

AM DXing 101: An Introduction to AM DXing

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Since the beginning of radio, people have been interested in hearing faraway signals. When commercial broadcasting began in the early 1920s, radio was the cutting-edge technology of the day, and the engineering staff was always interested in reports of their station's signal quality and range. What essentially started as a community of century-old hackers sharing ideas and information morphed into a game anybody with a receiver could play: the DX game.

AM DXing—sometimes called Broadcast Band (BCB) DXing or Medium Wave (MW) DXing—is one of the easiest ways to begin pursuing the DX game. You don't need a license since you're not transmitting; you can start using almost any AM radio you have lying around; and in most cases, there's no language barrier. Many hams—myself included—got their start in the radio hobby because of AM DXing. It's a pleasurable, low-stress part of the hobby that I've occasionally revisited when there wasn't anything interesting to me on the ham bands. In 2022, 40 years after getting my ham radio license, the AM DX bug took hold of me again with a vengeance, and I've been at it seriously ever since.

Propagation

The reason AM DXing is possible lies in a curiosity of the ionosphere, the part of the atmosphere that allows radio waves to travel great distances. There are a few layers of the ionosphere: D, E, and F. Each layer affects portions of the radio spectrum in different ways. For AM DXing, the root of the fun lies in the D layer, the lowest layer in the ionosphere. During daylight hours, the sun heats up the atmosphere and forms the D layer, which prohibits lower-frequency signals from traveling far. They get absorbed into the atmosphere instead. AM signals will only travel so far during the day, no more than a hundred miles or so, depending on the power level and quality of the station's antenna. At sunset, the sun stops warming the atmosphere and the D layer begins to dissipate, removing the barrier that keeps AM signals from radiating far. Within a couple hours after sunset, you can hear stations from hundreds of miles away. This will continue until sunrise, when the long-haul propagation on the AM band will begin to shrink, until it completely fades away a couple hours after sunrise. This cycle repeats itself every day.

Conditions for AM DXing are best during the winter months. In the Northern Hemisphere, this roughly runs from September to March, when the earth has shifted away from the sun and the solar radiation hitting the Northern Hemisphere is diminished. When it tilts back toward the sun in the summer, the increased amount of solar radiation hitting the Northern Hemisphere makes for harsher conditions. DXing is still possible, but it's a lot noisier.

Starting Off

Getting started in AM DXing is easy. Almost any AM radio receiver will do and will let you hear the loudest AM stations—those that transmit with the highest power level of 50,000 watts. Lower-quality AM/FM clock radios may be poorly shielded, which will make them more susceptible to interference from household appliances. Portable AM receivers and clock radios usually have an internal AM antenna which consists of some wire wrapped around a ferrite rod. By rotating the radio to different orientations, you can change the direction the antenna is broadside to and help hear different stations in different directions. You may notice improved reception with a clock radio or portable antenna near a window. If you live in a house or apartment with metal in the walls, you may notice poor reception. You can try using the radio in your car under these circumstances. It's a good idea to find a radio that has a digital readout, if possible, so you know what frequency you're monitoring.

Every station is required to identify at the top of each hour. Many also identify at 30 minutes past the hour, give or take. While you can hear a station ID at any time, pay special attention during the top and bottom of each hour and during commercial breaks. Listen for any clues in a station's programming that may help you identify its location: weather reports, commercials for local businesses, area codes in phone numbers, or morning shows where local programming tends to be prominent. High school sports coverage is another good choice, as many local and regional stations will broadcast high school football and basketball games.

If you've had some success with a clock radio or simple portable and want to improve your receive capabilities, you can look at getting a better receiver and improving your antenna.

Better Portables

Some manufacturers have designed portable AM/FM receivers with improved performance, along with higher-quality internal ferrite antennas. Examples of these include CCrane, including the CCRadio 2E. Vintage models available on the used market include the GE Superradio and the Sony IC2010. The IC2010 has achieved legendary status in the AM DX world due to being an incredibly solid performer for a portable radio.

Some component stereo equipment, especially vintage gear from the 1970s, can offer good performance when coupled with a good antenna.

If your radio has an external antenna jack, work on running a length of wire outside your house or apartment. A 30- to 50-foot length of wire as high in the air as possible, preferably running in a single direction, will do wonders for your reception. If you can go longer, all the better. If outdoor antennas aren't practical for your home environment, you can use a bi-directional loop antenna that passively couples to your radio for increased reception. Commercial models include the Tern AM Antenna Advantage and the Kato AM-100.

DIYers can build their own passive loop. There are dozens of DIY loop antennas on YouTube, but Radiodog has an [easy version](#) to get you started.

If you're a ham, most modern transceivers (or high-end communications receivers, for the shortwave listeners out there) come with a general coverage receiver that tunes down to the AM band. Use that receiver and the longest wire antenna you have, and you will get very respectable results.

SDR and Serious Antennas

If you decide you want to get serious with your AM DXing, it's time to take a look at much better gear. Most serious AM DXers use a software-defined radio (SDR) receiver connected to a PC. The software that comes with these radios is exceptionally sophisticated, with lots of filtering options and other effects to help you hear the weakest signals out there. There are several SDRs on the market today. Entry-level SDRs include the AirSPy HF+ Discovery, which comes with free software with lots of filtering options to help pull in weaker signals.

For serious DXers, an SDR combined with a great antenna can produce amazing results. Magnetic loop antennas, like the W6LVP models, are bi-directional and extremely sensitive. Anything off to the sides of the loop gets reduced in signal strength by up to 30dB. This is very helpful to null out a stronger station on the same frequency to hear weaker signals. Mount it on a TV antenna rotator in your backyard or set it up on a frame on your patio or balcony and you will be amazed with the results.

Editor's note: Applicable AM DXing equipment available from DX Engineering includes the [DX-Patrol MK4](#) SDR receiver; [RF-PRO-1B](#) magnetic loop antenna; an extensive lineup of radios from [Sangean Electronics](#); and Chelegance's [active indoor loop antenna](#) that covers the AM broadcast band and 2.3 to 30 MHz.

If you have the room, there are some dedicated wire antennas that are remarkable performers, when coupled with a preamplifier. Beverage antennas, just like the ones used by low-band ham radio operators worldwide, perform wonderfully for AM DXing. They have to be at least a couple hundred feet long, however. They are terminated at one end, so they receive in only one direction. Check the [ARRL Antenna Book](#) for details on Beverage antennas.

Some radio buffs use a BOG, or Beverage On Ground, with good results. Check out this [OnAllBands article](#) about BOG antennas.

There is also the KAZ antenna. Thought up by longtime AM DXer Neil Kazaross, the KAZ antenna is a triangular antenna about 70 feet long with an apex in the middle at about 22 feet tall.

DX Samples

How effective are these antennas and receivers? Using an AirSpy HF+ Discovery and a W6LVP loop, I've managed to hear almost 250 different AM radio stations in 33 states, four Canadian provinces, and six different countries since I got serious about AM DXing in March 2022.



I have a magnetic loop on an old TV antenna rotator in my backyard. It has a small footprint and has helped me pull in AM stations from California to Colombia from here in central Illinois.

Here's some samples of what I've heard:

[**KNX 1070AM**](#)—Los Angeles, CA: After years of trying, I finally heard California from my home in Central Illinois.

[**KBRH 1260AM**](#)—Baton Rouge, LA: Sometimes it's not about distance. This student-run station in Baton Rouge was running only 127 watts of power at the time I heard them. Many ham radio operators transmit with more power than that.

[**CKJH 750 AM**](#)—Melfort, Saskatchewan: Once in a while, a big station goes off the air for maintenance. This frees up the frequency for you to hear stations that wouldn't normally come through. Atlanta powerhouse WSB went off the air in September 2022 for an overnight, and I was able to hear this station in western Canada.

[**KTWO 1030 AM**](#)—Casper, Wyoming: Sunset and sunrise are magical times on AM radio, creating short pockets of enhancement that last only a few minutes. This was the case on this recording, which I've kept long to help highlight the changing conditions. 1030 AM is dominated by WBZ in Boston, even here in central Illinois. For a few minutes at sunset on January 18, 2023, I heard this station in Wyoming take over the frequency for a few minutes. Listen to the commercial for a moving and storage service beginning at 2:52 in this recording.

Additional Resources:

DX Central: An online community of AM DXers led by Loyd Van Horn, W4LVH. Loyd has a weekly livestream on his YouTube Channel where he does live DXing from his home in Louisiana and provides viewers with tips, tricks, and weekly challenges for listening.



Loyd, W4LVH, hosts the DXCentral live stream on YouTube every Friday evening from September through April, the AM DXing season in the Northern Hemisphere. He offers a wealth of info on technique, equipment, and weekly listening challenges to keep DXers on the hunt.

DX Clubs: Both the [National Radio Club \(NRC\)](#) and the [International Radio Club of America \(IRCA\)](#) are clubs for AM DXing and other forms of hobby radio. Membership is inexpensive, and both clubs publish regular bulletins and books to keep members up to date with the latest station information, regular reports from members on who is hearing what, and an extensive library of books and articles going back decades. NRC publishes the *AM Radio Log Book*, an annual listing of every AM station in the U.S. and Canada—a must-have for the serious AM DXer. And the IRCA offers awards for various achievements, such as hearing 100 different stations or tiered progress toward hearing all 50 U.S. states.

AM Station Databases

DXers need to know where to listen for stations and how to identify what you hear. Here are a few online resources of AM station information:

Radio-Locator.com

AMDXer.com—A searchable online database of AM stations in the U.S. and Canada maintained by Tim Tromp. This handy resource is sortable by frequency, state, programming format type, and more.

[Mesa Mike](#): Mesa Mike also features a searchable database of all U.S. AM stations. Mike updates his site from the FCC database daily. It can help you determine the distance and bearing to every U.S. station based on your location.

MWList: A worldwide site of station listings, including AM, FM, and shortwave. Create a user account and log all your stations heard and plot a map of their locations. Includes international AM station listings as well. Critical info for DXers looking for international stations on the AM band.

[U.S. AM Pattern References](#) compiled by NF8M: an interactive map showing the transmission radiation patterns of all U.S. stations. Use it to help you determine which station you may be hearing.

[AM DXing Facebook Group](#): A friendly space for Facebook users to gather and share tips and information on who is hearing what. Great resource for those new to AM DXing.

[#MWDX on Slack](#): For the Slack-savvy among us, the #MWDX channel is a real-time chat room and gathering place for AM DXers. Members of the channel post real-time DX tips, share equipment ideas, and hang out and virtually DX together.

AM DXing is just as exciting as any other radio pursuit. The thrill of the chase is there for newcomer and seasoned radio hobbyist alike, equipment to get started is affordable, and it can provide hours of enjoyment. An entire community of AM DXers is happy to help you get started. And you don't need a license. You can begin tonight, using receivers you already have. Besides, there is satisfaction in the simplicity of AM DXing...you're just listening to the radio! Give it a try. You're certain to have an enjoyable time.