

Citizens Band (CB) Radio Service – A guide to Radio, Antenna and Coax Selection and Installation

With CB radio there are a limited number of options for radios, antennas and coax that make sense. The first is whether you want a handheld (walkie talkie) or a mobile radio that installs in your vehicle. There are advantages and disadvantages with both. CB Radios as a whole have a significant disadvantage. The maximum output power limit of 4 watts. This limits the range to about 2 miles under the best of conditions. The major manufacturers are Cobra, Midland and Uniden. There are other manufacturers of CB radios but there is not much cost difference between those and the major manufacturers.

Handheld CB radios are typically a little more expensive than installed radios. There are advantages with a handheld radio such as that it is portable, no installation is necessary and that it can have the same power output as the installed units. The disadvantages are that it is battery operated, use a very poor performing antenna. If operated within a vehicle further performance issues will be present due to the vehicle's metal body.

Improvements to handheld radio can be made. The poor performing antenna on the handheld can be replaced by using a magnetic mount mobile antenna that would temporarily attach to the vehicle's exterior metal body. A coax (feed line) would run from the magnetic mount to inside the vehicle and connect to the handheld radio, also temporary. This would improve the antenna performance by using a better performing mobile antenna. Also with the antenna outside the vehicle, it would eliminate the vehicle's metal body from interfering (blocking) the signal. Another simple improvement can be made by powering the handheld radio from a charging adaptor that plugs into the cigarette lighter.

Vehicle installed (mobile) radios have two big disadvantages. The first is that it needs to be installed. The second is where to install it. The radio needs to be installed in a convenient location so that access to the controls is accessible, see the display and so you can easily hear the audio from the speaker. Most installable CB radios have a jack for a remote mounted speaker and this might provide a little more flexibility with the where to install it question. The typical install locations are on the dash, under the dash, overhead, on a roll bar or an aftermarket mounting system.

There is another type of vehicle installed radios that provide much more flexibility. These are remote mount CB radios. These types have everything in the microphone such as the speaker, volume and channel controls and the display. With this system, the main unit can be mounted anywhere such as under one of the seats. These remote mount CB radios are more expensive than the traditional CB radio, around the cost of a handheld.

Selecting an antenna is just as important as selecting the radio. The better the antenna the better the performance you will get from the radio. For CB radios, it is important that the antenna is installed to on metal body of the vehicle or other metal connected to the chassis such as the spare tire mount or tailgate. There needs to be a good ground connection. So before selecting the antenna, it is important to determine where you will install it. Then you can determine the type of antenna mount that is necessary for the application.

The ideal CB radio antenna is the 9 foot long whip. This is the most efficient mobile antenna as it is a straight piece of wire. Another and popular type of antenna is the 4 foot long fiberglass construction. What this is, is a 4 foot piece of round fiberglass with a 9 foot long piece of wire spiral wrapped around it. This antenna is a good compromise.

The type of coax is less critical for CB radios than it is for higher frequency radios. Two important considerations though are the length and conductor type. The length of coax should not be much longer than necessary. Having excessively long (excess) coax usually would have the excess coiled up which can create issues as well as the extra losses. If the antenna will be installed on the spare tire mount or tailgate then a high flex coax needs to be used. Due to the repetitive motion, a solid center conductor coax will break over time. A stranded center conductor coax should be used with this type of antenna installation which is much more forgiving with repetitive motion.

The installed traditional or remote mount radios need to have the unit powered by the vehicles electrical system. It is best to connect the radio directly to the battery. Additional wire may need to be added to the wire harness provided with the radio. The two wires (positive and negative) should be twisted together from the radio all the way to the battery. The twist rate should be about one or more twists per inch. This helps eliminate unwanted interference from any other of the vehicles electronic or electrical systems to the radio which is heard through the CB radios audio speaker.

Handheld CB Radio examples:

Cobra: Hhrt50 around \$100.00

Midland: 75785 around \$60.00

Traditional CB Radios examples:

Uniden: Pro510XI around \$40.00

Cobra: 19DXIV around \$50.00

Midland: 5001Z around \$70.00

Uniden: PC60LTX around \$80.00

Cobra: 29 LTD around \$120.00

Midland: MXT115 around \$150.00

Remote mount CB Radio examples:

Uniden: CMX760 around \$120.00

Cobra: 75 WX ST around \$120.00

CB Radio Antenna examples:

Magnet mount: Wilson Little Wil around \$40.00

Magnet mount: Cobra HG A1500 around \$45.00

4 Foot Fiberglass: Prostick around \$20.00

4 Foot Fiberglass: Firestik WK around \$23.00

9 foot whip: Various around \$60.00