

USING WEB-BASED SDR RECEIVERS IN THE HAM SHACK

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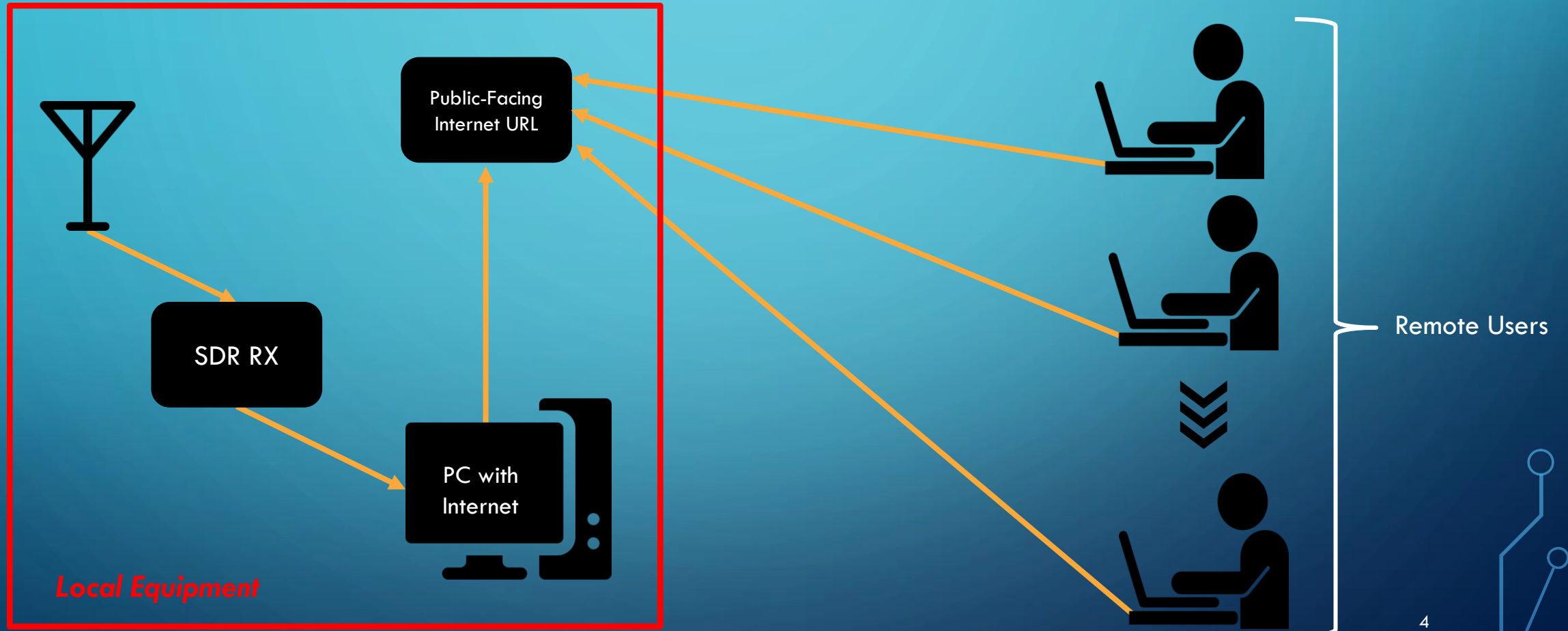
TALK OUTLINE

- How are SDR-based receivers connected to the Internet?
- Why would a ham want to use a remote web-based SDR receiver?
- Can they work with a local transceiver?
- Examples of various implementations for web-based SDR Receivers
- Demo of two of these types.
- Should you consider installing one?

HOW ARE SDR-BASED RECEIVERS CONNECTED TO THE INTERNET?

- Connecting an SDR receiver to the Internet with multiple end-users.
- Distinct from a remote ham station.
- Most are accessed through a standard web browser directed to a specific website or “collection” website.
- A few can be access from specific client software.
- Virtually all are free to use but some have a cap on the total of simultaneous users due to local Internet bandwidth needs or speed.

DIAGRAM OF WEB-BASED SDR RECEIVER



WHY WOULD A HAM WANT TO USE A REMOTE WEB-BASED SDR RECEIVER?

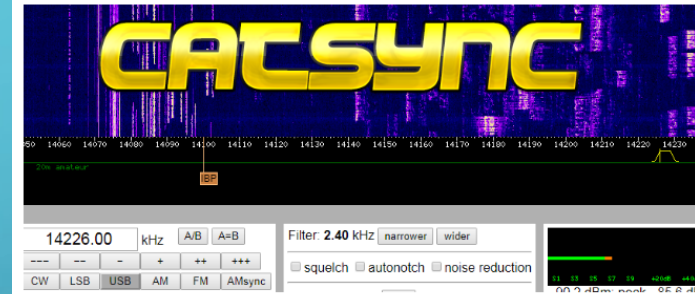
- Frequently propagation conditions prevent one or more hams in a group QSO (e.g., Net, Roundtable) from hearing everyone else. A remote web-based SDR RX can supplement a local transceiver's receive capabilities with the local antenna system.
- Local or sub-regional noise can often be circumvented through using a remote web-based SDR RX.
- They are highly useful for additional specific use-cases, including station location, testing TX audio and signal at another location (including recording your transmission), and just reading the mail in another area that is challenging to RX.

CAN THEY WORK WITH A LOCAL TRANSCEIVER?

- Yes! A third-party software application called CATSync can manage a synchronous link between your local transceiver and a remote web-based SDR. It costs about \$10.
- CATSync works with KiwiSDR and WebSDR interfaces. Author says his software is a slimmed down Chrome browser with some “smart” addons.
- Here’s a brief video demonstration.

Welcome to CATSync

NEW !
V1.30 – Now with Open Web RX support



The CAT Tool for WebSDRs

CATSync allows you to synchronize public WebSDR receivers with your real rig connected via CAT control to your computer. It supports the classical WebSDR, Kiwi SDR as well as Open Web RX:

- Control any public WebSDR server by means of your real RIG...
- Supports a wide number of RIG's (it uses the popular OmniRig engine)
- Supports WebSDR, KiwiSDR and Open Web RX browser-based SDR receivers
- Tune the VFO of your radio and see the web SDR follow in realtime !
- Click on the WebSDR waterfall and retune your rig in realtime.
- Synchronizes both, frequency and mode changes (CW, USB, LSB, AM, FM)
- Listen to the same frequency as your rig via web SDR or vice-versa
- Ideally suited e.g. for people suffering from local QRM or working in nets
- Can track RX or TX VFO (e.g. to find that split of a DX station) if radio CAT command set of your rig supports both independently
- Can be interfaced with popular logging software using OminRig or via VSPE port splitter.

CATSYNC VIDEO DEMONSTRATION

CATSync

V1.10

EXAMPLES OF VARIOUS IMPLEMENTATIONS FOR WEB-BASED SDR RECEIVERS

- The two most popular implementations are KiwiSDR (kiwisdr.com) and two versions of WebSDR (websdr.org): the original and OpenWebRX (www.openwebrx.de). The hardware platform for the KiwiSDR is no longer in production but is open-source (I have one). The WebSDR author has ceased development but an active community has forked the software as OpenWebRX.
- The Flex Radio Systems 6000-class transceivers to allow remote control but this is an individual-to-individual agreement. Ham Remote is another product that will allow remote access but is *distinctly different* than a web-based SDR RX.
- RigPi (rigpi.net) is another non-public remote ham station access model as is the commercial Remote Ham service (www.remotehamradio.com).

WEB-BASED SDR RECEIVER COLLECTION SITES

- Receiver Book: www.receiverbook.de
- Perseus SDR Map (requires Perseus software client):
<https://microtelecom.it/map/ServersMap.html>
- AirSpy SDR (using SpyServer software, PC, AirSpy or RTL-SDR Dongle):
<https://airspy.com/directory/>
- SDR-Console OnAir Receivers: <http://onairv3.sdrspace.com/onair.htm>

KIWISDR RADIOS (KIWISDR.ORG)

- The KiwiSDR is a hardware/software product using a BeagleBone Black computer with a “cape” for a GPS receiver. This gives it a very accurate signal base.



KIWISDR WEB INTERFACE

KiwiSDR HF remote receiver. WB5LLI
Pass Christian, MS | Grid EM50th, ASL 7m, [map], SNR 18:17 dB
© bluebison.net Antenna: EFHW 10-80M with AM broadcast notch filter.

Your name or callsign: **21:47 UTC**
16:47 Local
America/Chicago (CDT)

20m Amateur

Waterfall plot showing frequency from 13.95 MHz to 14.40 MHz. A yellow cursor is positioned at 14.192 MHz.

Welcome! Project website: kiwisdr.com Here are some tips:

- Windows: Firefox, Chrome & Edge work; IE does not work.
- Mac & Linux: Safari, Firefox, Chrome & Opera should work fine.
- Open and close the panels by using the circled arrows at the top right corner.
- You can click and/or drag almost anywhere on the page to change settings.
- Enter a numeric frequency in the box marked "kHz" at right.
- Or use the "select band" menu to jump to a pre-defined band.
- Use the zoom icons to control the waterfall span.
- Tune by clicking on the waterfall, spectrum or the cyan/red-colored station labels.
- Ctrl-shift or alt-shift click in the waterfall to lookup frequency in online databases.
- Control or option/alt click to page spectrum down and up in frequency.
- Adjust the "WF min" slider for best waterfall colors or use the "Auto Scale" button.
- Type 'h' or '?' to see the list of keyboard shortcuts.
- See the [Operating information](#) page and [Design review document](#).

Control panel (14192.00 kHz, 20m band):

- Buttons: AM, SAM, DRM, LSB, USB, CW, NBFM, IQ
- Buttons: WF-6, Audio, AGC, Users, Stats, Off
- Sliders: WF ceil (+5 dB), WF floor (0 dB), WF rate (fast), Spec Δ (0.2 gain)
- Buttons: Auto Scale, Slow Dev
- Buttons: Kiwi, auto, off, IIR, More
- Buttons: S1, S3, S5, S7, S9, +10, +20, +40, +60, -106 dBm

WEBSDR INTERFACE

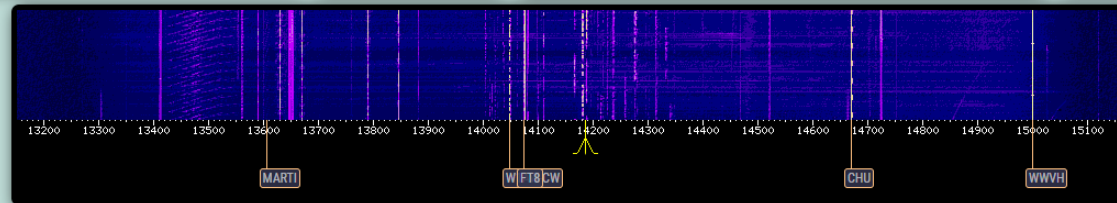
WebSDR - Dahlonega, GA : EM84an

This WebSDR is located at Lumpkin County Middle School : Comments? e-mail the sysop.
This site's interface includes features by PA3FWM from University of Twente and RW3PS. Do you want to know more? www.websdr.org

WebSDR Information

Please enter your name or call sign : This web interface designed by Sergey, RW3PS

Waterfall: All Bands Single Band Off Keyboard Control: Waterfall: Java HTML5 Audio: Java HTML5 Background Image:



Band
80m 40m 20m 10m 2m 7m

Filters: 2.70 kHz @ -6dB; 3.16 kHz @ -60dB
2.00 kHz 2.20 kHz 2.40 kHz
2.60 kHz 2.70 kHz 2.80 kHz
3.00 kHz 3.50 kHz

Memories
Recall Erase Store (new)

14185.00 SNR 22 dB MUTE SOL ANF1 ANF2 NR AGC OFF
USB BW 0.15... 2.76 kHz S1 3 5 7 9 +20 +40 +60 dB

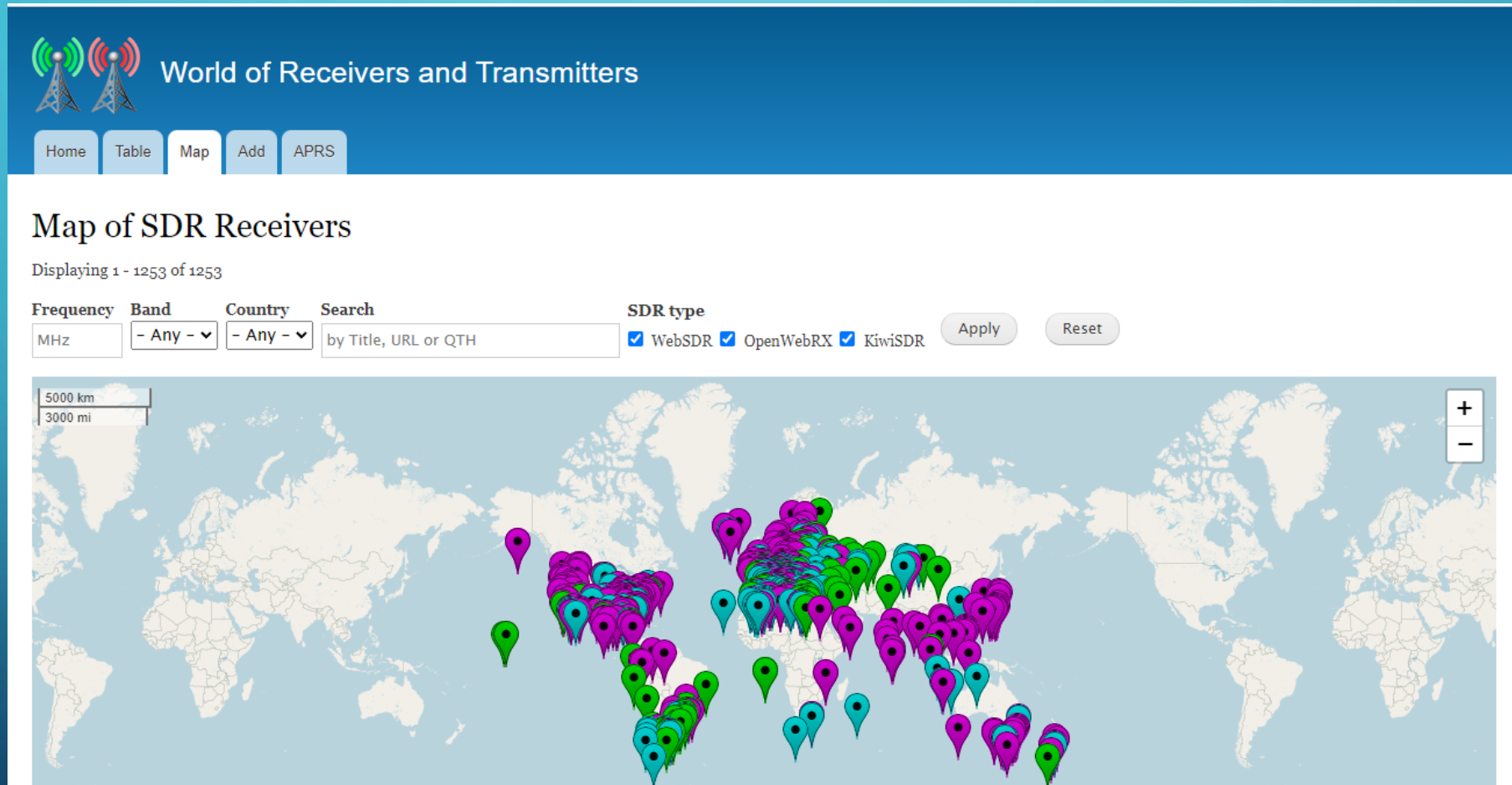
Frequency Tuning & Mode
<<< << >>> >>> 0 <<< >>>
CW LSB USB AM FM

Waterfall Settings
Max out Zoom out Band Zoom in Max in
Type Size Speed Hide labels
waterfall small medium

Tube & DSP & Audio
Magic Eye: Off Max
Mute Squelch Aut notch Notch-2
DSP Noise Reduction: Off Hi-Boost
Volume: -1dB
Manual Gain
Gain:
Audio recording: start

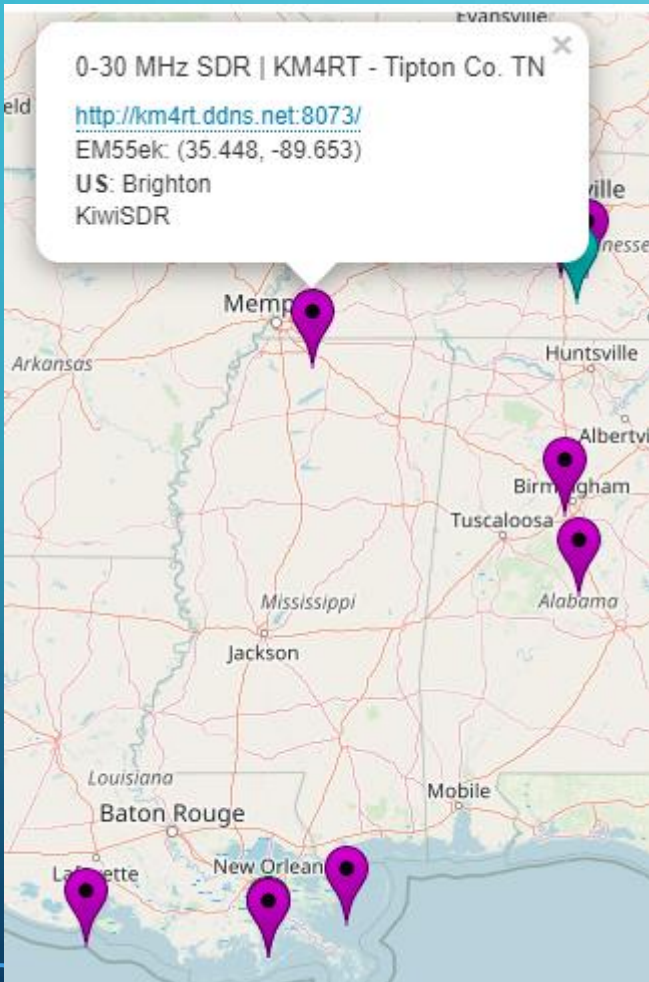
This WebSDR is currently being used by 64 user(s) simultaneously compact view

HOW MANY WEB-BASED SDRs ARE OPERATION?



Source: <https://rx-tx.info/map-sdr-points>. Note: WebSDR = green, OpenWebRX = blue; KiwiSDR = purple

WEB-BASED SDRS IN MISSISSIPPI

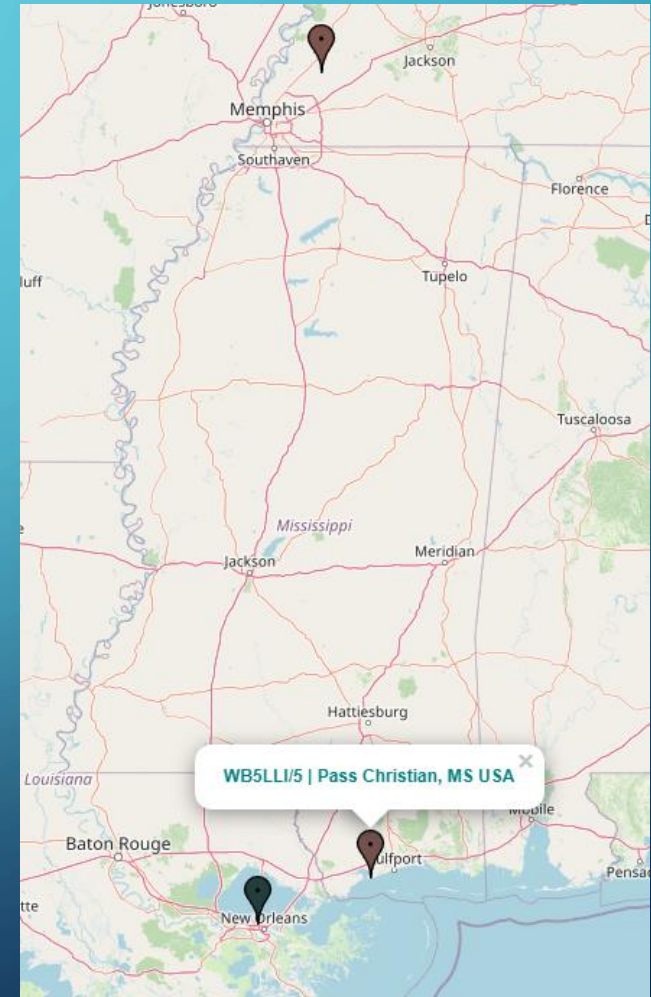


Two different web-based SDR Receivers in MS but only shown on different “collection” sites!

On left, from main KiwiSDR map.

On right, from rx-tx.info map.

Some are only intermittently online and get “collected” differently. Caveat emptor!



DEMO OF KIWISDR & WEBSDR SITES

- Go to browser...

SHOULD YOU CONSIDER INSTALLING ONE?

- Web-based SDR RXes are a “common good” for the amateur radio community.
- Requirements: Broadband HF antenna, (supported) SDR RX, PC, broadband Internet connection with public-facing IP address (perhaps a dynamic IP service).
- As shown in previous slide, there are FEW web-based SDR Receivers in Mississippi! MSPN suffers during high noise periods, relying on relays. Just two web-based SDRs could likely give full coverage for the MSPN Net Control Op on 3.862 mhz.
- Your choice about serving the hobby. One in the Vicksburg MS are could add quite a lot to remote HF reception.

THANKS FOR LISTENING!

QUESTIONS?

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