

Tech corner – Using the WebSDR

As a new General Class ham, you might have discovered that it can be a little challenging to make SSB ([single sideband](#)) contacts on HF. One of the difficulties might be that it's often hard to hear the other stations, due to all the noise, even if *your* signal is being picked up well by *them*. Perhaps a stronger pair of ears could help.

That stronger pair of ears is now available in the form of what we call a **WebSDR**, meaning an SDR (software-defined radio) that's available to internet users. Somewhere in a distant land, one or more benevolent individuals has taken the time and expense to erect a **receive antenna** and provide access to that antenna through some software that you and I can use by simply getting online to a server that hosts the website and the software.

A little background

Around 1973 the original Utah crew installed a couple of HF beam antennas at a former research site near Corinne, Utah, near the road on the way to the [Golden Spike National Historical Park](#). After a mishap and a misunderstanding, the antenna site was taken down until others came along to resurrect the idea of providing an HF service to prospective listeners.

Once (or thrice) upon a time later a group of noble and able-bodied hams, including Clint Turner KA7OEI, et al, got together and erected a tower and a log-periodic antenna at the same Corinne site. They gathered donated computer and internet equipment and set up the precursor to today's receive-only ham radio station known as the [Northern Utah WebSDR](#).

The Northern Utah WebSDR in particular

It turns out that our own WebSDR in Corinne, Utah, is one of the most widely known and used in the nation, possibly because it provides some of the best amateur coverage. including all LF, MF, and HF bands, as well as 6 meters and 2 meters. It's constantly being upgraded, updated, and maintained by its owners. Today it's connected by several redundant servers that are powered by UPSs to minimize outages.

The main antenna of the Northern Utah WebSDR is a [Model 530](#) log periodic omnidirectional antenna by TCI International, perched about 92 feet off the dirt, and installed on 28 February 2018. It presents a circularly oriented receive pattern, to reduce the effects of fading due to polarized signal rotation. Another is



a [hi-gain LP-1002](#) log-periodic beam antenna, weighing about 1500 pounds and aimed at 87°N. You can see a [video of the 530 antenna](#) by Gary Crum KK7DV.



How a WebSDR can benefit me

- You don't have to spend a lot of money on a monster antenna (or any antenna at all, for that matter) that can bring in the entire world to your shack
- In fact, anybody who has internet access can use the WebSDR free-of-charge
- Even though the WebSDR is *receive-only*, that's an understatement. Its omnidirectional receive pattern allows you to pick up distant signals almost without regard to direction of origin.
- Each user has the ability to tune to a frequency apart from every other user, which allows multiple operators (75 to 90 at a time) to get on the website and listen to different frequencies at the same time for each server.
- One useful aspect of the WebSDR is the unique ability to listen to what you sound like as you're transmitting from your own station, in case people complain of distortion or other issues from your

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signal, for example. This also allows you to test your antenna or compare different antennas you might have built or are experimenting with.

- Viewing the WebSDR online can give you an idea of band conditions. If its waterfall shows few to no conversations taking place, chances are the conditions are not the best for SSB on that band.
- Instead of calling out and asking whether a frequency is in use, you can *see* that it might be in use, although it's still a good habit to verbally ask anyway
- If your local station is plagued by noise, whether that's from your home or from a neighbor's solar inverter, the WebSDR will not likely be hammered by the same noise problems. For example, most Utah hams never get on 160 meters because the required antenna is typically too large to install on their properties, and their house and neighborhood will likely wipe out the band with local noise anyway. The WebSDR can overcome both of those limitations.
- The WebSDR allows you to record the audio, so you can play it back at your leisure at another time. Simply click "start" after the **Audio recording:** button, then "stop" and you can then download the recording in .wav format.
- And speaking of recording the WebSDR has a graphing feature that can capture the analysis of a signal at your frequency of interest. In the lower-right of the screen after Sig. strength plot: click slow w/pk or fast w/pk to display the graph.

will not pose a problem.

You have limited control over the WebSDR, which is dictated by the software that hosts it. On the other hand, the WebSDR contains features that are unavailable to many modern transceivers.

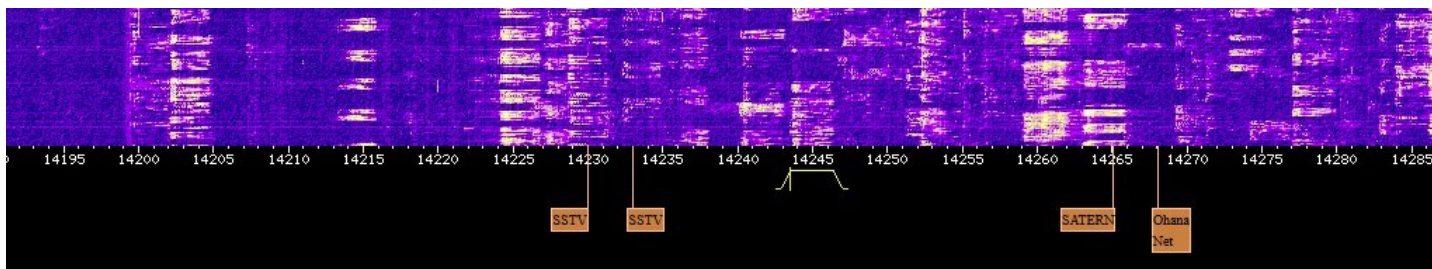
The antenna of the WebSDR is located quite far from your transmitting location, so that location difference can deceive you into believing that what the WebSDR picks up should also be heard by your own station.

How to use the Northern Utah WebSDR

First, open your browser and go to sdrutah.org

Next, select the server (distinguished by color names) that provides your band of interest. For example, if you want to try 20 meters, click [WebSDR2](#) ("Green").

Then, select the very frequency you're interested in, if you have one in mind. You can do that by manually entering the value of kHz in the **Frequency:** box. Another way is to click the bandwidth graphic on the



Drawbacks of a WebSDR

Because the WebSDR is receive-only, you won't be able to use it for transmitting. In most cases, your 100-watt (*barefoot*, as we call it) station is adequate for reaching those long-distant stations, so your biggest limitation will likely be your antenna.

The WebSDR is dependent on the internet being available to it and to your QTH, which in most cases

waterfall and drag the graphic to a frequency pointed at by the vertical line of the slanted-line graphic:



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Once again, all frequencies on the WebSDR are listed in kHz. With that in mind, you can jump straight to a particular frequency by appending the frequency and mode on the URL, like this:

<http://websdr2.sdrutah.org:8902/index1a.html?tune=14290usb>

Which means go to WebSDR2 and tune to 14290 kHz on USB.

Brown flags often appear under the waterfall, noting specially established nets, events, or assignments.

Tips for usage

- If you find a station that reports they have a good copy on you, but you could hardly hear them, turn down the volume (“AF”) on your own rig all the way, then locate the same frequency on the WebSDR.
- Once again, all frequencies noted or entered on the WebSDR are in kHz.
- You can drag the waterfall right or left to see what kinds of signals are being picked up the WebSDR antenna. While hovering over the waterfall, you can also expand and contract your viewing region by scrolling your mouse wheel.
- When somebody approaches your phone or computer, you can click Mute to silence the audio or drag the volume slider to the left to better hear your guest.

Finally

Clint gave an entertaining and very thorough presentation about the Northern Utah WebSDR to the



UVARC group on [January 2019](#), and then to our own group on [May 2020](#). He presented not only an historical perspective, but tips on how best to use the WebSDR to your advantage. The Northern Utah WebSDR is a 501(c)(3) organization that accepts [tax-exempt donations](#), but as mentioned, its resources can be used free-of-charge.

Here are links to other popular WebSDR sites, not necessarily in any order:

[KFS, Half Moon Bay, CA](#)

[W7NRA KiwiSDR, Phoenix, AZ](#)

[NA5B KiwiSDR, Washington, DC](#)

[K3FEF, Milford, PA](#)

[Lumpkin Schools, Dalhousie, GA](#)

[N4BUT KiwiSDR, Orlando, FL](#)

More than 170 WebSDRs have been installed worldwide, most of them accessible to anybody with an internet connection. A world-wide listing of the WebSDRs can be found at WebSDR.org

The screenshot displays the WebSDR interface with the following elements:

- Frequency and Mode:** Frequency is set to 7272.000 kHz, Mode is LSB, and VFO is A. The frequency scale ranges from -2.5k to +2.5k kHz.
- Band Selection:** Bands include 2200M, 630M, 160M, AM-160M-120M, 80-75M, 60M, and 40M. The 40M band is selected.
- Other receivers on Omni antennas:** Includes 30M, 20CW, 20PH, 17M, 15M, 12M, 10M Lo, 10M Hi, and 6M.
- Receivers on the East-pointing beam:** Includes 40CW-E, 40PH-E, 30M-E, 20CW-E, 20PH-E, 17M-E, 15M-E, 12M-E, 10M-E Lo, and 10M-E Hi.
- Receivers on the Northwest-pointing beam:** Includes 30M-NW, 20CW-NW, 20PH-NW, 17M-NW, 15M-NW, 12M-NW, 10M-NW Lo, and 10M-NW Hi.
- Waterfall view:** Shows a frequency spectrum with a peak at -71.3 dBm. Controls include zoom out, zoom in, max out, max in, Speed (medium), Size (medium), View (waterfall), and Hide labels.
- Audio controls:** Includes S-meter squelch (Off), Volume slider, Mute, Squelch, Notch1, Notch2, High Boost, DSP Noise Reduction (Off), and Audio buffering (+125ms).
- Gain control:** Includes RF AGC, Alt AGC, and Manual.