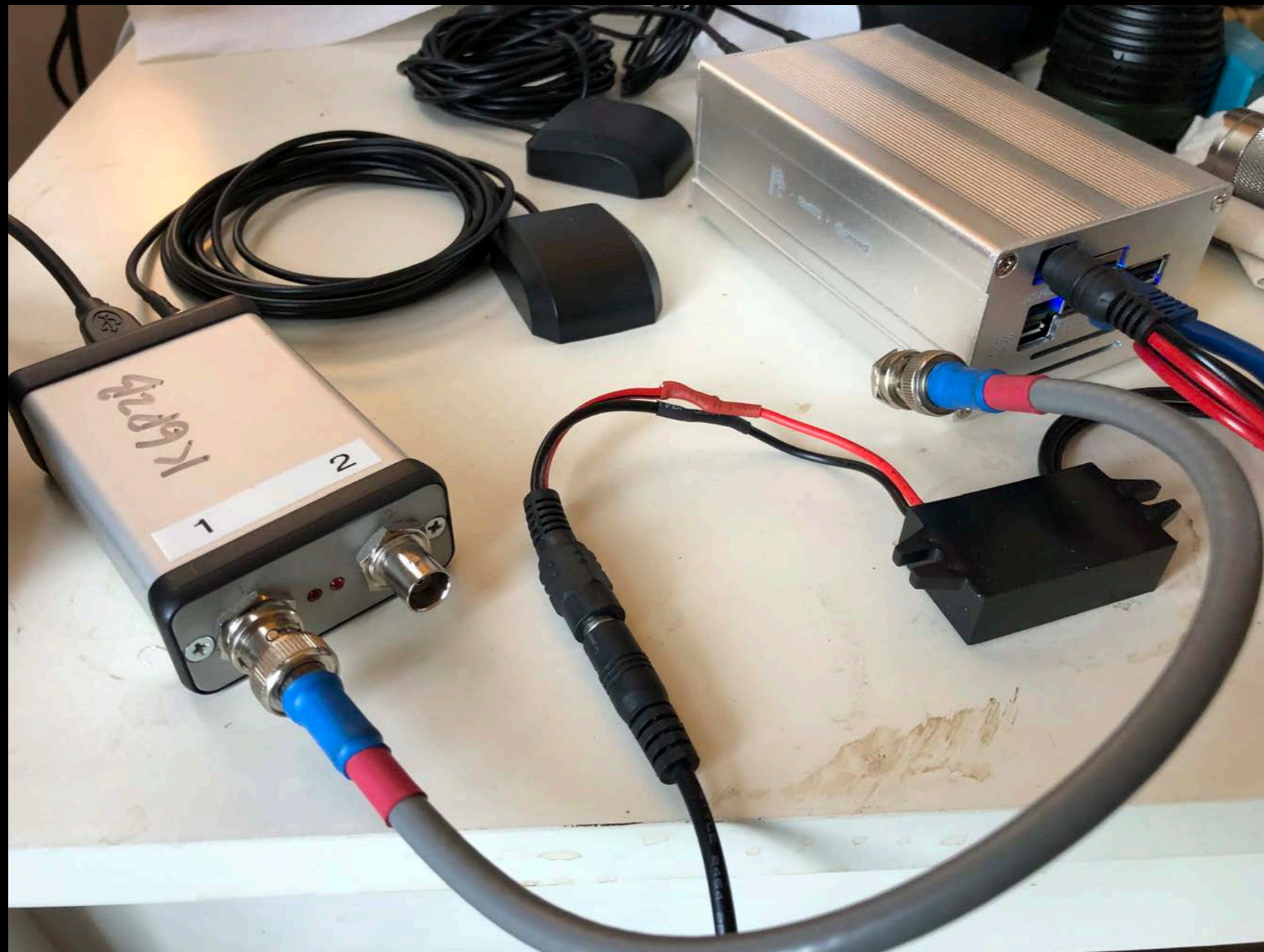
rob@robinett.us

KiwiSDR

Self contained SDR

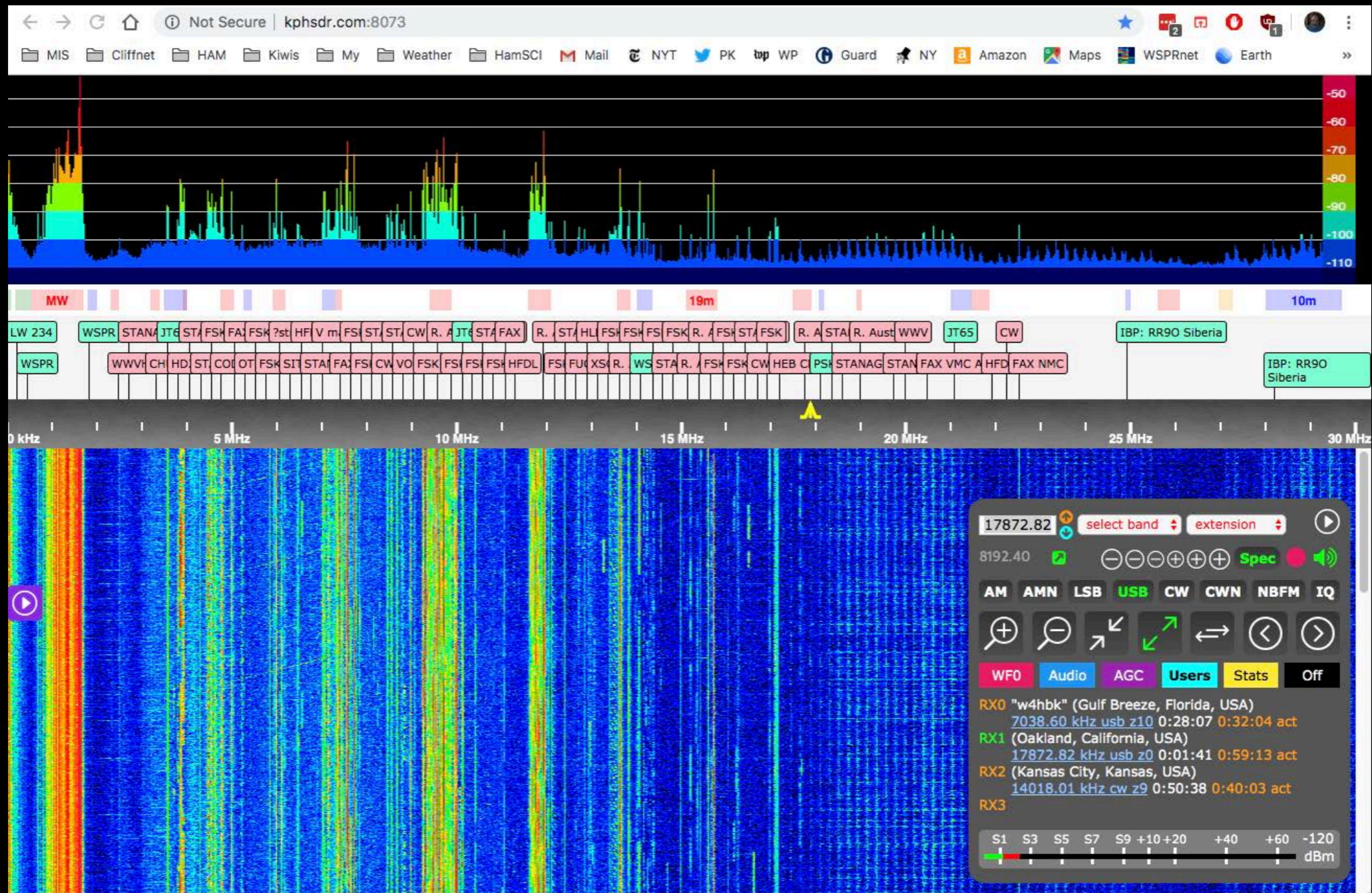
- 10Khz - 30 Mhz
- Web page interface
- 4 or 8 independent listening channels
- Internal GPS referenced time and oscillator
- 14 bit Linear Tech ADC
- 110 dB dynamic range
- 5VDC / 5 Watts
- \$300 List from Mouser
- 100s publicly available worldwide
- Open source Linux SW, HW & FW
- Very active author and forum community
- Internal extensions (e.g. WSPR)
- External extensions (SNR maps)





Leo Bodnar GPSDO

- Internal -> $500e-9$ accuracy
- External \$150 -> enhances that to better than $1e-9$
- User must modify case and wire signals



Full 0 - 30 Mhz Display

Mouse and/or keyboard control

AM/SSB/CW/NBFM/IQ demodulation Audio plays on user's PC

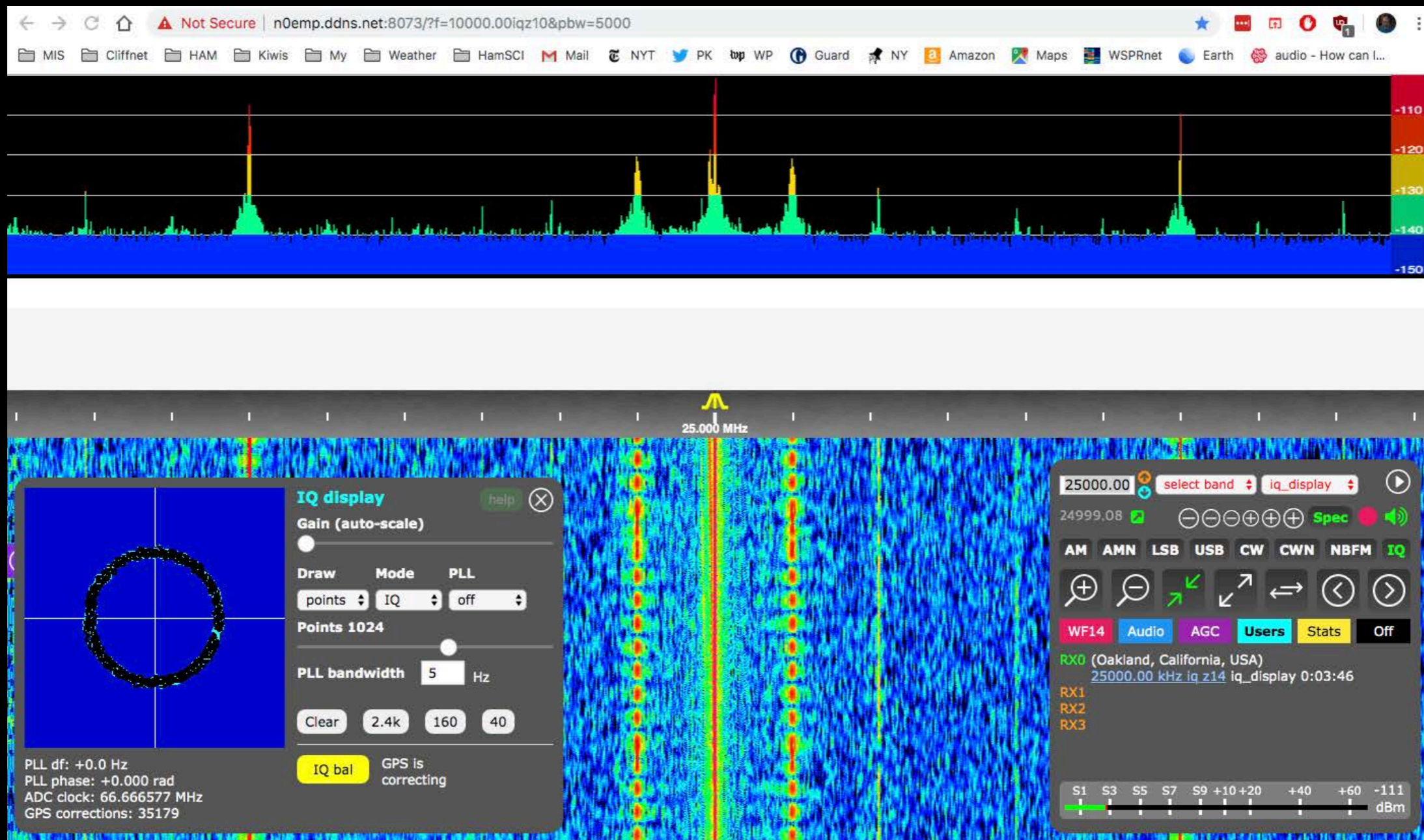
Zoom to 2 Khz wide view and 4 Hz wide passband

WSPR viewer

UTC	dB	dT	Freq	dF	Call	Grid	km	dBm
2358	-26	1.7	14.097098	0	VE3SAO	EN58	2950	23 (200 mW)
0000	2	0.4	14.097107	0	KD6RF	EM22	2601	37 (5.0 W)
0000	0	0.1	14.097081	0	VE5MMG	DO62	2020	20 (100 mW)
0000	-13	0.2	14.097131	0	8P9DH	GK03	6818	37 (5.0 W)
0000	-27	0.2	14.097023	2	DPOGVN	IB59	14844	33 (2.0 W)

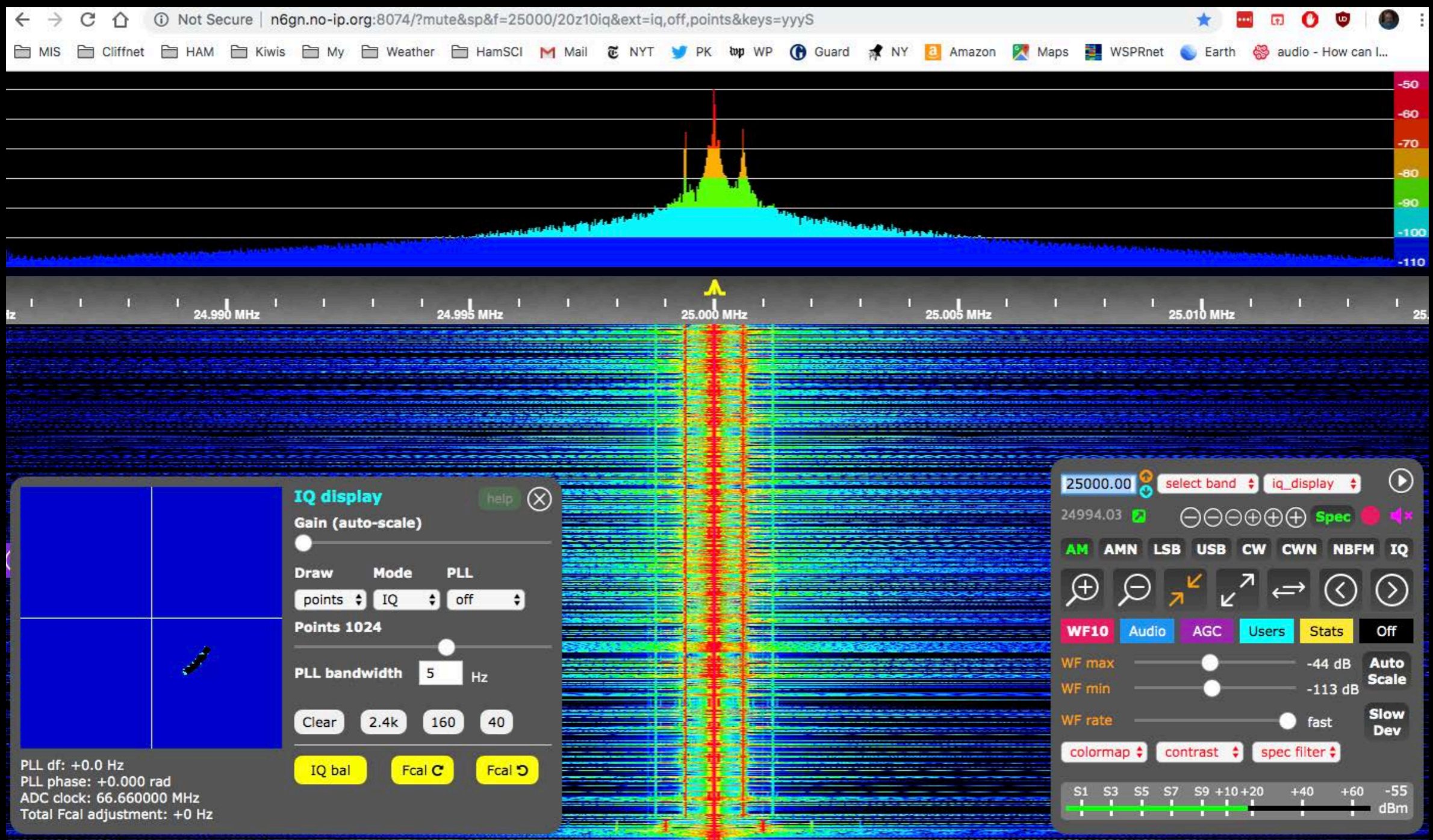
Internal Extensions

Features added by the author John Seamons and others
e.g. WSPR decoder, fax, Loran. CW decoder,...



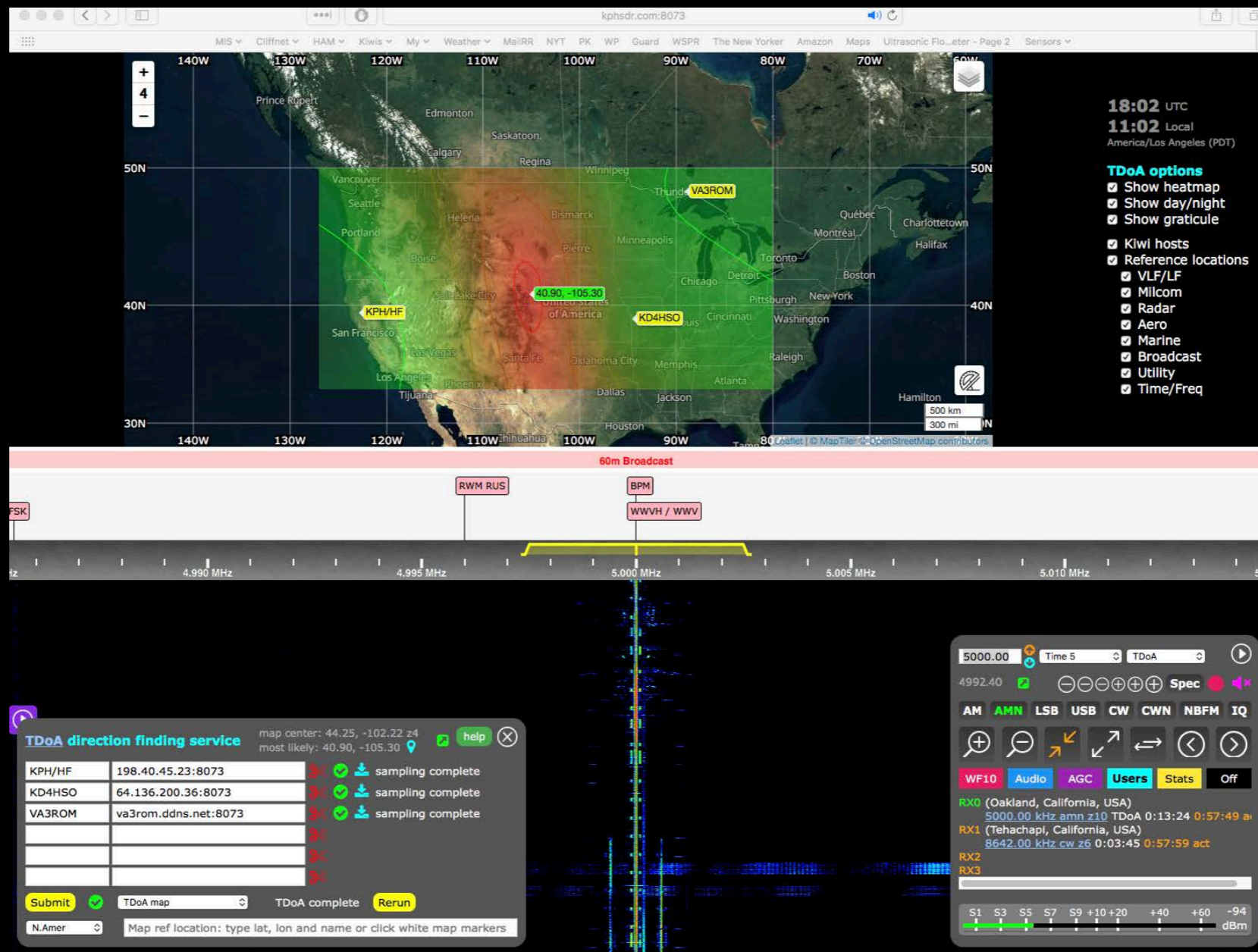
I/Q Display Extension

Internal oscillator referenced to GPS
 30 secs to draw I/Q circle
 = 1/30th Hz error on 25 Mhz WWV



Bodnar driven Kiwi - I/Q Extension

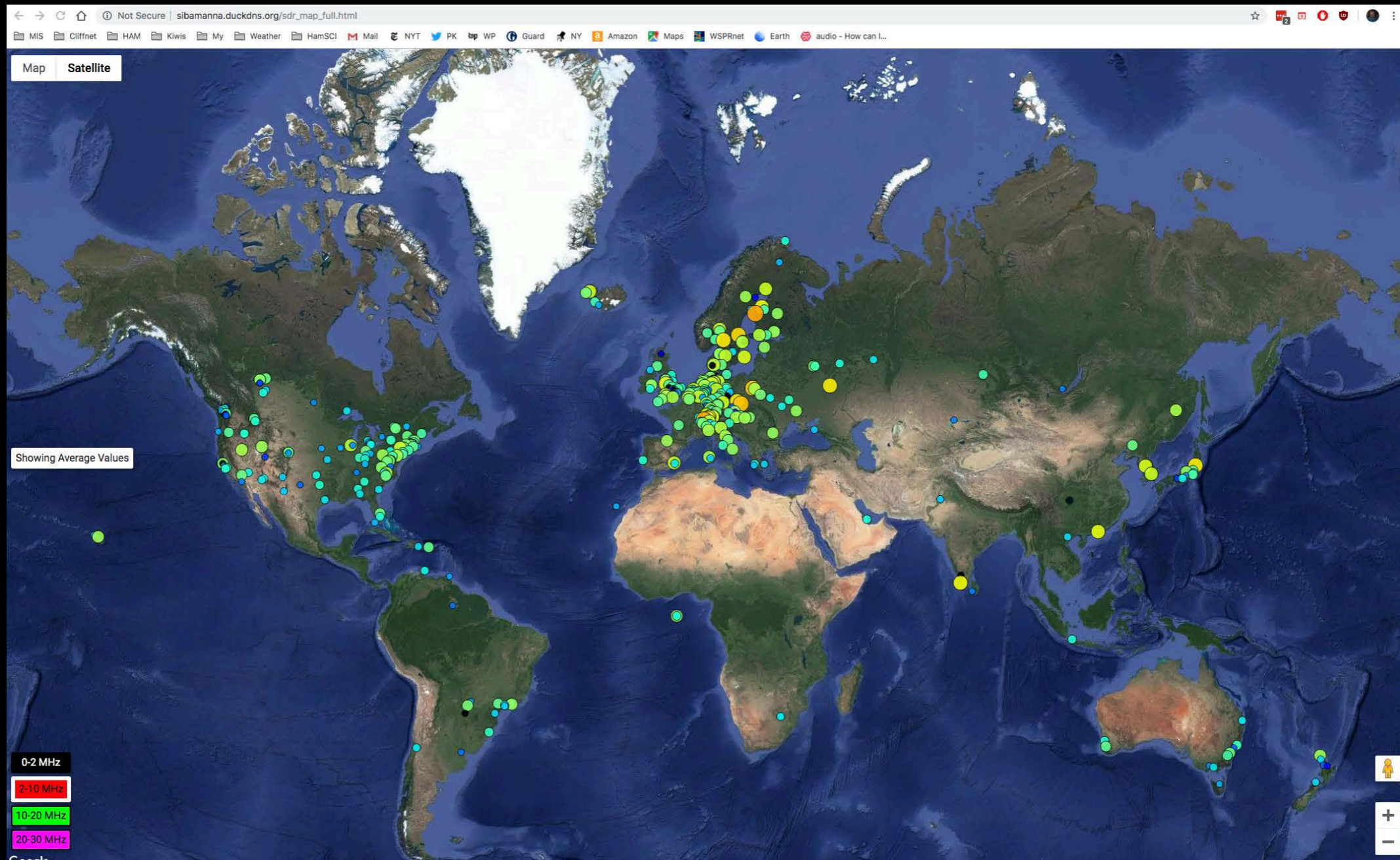
Internal oscillator referenced to external Bodnar GPSDO
 In unheated mountain top shack
 1000+ secs to draw I/Q circle
 = 1/1000th Hz error on 25 Mhz WWV



External Extensions

TDoA - Time Delay of Arrival

Locates transmitter using uSec accurate recording obtained from multiple Kiwis. Recordings are obtained by a cloud server which then processes them with Octave. The results are displayed on a map on the primary Kiwi web page



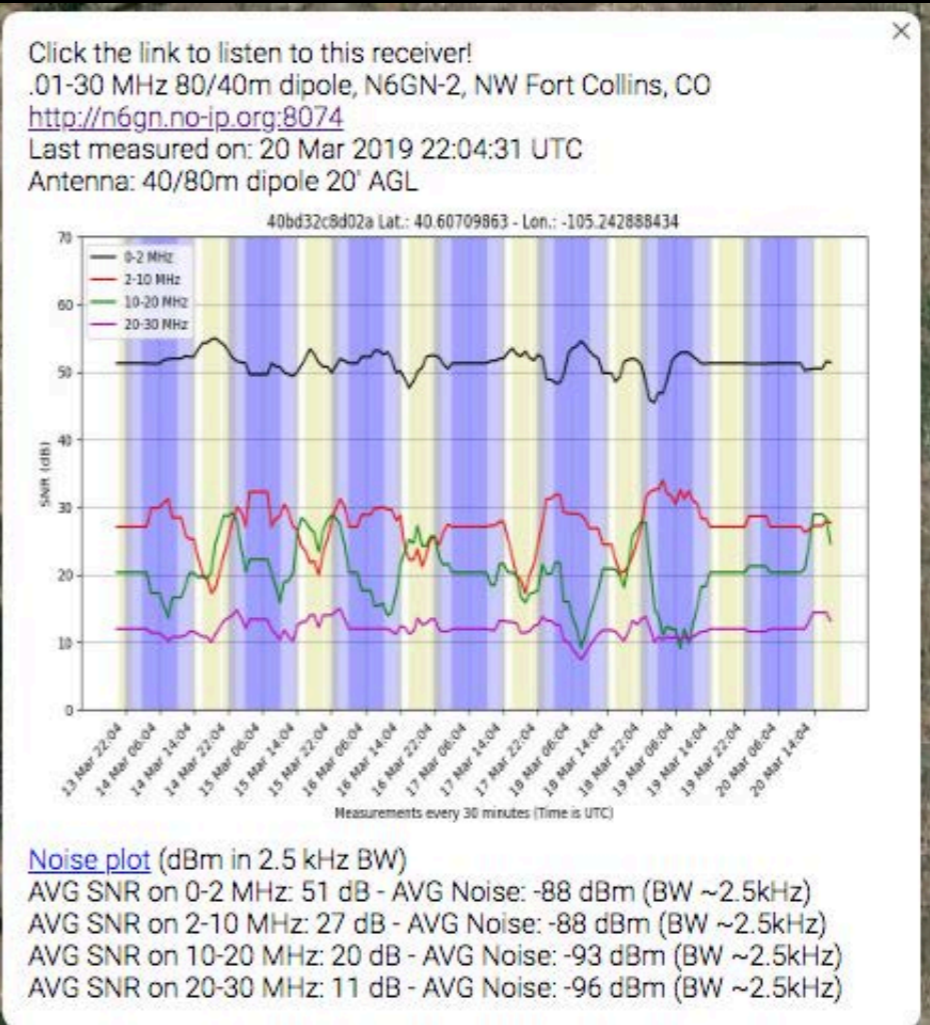
External extension to find high quality Kiwi receive sites

This service polls Kiwi sites every hour and calculates SNR quality
from waterfall data

http://sibamanna.duckdns.org/sdr_map.html

Per Kiwi site SNR history

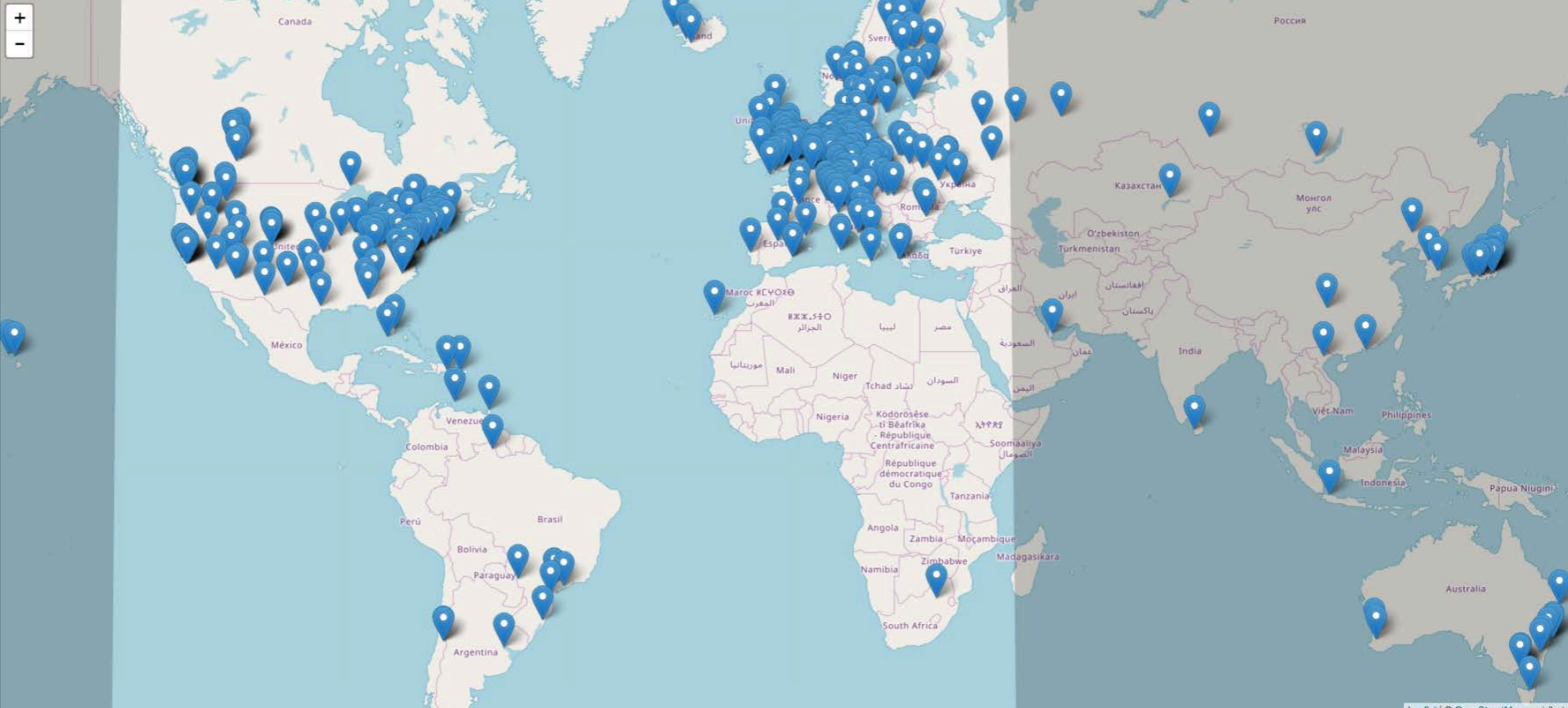
Values



sdh.hu/map

MIS Cliffnet HAM Kiwis My Weather HamSCI Mail NYT PK WP Guard NY Amazon Maps WSPRnet Earth audio - How can I...

SDR.HU RECEIVERS OPENWEBRX BLOG SUPPORT ABOUT MY ACCOUNT LOGOUT



A world map with numerous blue location pins indicating the presence of Kiwis receivers. The pins are densely clustered in North America, Europe, and parts of Asia, with more scattered pins in South America, Africa, and Australia. The map includes labels for various countries in both English and their native languages.

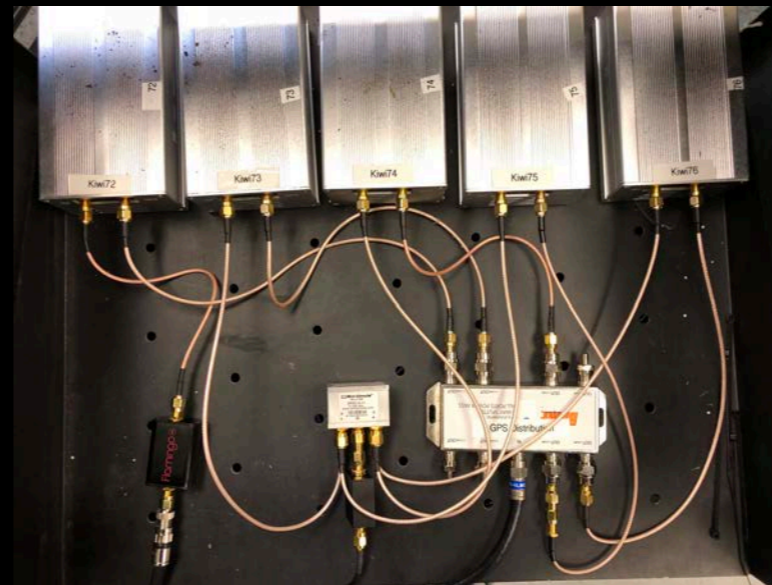
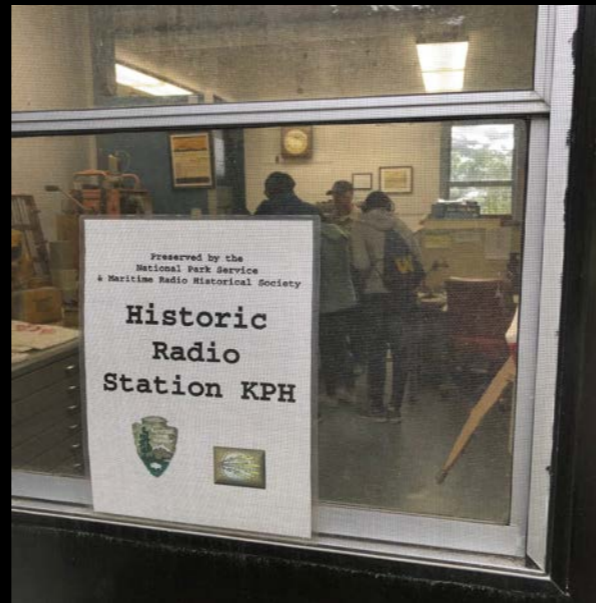
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HASKFU
Simonyi

OPENWEBRX
TERMS OF USE
PRIVACY POLICY
CODE & DESIGN
BY HA7ILM

Publicly Available Kiwis Worldwide

Listed at <http://sdr.hu/>



KPH Historic Station Kiwi System
Point Reyes National Seashore
6 Kiwis fed by TCI-530 3-30 Mhz antenna
2 Kiwis fed by 200' Marconi T

Further Information

- Kiwi <http://kiwisdr.com>
- Bodnar <http://leobodnar.com>
- Kiwi map <http://sdr.hu>
- SNR map http://sibamanna.duckdns.org/sdr_map.html
- KPH <http://kphsdr.com>