

Shopping for a Mobile Radio

As you expand your ham radio horizons, you'll probably want to move beyond your handheld radio to something larger with far greater output power. For many hams, that next big move is a *mobile radio* — one that is designed for use in a vehicle, featuring a slender profile, higher output power, more audio punch, and a display that's easier to read.

A *base transceiver* is larger and is intended for use indoors, but as you'll discover, mobile radios can be easily used indoors as well.

VHF/UHF Transceivers

Many VHF/UHF mobile transceivers are *dual band*, which usually means they work on 146 and 440 MHz (the 2-meter and 70-centimeter frequency bands). You will also find single-band radios — typically 2 meters, but there are a couple of 6- and 10-meter FM mobile transceivers.

Unless you have a strong interest in 6- or 10-meter FM, or only care about 2 meters, dual-band is your best bet. Yes, you'll pay more, but 2 meters and 70 centimeters are the most active VHF/UHF bands. If cost is a concern, go with a 2-meter-only radio. You'll find more activity on that band than any other.

You also need to consider whether you want a transceiver that is FM only, or one that also works with one of the three most popular digital communications modes: Digital Mobile Radio (DMR), D-STAR, or System Fusion. Use *The ARRL Repeater Directory*, or the *RFinder* app for your smartphone, to determine how many digital repeaters there are in your area and which modes they use.

If you have active digital repeaters nearby, purchasing an FM/digital transceiver makes sense. It will be more expensive, but it will give you easier access to the internet-linked repeaters that allow you to contact amateurs thousands of miles away. And if you're into other digital activities such as transferring files from station to station, a digital mobile transceiver is the way to go.

HF Mobile Transceivers

If you hold a Technician license, you have privileges on several HF bands. For mobile operation, the 10-meter band has the most to offer, with CW (Morse code), SSB (single sideband),

Read Before You Buy!

Every month, *QST* magazine, the membership journal of ARRL, reviews amateur radio gear of all kinds, including transceivers. ARRL members can browse reviews from previous issues online. These reviews are highly respected in the amateur community, so don't reach for your credit card before reading a radio's *QST* review!

and digital activity. Your privileges on the other HF bands are limited to CW communication. Sending and receiving Morse code isn't impossible while driving, but it isn't recommended unless you've mastered the ability to understand code without writing it down!

The 10-meter band isn't in great shape at this point in the 11-year solar cycle. You can make mobile contacts on 10 meters, mainly with SSB, but they won't be common. It may be a different story in a few years, but for now, 10-meter mobile operating may disappoint.

However, if you intend to move up the ladder to get your General or Amateur Extra license, buying an HF mobile transceiver is an investment in the future. There are a few HF mobile radios that also work on VHF and UHF, so consider those models if they fit within your budget. All HF/VHF mobile transceivers will work inside your home just as well as they will in your car.

If you have a General or Amateur Extra license, HF mobile transceivers offer more possibilities. For instance, you can enjoy voice conversations using SSB while you're driving. When conditions are right, you may even be able to chat with hams on the other side of the world! Consider an HF-only radio if you already own a VHF/UHF transceiver. Otherwise, an investment in an HF mobile transceiver that also works on VHF and UHF may be worthwhile.

Few HF/VHF mobile transceivers offer digital communications capability. In fact, at the time of this writing, the only HF/VHF mobile radios that work with digital repeaters are Icom models that include D-STAR capability.

RF Output

On VHF and UHF, higher RF output power may greatly extend your communication range. Look for a transceiver that offers 40 to 50 watts output.

Among HF mobile transceivers, 100 watts output is common. You'll find a few HF radios that only generate about 5 to 10 watts output, but these are not recommended for mobile use. Mobile HF antennas tend to be mediocre performers, so you'll need all the power you can get.

Audio Output

Unless you drive an extremely quiet vehicle, you want a mobile transceiver that has enough audio to be heard clearly. Check the specifications and look for a maximum audio output power of at least 2 watts, preferably more.

Also take note of where the speaker is located on the chassis. For mobile applications, a so-called *front firing* speaker is ideal. This simply means that the speaker is part of the front panel of the radio. A speaker on the bottom of the chassis also works well, as long as you don't install the radio entirely inside the dashboard of your vehicle. Check the feature list and see if the radio includes an external speaker jack. If it does, you can connect a separate speaker and locate it wherever you want.

The microphone is another consideration. All mobile radios include handheld microphones, but manufacturers often offer, at an additional cost, microphones with sets of buttons that allow you to control the various features of the radio.

Some manufacturers even offer wireless Bluetooth microphone/headset options. Although these are great for use when driving, be careful — many states have laws that impact the use of "hands free" devices. For example, some states ban the use of headsets that cover both ears. Research the regulations in your state to be sure.

Frequency Coverage

Almost all VHF/UHF mobile radios offer extended receive coverage, but this can vary from one model to another, so check each radio's specifications. Most HF mobile radios cover 160 through 10 meters, with many tossing in 6 meters as well. As we've discussed, you may want to consider an HF mobile transceiver that

includes VHF and UHF. You'll pay more, but it's often convenient to have everything you need in one package.

Detachable Front Panels

Many VHF/UHF and HF mobile transceivers offer the ability to detach the entire front panel from the rest of the radio. This is an attractive feature for two reasons:

- The front panels are usually thin, lightweight, and much easier to install on or in a crowded dashboard.
- You can place the "guts" of the radio in the trunk or under a seat, and attach it to the front panel with a long control cable. If someone breaks into your car, all they'll get for their trouble is the front panel.

Detachable front panels are clearly useful, but this feature comes with a couple of caveats to consider.

- If the microphone attaches only to the body of the radio, you'll need to run another cable, in addition to the control cable, to wherever the body is located.
- If the speaker is in the body of the radio, this could be a problem if the radio is in the trunk! You may find that you must install yet another separate cable, and purchase a portable speaker to bring the audio into the interior of the car.

If a detachable front panel is high on your must-have list, make sure to investigate how it works with the radio you have in mind, and determine what connections are necessary. Also evaluate the separate cost of the *extension kit* — the set of cables that connects the body to the panel.

Power Supply

If you intend to use your mobile transceiver indoors, you'll need a 13.8-volt dc power supply to run it. Look at the transceiver specifications and determine the maximum amount of current the radio will draw, in amps, when transmitting. Your power supply will have to deliver at least that much current. Most 50-watt FM/digital transceivers draw about 15 amps, while 100-watt HF radios draw about 25 amps. If you think you may someday be operating a 100-watt radio at home, go ahead and buy a power supply rated for 25 amps or more. Don't worry about providing too much current; the radio will only draw as much current as it needs.



The Icom ID-4100A is a dual-band FM and D-STAR mobile transceiver. Note the detachable front panel.



The Yaesu FTM-7250DR is a dual-band FM mobile transceiver that includes Yaesu's System Fusion digital mode.



The Kenwood TM-281A is an example of a single-band (2 meters only, in this model) FM-only transceiver.



The Yaesu FT-857D is an HF mobile transceiver and offers 6 meters, 2 meters, and 70 centimeters.



The AnyTone AT-D578UV is a dual-band FM and DMR mobile transceiver.

Buying a Used Radio

The amateur radio used equipment market is quite large. Some dealers sell used transceivers, and you'll also find many radios for sale online at auction sites. You can save a lot of money with used gear, but there's always the risk of buying "someone else's problems." If the risk seems too intimidating, consider buying used equipment from a dealer that offers a limited warranty.