

AM reception guide

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.

Free and Easy Tips

First, if you are having trouble bringing in a talk radio program and your radio has controls for treble and bass then turn the treble all the way down and the bass 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. I found that moving away from a window that was close to a power line improved reception. 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

fluorescent 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, fluorescent 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.

This can allow you to determine almost exactly where the interference is coming from in your neighbor's apartment. For example, by playing with the radio in various places in my apartment and finding out at what angle the buzz disappeared I was able to determine that a television set in my downstairs neighbor's apartment was the source of interference. It was a matter of looking for the intersection of several straight lines.

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. The lucky thing is that the interference often disappears if the radio is not within a foot or two of the interference. Often, but not always. At any rate, here is a list of interference sources that you can simply turn off if the source is in your home.

1. fluorescent 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
11. scanners
12. cell phone chargers
13. electrostatic air purifier, for example Ionic Breeze
14. ultrasonic motion detectors

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. This point was confirmed by a note from my guest book, "Have had interference from an radio shack adapter that screws onto a light bulb, for automatic turn off at dawn; at great distances"

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 with a radio and I have not been able to hear 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. Most interference problems disappear if the radio is a couple of feet away from the interference so 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 Maxell 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 Maxell 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. I have a more detailed web page on timed radio recording with both tips and links. The links can give you more detailed instructions on using your VCR to record programs.

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. If you have broadband you may well be able to simply listen to Catholic radio there.

If you are on a 56K modem you can also hear it, it only requires about 15K, but you will have to be on the Internet and therefore you cannot receive phone calls, unless you have actually gotten the Net Waiting program or some similar software to work. In the long term it is probably better to get EWTN some other way 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.

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. The fact that I have written all the wrong spellings will help people find my web page on search engines.

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. Furthermore, my first suggestion about turning the base up and the treble down may do much the same thing.

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 and will also function as an excellent AM radio, probably about as good as the GE Superadio and the CCRadio. The fact that good shortwave radios are also good AM radios puts a cap on how much you might want to spend on a pure AM solution.

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.

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.

One last point on buying radios. If you have an old radio you may not be able to get some stations. 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.

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 the antenna's I tried did not improve the GE Superadio or CCRadio much because the built in antennas are already very good.

While the antennas I have tried have failed to greatly improve the reception of really good radios C. Crane company is selling what they call a Twin Coil Ferrite AM Antenna which one of their customers claims greatly increases the reception of his CCRadio.

This antenna used to be called the Justice Antenna after its inventor Chris Justice, who is the head engineer at Crane.

I have not tested Twin Coil Ferrite AM Antenna. It costs a hundred dollars, and the Catholic radio station I was trying to get moved closer, so now I have no difficulty getting it.

While I have not tested this antenna another website, The Hardware Maniac, did. You can find it at this page in the Internet Archive

The Hardware Maniac asked for a free antenna in exchange for writing the review. His first impression was that it did not help much with a good radio, the CCRadioplus. It did wonders for cheap radios. This is what I have found; antennas only help with cheap radios.

The Hardware Maniac contacted Crane and Chris Justice told him that the antenna would not help much inside his house because his home was cement block construction with steel reinforcing rods. Following Justice's suggestions he tried it out doors and got impressive results. He pulled in stations a thousand miles away. You expect that with shortwave or on rare occasions with AM, but The Hardware Maniac felt it was pretty easy.

This leaves me with some questions. Does the Justice Antenna work inside in most houses. Was the problem limited to the Hardware Maniac's cement block house with steel reinforcing rods?

The Maniac solved the problem by putting the antenna outside on top of his house and using a cable to bring the signal inside, but many people do not want an outside antenna for various reasons.

The Hardware Maniac has the longest most detailed review of the Justice antenna but Philly talk radio online has several short reviews written by users. They are generally very positive. They seem to think that the Justice antenna is a big improvement compared to Select-A-Tenna which was previously the recommended antenna. One user tested it with the GE Superadio, which is interesting.

There are two articles by James Careless on the Justice Antenna. The link I just gave you is to the short one. This link is too the longer article on the Justice Antenna.

I would be very interested to hear what other people thought of the Twin Coil Ferrite AM Antenna. If you have had time to test it you can leave a message in my guest book.

What I have been able to test are tunable loop antennas which have been recommended as a 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 used to sell 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, which I mentioned several paragraphs above. 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.