

# **AM reception guide**

This web page provides a collection of AM radio reception tips from many web sites, with an emphasis on the easy and inexpensive solutions for listening to low power AM radio stations in your home or office. For several years I have had a web page which combined my own more or less original tips on [middle wave or AM radio reception](#) with an annotated list of links. This page attempts to bring the most important tips from my page and web pages other people have written into one web page. This is probably the most extensive list of tips for better AM radio reception on the Internet.

I started this page and its companion pages to help Catholics bring in low power stations that carry EWTN, but physics is physics so it should be useful for everyone. Because my interest is communication, not the AM radio hobby, many people with no interest in Catholicism will still find that these are the most useful web pages available.

## **Free and Easy Tips**

Let's start with tips that are easy and free. Later in the page I will discuss some reasonably priced [equipment to bring in AM radio](#).

First, if you are having trouble bringing in a talk radio program and your radio has controls for treble and base then turn the treble all the way down and the base all the way up. If you have a control for tone then turn it all the way down. Many inexpensive radios do not have these controls, but if your radio does have these controls this is a cheap, easy solution that can eliminate much of the static.

Second, reception works better near windows. Avoid areas covered by metal, brick, or concrete. There is an exception to this rule. If there is a source of interference you may improve your reception by moving away from it. More on interference later.

Third, slowly turn the dial to look for the station. If it is difficult to find you can mark its location with a little invisible tape, which is really near invisible tape. You can also memorize exactly where one side of the needle lines up on the dial. It also helps to memorize the stronger stations that are near to the one you are searching for. This can help you explain where the station is to your friends.

Fourth, properly orient your AM antenna. The telescoping antenna that sticks out of your radio is for FM, not AM. The AM antenna on a portable radio is usually a ferrite rod with a thin wire wound around it. The AM antenna is inside the radio and normally runs across the back of the radio parallel to the ground. To get the most signal either the front or back of the radio should face the broadcast tower so the antenna is perpendicular to the signal, like a sail spread out to catch the wind.

## **Minimize Interference**

But sometimes it is better to minimize interference rather than maximize the signal. You do this by pointing one end of the antenna rod at the source of interference. As the antenna rod normally runs along the back of the radio, parallel to the ground, you point either end of the radio at the source of interference.

This can do wonders. The interference may almost disappear.

If your problem is another radio station that is right next to the one you want on the dial you might be able to find out through experimentation, or the Internet where its signal is and then point either end of the radio at the offending stations broadcast tower to largely eliminate its signal.

Often the interference is not another radio station, it is an annoying buzz. Note, that the interference is always a radio signal, whether it is a signal from another channel or a buzz from a florescent light. You minimize the signal by doing the opposite of what you would do to maximize a signal you want.

You can find buzz interference with a radio. If you have a portable radio you can move it around looking for the buzz. If you put the radio up close to a source of interference, for example, florescent lights, it should buzz loudly, the buzz will decrease as you move it away.

Also the buzzing will increase if the front, back, top or bottom of the radio faces the interference, and decrease if the left or right end of the radio faces the interference. This is because the interference decreases when either end of the ferrite rod antenna points at the interference, and increases when the length of the rod faces the interference.

You can also look for interference by turning individual appliances on or off. Or turn all the electricity in part of your home off with the switches at the fuse box. This will allow you to narrow down the search for your problem.

### **Interference sources you can turn off**

When you are looking for interference it helps to know what the likely sources of interference are. Unfortunately there are many sources of interference. Here is a list of interference sources that you can simply turn off if the source is in your home.

1. florescent lights
2. incandescent lights that are about to burn out
3. blinking Christmas lights
4. television
5. computers and monitors
6. electric motors
7. vacuum cleaners
8. microwave ovens
9. electronic bug zappers
10. electric blankets

### **Interference sources you can not simply turn off**

Unfortunately, there are many other interference sources that can not simply be turned off. Here are some of the more common ones with suggested solutions.

Touch lamps, the type you turn on by simply touching the base, have to be unplugged not just turned off.

Light dimmers can cause interference even if they are in your neighbor's apartment. If you have one in your home, you can have it replaced with a regular switch. I have not had to deal with a dimmer switch built into the wall but I have dealt with dimmer switches built into lamps. I have found that if I turned the light off completely the interference was eliminated, which is contrary to the normal story. Perhaps this is only true of dimmer switches built into lamps.

Hard wired smoke detectors cause interference, they can be replaced by battery powered models.

Aquarium heaters, particularly some cheaper models, cause interference. You can upgrade to a better model. The key point is the way the thermostat turns the heater on and off. In cheap heaters the electricity can arch when the heater is about to turn on. In the more expensive models little magnets pull together and complete the circuit in a quick way that prevents arching.

Automatic on/off night lights and outdoor yard lights which come on automatically also generate interference.

Dirty or faulty insulators on utility poles can cause interference, you can phone the utility company and ask to have them repaired or replaced.

A faulty electric switch in your house can cause interference. You can have it replaced. This might be a good idea even if you are not concerned with AM reception.

The interference maybe coming through the electric socket that powers the radio. If the problem disappears when you use a battery-powered radio then you have found the source of the interference.

Some older radios have plugs that are not polarized. If you can flip the plug over then the plug is not polarized. Sometimes the interference can be cut by turning the plug over and putting the prongs in the opposite socket holes.

The chlorine in swimming pools can generate interference, the source I used gave no suggestions for reducing this. I have checked a couple of pools and I have not been able to find this interference.

There maybe other sources of interference in your neighborhood that you will have to live with: medical equipment, radio equipment, and neon signs. You can deal with these in several ways.

First, minimize the interference by pointing the ends of the ferrite rod toward the source of interference as explained above.

Second, move the radio as far away from the source of interference as you can. If the interference is very close by this can work wonders.

Third, sometimes there is interference for only part of the day. You can record programs, even while you are not at home, and listen to them at your convenience. I discuss this below as part of this summary, but I also have a web page with my original ideas and some links on [timed radio recording](#).

## **Timed Radio recording**

A cheap way to do this is with one of those anti-burglar timers used to fool burglars into thinking you are home by turning the lights on and off. You can set the anti-burglar timer to go on and off when the program begins and ends. Set a radio tape player to the radio station and to record. Insert the cord from the radio tape player into the anti-burglar timer and the anti-burglar timer into the wall socket.

A difficulty with this solution is that you can only record on one side of the tape unless you have auto reverse, which most inexpensive tape recorders do not. With a two hour tape you could record a one hour program, but two hour tapes are thinner than other tapes and can break in the machine and jam it. Many manufactures recommend that you do not use them. The hour and a half tapes will give you 45 minutes of recording on a side and are the longest generally recommended tapes. However there is a 110 minute tape by Maxwell which C Crane and Company recommends and sells, this will give you 55 minutes of recording to a side.

Many Catholic programs are only a half hour long, and most are no more than an hour, so the 55 minutes of recording time that you can get on a Maxwell tape will give you most of the program. This will at least give you a chance to get a good taste of Catholic radio. If you fall in love with Catholic radio you can use your VCR to record the program or buy the reasonably priced equipment discussed below. If you want to listen to typical three-hour secular talk radio you have even more reason to use your VCR or buy the equipment.

You can also rig at least some, perhaps all, VCRs to record programs. This has the advantage that you can record up to six hours in slow play mode. The disadvantage is that you will have to use the VCR to play the tape back. This works well at home but you cannot listen in the car.

There are several special recorders that you can buy to do timed recordings but now we are talking money. But as I have finished the free suggestions this is a good time to make the transition to solutions that cost money.

## **Buying equipment**

There are several types of equipment you can buy, a better radio, antennas, and a little less obvious equipment for timed radio recording so you can record when the signal is strong and play it back when it weak. Also less obvious is equipment that will rebroadcast an AM signal on a FM channel so you can put an AM radio and antenna where the building you are in does not block the AM signal and rebroadcast it to an FM radio where you can listen to it. But first, a couple of points about buying equipment.

The average American adult spends about a thousand hours a year listening to radio according to government statistics, which are probably over estimated. The majority of that time is spent with FM, but hundreds of hours are spent on AM. As much of this equipment will last for many years, the cost per hour is close to nothing, if you use it.

That if, (if you use it) is where the cheap and free solutions can be very useful. They can give you a chance to try before you buy. If you find you are really into listening to Catholic radio on a regular basis you can easily justify buying the equipment.

On this note let me mention one last free solution that can help you determine whether you want to spend that money. Many radio stations can be heard on the Internet. EWTN can be heard at [ewtn.com](http://ewtn.com). If you have broadband you may well be able to simply listen to Catholic radio there.

If you are on a 56K modem I assume you can hear it, but you will have to be on the Internet and therefore you cannot receive phone calls. In the long term it is probably better to get EWTN some other way, even through short-wave radio, just to free up your phone line. However this can be a good way to check out Catholic radio to determine whether you want to spend money on equipment to bring EWTN and other Catholic radio in.

If you do not have the Internet at all you may still be able to check out EWTN on the public access computers at your local public library. My library has earphones to do this. You can check to see if yours does, perhaps you can bring your own if they do not.

### **Timed recording equipment**

So now on the equipment. C. Crane and Company sells a VersaCorder which can do timed radio recordings for about 100 dollars. It can record at normal speeds and at one-quarter speed. Crane also sells and recommends a 110-minute tape. This tape has 55 minutes to a side in normal speed and 3 hours and 40 minutes to a side in quarter speed mode.

You can not play the tapes recorded at one quarter speed in a regular tape recorder, but you can run the VersaCorder off of batteries. This allows you to play the tapes in your car. You can also run the VersaCorder off of the cigarette lighter in your car with a special cord.

I have not had a chance to use the VersaCorder myself this is simply based on the C. Crane and Company web site, but Crane is an old established company with strong reputation for quality equipment.

I also have not had a chance to use the Radio Program Recorder and am once again just relying on their web site. The Radio Program Recorder is a combination of several devices which are sold in different combinations at various prices. The lowest list price is about \$140, but at this writing it is on sale for half that, \$70.

For your \$70 you get a portable radio, a device that records programs, and a third device that takes a radio signal in from the radio which can be tuned to AM and transmits it to another radio on an FM channel. Crane sells the VersaCorder for \$100 and the Digital FM Transmitter discussed later also for \$100. So the Radio Program Recorder looks like a deal because you get both for \$70 dollars. But I have not tried it, so who knows what the quality is.

One advantage of the FM transmitter is that you can set up a radio tuned to AM in a place where you can get good reception, for example, next to a window or away from interference, and then transmit the signal to a place where the reception is not so good, for example, at your desk at the office.

In 1991 the FCC expanded the AM band to include 1605 through 1705. Radios sold before then do not have these frequencies on the dial and therefore can not pick up some stations, for example, 1620, the Catholic station in Sacramento. The other Immaculate Heart Radio stations are not in this range and should not be affected. If you wish to hear a station in the 1605 to 1705 range you have to have a recently built radio.

## **Quality Radios**

There are a couple of radios that are widely recommended for AM talk radio. The cheaper one is the GE Superadio for about \$50. A local super drug store or department store probably carries it. The other is the \$150 CCRadio by C. Crane Company, which is bought through the mail or at their web site.

Note the GE Superadio, which is made by Thompson Electronics not GE, is spelled superadio not super radio or superradio. Also note that Crane spells their radio CCRadio, not CC Radio, or C. C. Radio. This may help you find them information on the Internet.

When I tested them side by side I found that the reception was pretty much the same. The CCRadio does have a digital tuner, which is better if you plan to switch between stations. The CCRadio is specially tuned to listen to talk radio, which makes it good for a lot of Catholic radio. But it may not bring in music as well.

One difficulty with the CCRadio and many other methods for bringing in Catholic radio is the price. It is not that \$150 dollars is too much for a radio which you may be using for many thousands of hours. It is that for about \$150 dollars you could buy a very good short wave-radio which would bring in EWTN short wave and will also function as an excellent AM radio, probably about as good as the GE Superadio and the CCRadio. The fact that you can get EWTN short wave puts a cap on how much you might want to spend on a pure AM solution. For more information on [short-wave equipment for EWTN click here.](#)

For a little over \$200 you can get an excellent short wave radio, the Sangean ATS 818ACS, that has a built in tape recorder and does timed recording. This will allow you to tape any time you get good reception and listen to the programs when you do not. I have found that short-wave reception seems to be about the same any time of day, you just listen to different channels, so this is less useful than I thought. Nevertheless, it should allow you to listen in the car on the way to work, and share the programs with your friends.

It should be mentioned that the local AM radio has things the national service does not. There are announcements of local events you might want to go to. Our bishop speaks to us through the local AM station but not the national service. Finally for at least the Sacramento station there is Bob Dunning's program, "The Bishop's Radio Hour". If you are a fan of that then you need to concentrate on AM even if you have to spend more than a couple of hundred dollars.

Another national radio source that is just becoming available is [Sirius Satellite Radio, which is adding EWTN](#) to its service. This is likely to provide very clear reception but the price is higher than the one time cost of short-wave. Still the price is not unreasonable. I will be collecting more information this.

## **Antennas**

Another way to improve your AM reception is with an antenna. Many sources will tell you this is the most important way. An antenna can certainly help a poor radio, because the poor radio has a poor antenna. However, I have found that it does not improve the GE Superadio or CCRadio much because the built in antennas are already very good.

Nevertheless, a tunable loop antenna is a frequently recommended way to improve AM reception. You can order a Select-A-Tenna from many mail order and on line sources. It is about \$60 and is highly recommended. Once again the difficulty for Catholics is that a GE Superadio and a Select-A-Tenna together put you into the price range of some fairly good short-wave radios. Still if you really value the local Catholic signal the Select-A-Tenna can make an improvement.

Radio Shack puts out a tunable loop antenna for about twenty dollars, one third the price of a Select-A-Tenna. Once again it does wonders to improve a cheap radio, but I have difficulty seeing any improvement on my GE Superadio. I have done a side-by-side comparison between the Radio Shack and Select-A-Tenna, and the more expensive Select-A-Tenna was better than the Radio Shack tunable loop.

The tunable loop antennas do not have to be wired to the radio. You can place the antenna next to the radio, experiment with it to find the best position.

The directions usually recommend that you simply experiment, but here is another clue. Place the loop so it could be rolled if it were a wheel toward the station. This is perhaps not obvious because you would think the loop should be positioned like a dish to catch the signal, but this is what works.

The ferrite rod antennas are often oriented to minimize interference rather than maximize the signal. The same is true of loops. Orient the loop toward the interference as if the interference was an axle and the loop was a wheel. This should reduce the interference.

Some web pages recommend what are called long wire antennas. These are long wires strung up outside to catch radio signals. They are cheap, but can attract lightning strikes, which can destroy equipment, burn down your house, and perhaps kill you. There are other safe solutions for Catholic radio listeners including short wave radio, so there is little reason Catholics should take this risk.

As mentioned earlier reception is best near a window. Metal, brick, and concrete can hurt reception. Particularly at the office it can be very difficult to get good reception. C. Crane and Company sells a one hundred dollar Digital FM Transmitter. You put an AM radio near the window. Plug it into the Digital FM Transmitter and the FM transmitter turns the AM signal to an FM signal and broadcasts it. You should be able to pick it up on an FM radio in your cubicle.

As mentioned earlier there is a FM transmitter that comes with the Radio Program Recorder. A radio, FM transmitter, and tape recorder which is set up to do timed recordings all in the Radio Program Recorder package which has been available for as little as 70 dollars but I do not know about the quality.

This file is now up to 21 thousand bytes, almost all of it text, that should be about 10 type written pages. I have tried to provide you with almost all the cheap, easy, or reasonably priced tips. There is more information on some of the other AM radio pages which you can access on my links page on [AM radio reception](#)