

How to Make Your Own FM Antenna

Today's TipsMake will show you how to make your own antenna to improve the range of your FM receiver. Depending on your preferred frequency, you can use coaxial cable or speaker wire.

Use coaxial cable



Prepare the necessary materials. To make a straight antenna from a coaxial cable, you need the following materials:

50 Ohm (or 75 Ohm) coaxial cable with copper shielding.

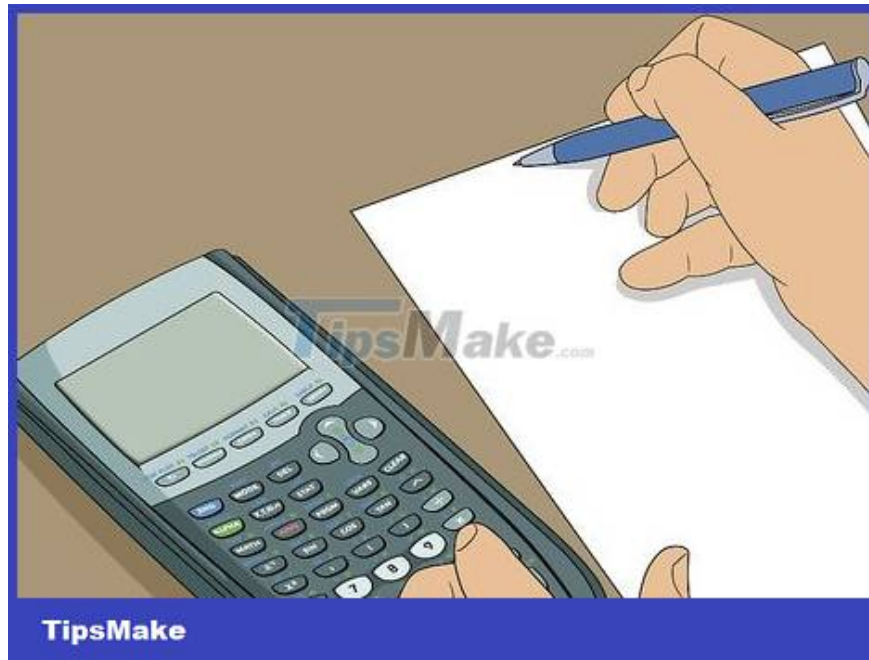
FM receiver with coaxial connector.

Copper tube diameter 9.5 mm

Wire cutting pliers

Hacksaw

Welding tools



Calculate the length of the antenna. Thus, you will know the length of copper pipes and coaxial cables that need to be cut:

Divide 468 by the frequency you want to connect to (e.g. $468/108\text{MHz} = 4.3$).

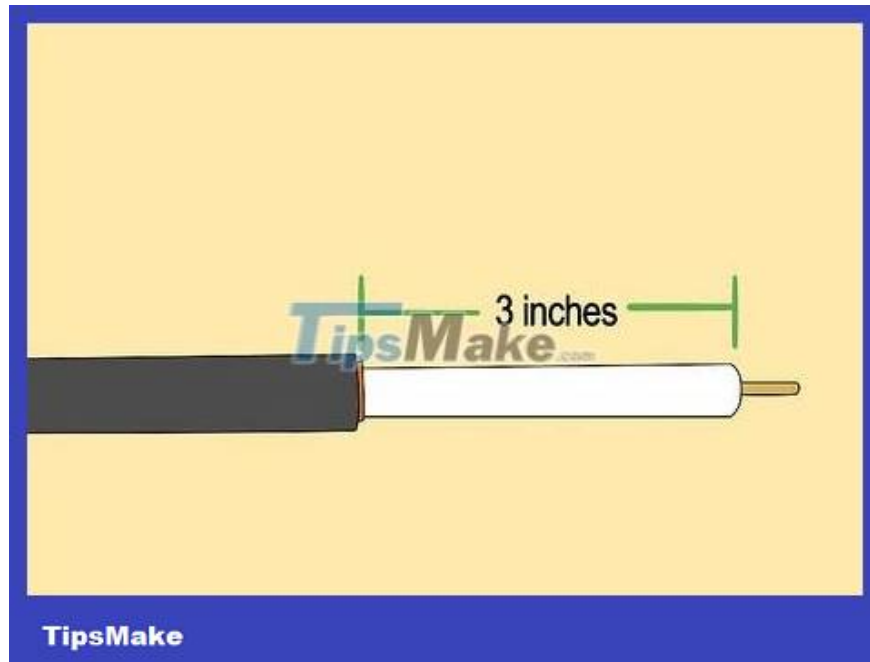
Take the previous result and divide it by 2 (for example: $4.3/2 = 2.15$).

Continue multiplying by 30.5 cm (12 inches) to calculate the antenna length (e.g. $2.15*30.5 \text{ cm} = 65.57 \text{ cm}$).



Cut one end of the coaxial cable. Keep one end of the coaxial cable intact as a connector, then cut off the other end.

You can use wire cutters or a hacksaw to do this.



Strip the outer sheath to half the length of the coaxial cable. You need to remove each protective layer until you see the white sheath surrounding the cable core.

For example, if the antenna is estimated to be 15 cm long, you need to strip 7.5 cm of the protective cover.

You need to remove the protective copper cover during this process. The easiest way is to use a saw to mark a shallow line around the area to be cut and try to strip the copper sheathing off the cable.



Cut the copper tube to half the length of the antenna. This is the other half of the antenna receiver, so the copper tube should be as long as the part you just stripped.

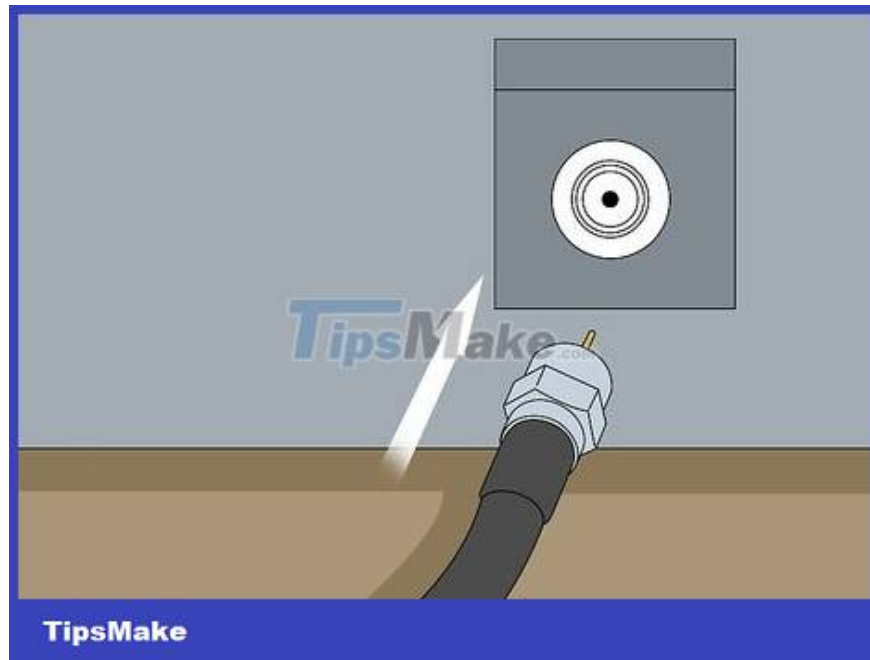
Again, if you plan to use a 15 cm long antenna, the copper tube must be 7.5 cm long.



Insert the copper tube into the coaxial cable. Insert the pile of copper into the stripped end of the coaxial cable and slide it down.



Solder the protective sheath of the coaxial cable to the copper tube. You can do this by cutting about 2.5 cm of PVC insulation (black) just below the stripped part of the coaxial cable, using pliers to turn it into a lip shape, then use a welding pen to Connect this lip to the copper shell.



Connect the coaxial cable to the radio receiver. Plug the coaxial connector you kept into the coaxial antenna port on the receiver, the remaining piece is the antenna.



Adjust the antenna. Once connected, point the antenna at the nearest broadcasting station and re-fix it if necessary.

The fewer obstacles between the antenna and the FM broadcast station, the stronger the signal you will receive.

The coaxial cable is sturdy enough to lie in the desired direction without support, but you can use brackets or tape to secure the antenna if necessary.

Use speaker wire



You need to understand when to apply this method. If the FM signal is relatively good but sometimes just needs a little tweaking, you can use the speaker cable as a range amplifier to improve connection quality.

Speaker wire is not the ideal solution for long-range reception. If the signal has persistent problems, you should use coaxial cable.



Prepare the necessary items. To make a rudimentary antenna from speaker wire, you need:

3 meters of speaker cable

FM receiver with clip-on (or straight) connector

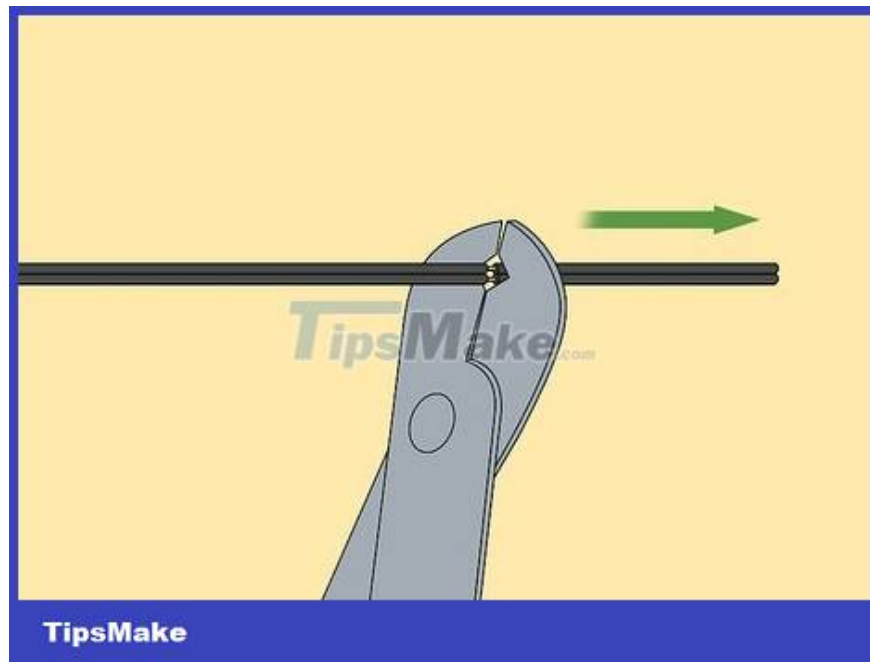
Wire stripping pliers



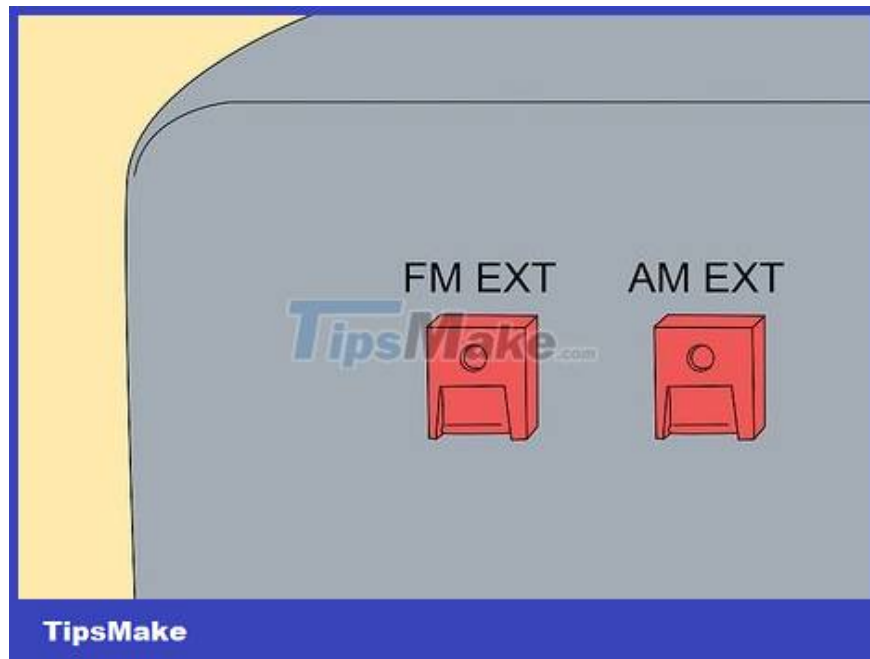
Strip about 1 meter of speaker wire. Use a knife or pliers to separate about 1 m of speaker wire in opposite directions. You should separate about 1 m and leave 2 m of intact wire.



Bend the speaker wire into a "T" shape. Bend each end of the separated wire at a 90 degree angle compared to the remaining 2 m long wire.

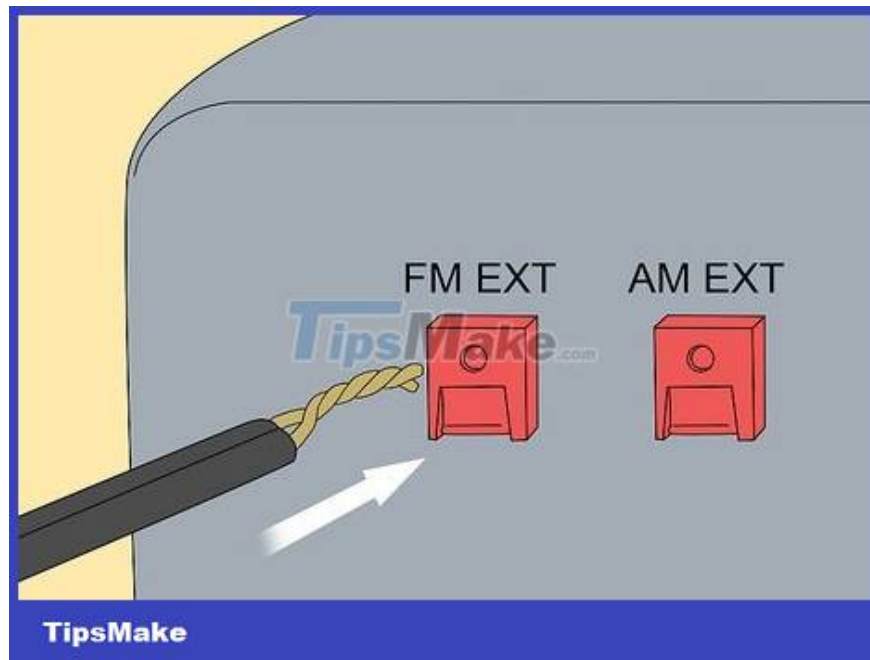


Strip about 5 cm of insulation from the intact speaker wire end. Use wire strippers to do this. After stripping, you will have two bare wires at the end of the "T".



Find the receiver's antenna port. Usually, there are two ports marked "FM EXT" or "ANT EXT", but you'll most likely see the "FM" port somewhere near the connection port; There is also a "Balanced" or "BAL" label near the corresponding connection ports.

FM receivers will have clip-on or straight connectors. The clamp-on connector is clamp-shaped as the name suggests, while the straight connector takes the form of a metal pin inserted into the connecting post.



Connect the bottom of the "T" speaker cable to the receiver. Use the bare wire end below the "T" you stripped to connect it to the FM receiver's connector.

If there is only one connection port on the FM receiver, you can twist the two bare wires at the end of the "T" together to form one and connect to the clip or post.



Adjust the antenna. In theory, you need to place the antenna as high and close to the transmitting station as possible. But in some cases, this means putting the antenna up on a wall or outside.

You may need to move the FM receiver so that the signal is strongest.

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