

# Build an FM Antenna

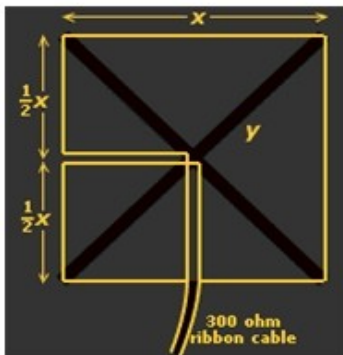
## *A do-it-yourself project*

The single most important thing that you can do to improve your reception of WSLR-LP is to use a good antenna.

It's easy to build a good antenna for listening to FM radio. The design given here can be built in under half an hour if you have the parts and it works better than products from Radio Shack and elsewhere that cost over \$100. This antenna works much better than most commercial powered or amplified units.

You need two rods made of wood or plastic or anything that isn't a conductor (so don't use wire from a coat hanger, for example), a length of insulated wire, some sticky -tape or thumbtacks or some substitute, and a length of 300 Ohm ribbon feeder cable to connect the antenna to the radio. It will help if you can solder the wire connections together but it isn't essential.

The antenna, as shown in the diagram below, is square and is made by wrapping wire around a frame of crossing rods. The size of the square is important and is shown in the table. If you listen to stations all over the FM dial then use the smaller measurements for the "full band", and this would include WSLR-LP. [If you wish to build an antenna for listening to college radio in the 88 to 92 MHz range, then choose the larger size antenna for "non -commercial".]



The length of the side of the antenna is  $x$  and  $y$  is the length of the rod you need to make the correct size of square.

Frequency Band	$x$	$1/2x$	$y$
88-92 MHz	832 mm	416 mm	1178 mm
Non-commercial Band	32.8 inch	16.4 inch	46.4 inch
88-108 MHz	760 mm	380 mm	1075 mm
Full FM Band	30.0 inch	15.0 inch	42.4 inch

Connect the rods together in the middle with tape, string, a nail or whatever. Try to keep them perpendicular to each other. You might want to brace the frame for extra strength. Wind the wire around the rods as shown. This is the tricky part. In order to pull the wire taught you need to tie

together the corners of the  $\frac{1}{2}$  x lengths. I used electrical tape for this. Connect the two ends of the length or wire together at one of the points where the feeder connects, this involves stripping the insulation back a bit, winding the ends together and, preferably, soldering them up. One of the conductors in the feeder connects to this point also, the other connects the corner of the adjacent loop. Strip a bit of insulation off at this corner and attach the other conductor of the feeder.

Connect the other end of the feeder to the 300 Ohm antenna input on your radio. If your radio only has a 75 Ohm coax input then get a 300 to 75 Ohm converter (called a "balun") from Radio Shack that plugs into the socket on the back of radio.

Now, fiddle with your antenna. Experiment with all different directions, orientations and positions in your room till you get the best reception. To get the best signal, you may need to reposition the antenna when you change stations. Also, moving things around the room, including yourself, may change reception. Best of all, install the antenna in your attic and run a longer length of feeder cable to your radio.

This antenna is a modified cubial quad design. The modification is to the feed that increases the antenna's gain by 3db when receiving circular polarized signals. WZBC DJ Ethan Funk is responsible for the modification to the design.