

General HF Radio Recommendations

HF privileges are no good without an HF radio, so we will start there. Technically, the HF spectrum includes 80-10 meters. Most, but not all current production radios also include 160 meters and/or 6 meters. One-sixty is Medium Frequency, and Six meters is VHF.

Some of the current radios don't include 60-meters (the five discrete frequencies we use on a secondary basis). Frankly, 60-meters is not the place for a brand-new ham to start out. Give it some time, get used to HF practices. If your new radio includes this band, there will be plenty of time to get to know it later. Most of the current equipment can be 'unlocked' so that it will transmit anywhere. This will take care of 60-meters and any future new frequencies that might become available. Don't have your radio 'unlocked' until you are familiar with the limits of your privileges. Operating out of the ham bands is a big no-no..

Each band has its own personality. I would tend to say that you won't miss 160 if it isn't included, but I can't be sure that you won't be one of those who find it to be your favorite band. Let's just say that 160 is a bit off the beaten path for most hams as far as popularity goes, requiring large antennas to be effective.

Six meters is useful for local work, as discussed in the Technician class. It is a VHF band, after all. It can also be exciting during band "openings", which occur around sunspot maxima. Look for that in another 4 years or so.

Keep in mind that your new radio is a long-term investment. You can expect it to last ten years - twenty or more with care and luck. This doesn't necessarily mean you should go for the top-of-the-line unit, figuring you will grow into it. I suggest starting simple.

Prices cover a wide range, to say the least, from \$549.99 to \$12049.99 (yes, \$12k!). I strongly suggest staying at the low end of the range. When I was in college, I used to get leaned on a lot for advice on stereo equipment. In a nutshell, if you can't hear the difference between two choices, go with the cheaper. Don't pay for something you can't hear.

In this case, most of what goes into the high-priced equipment is for nuances and contest features that you won't be able to appreciate until you have worn out your first radio. So, make that first one a reasonably priced basic "rig".

The form factor falls into two package styles: base and mobile. The base types sit nicely on a desk and are more comfortable to use at home. The mobile style takes up a little less space, but is a bit small for many folks on a desk. They tend not to stay put unless screwed down, usually to the power supply or the desk itself. Either works fine, so the choice is personal preference.

A word about mobile operation... It is certainly possible to work HF mobile. I do not recommend it for the beginner. Mobile or portable operation has its own set of challenges and limitations over and above learning about HF in general. Aside from the radio aspects, the last thing we need on the roads

is more distracted drivers. HF mobile is best done once you are very familiar with HF operation in general and can manage contacts without detracting from vehicle operation. Start with a home station.

Each of the major manufacturers has a "beginner's" model that is more than adequate. These radios are quite a bit fancier, and perform better, than what was a top-of-the-line set 20 years ago. They all will work 80-10 meters, all have a "general coverage" receiver that tunes not just the ham bands, but everything else in the HF spectrum.

These radios all transmit with a nominal 100 watts of power. There are some high-end models that put out 200 watts, but they require a special 24-volt power supply. There are also "backpacker" radios that put out 5 or 10 watts. Low power (QRP) operation is enjoyable and challenging. I recommend you not start there. One hundred watts is plenty, and if you decide at some time to buy an amplifier, they're typically designed to be driven with 100 watts or less.

Icom

IC-718	(base style)	\$549.99	
IC-706mk2G	(mobile style)	\$899.99	(has 6, 2, .7 meters)
IC-7000	(mobile style)	\$1299.99	(has 6, 2, .7 meters)

Kenwood

TS-480AT	(base style)	\$989.99	(has 6 meters)
TS-570S(G)	(base style)	\$1079.99	(has 6 meters)

Yaesu

FT-857D	(mobile style)	\$699.99	(has 6, 2, .7 meters)
FT-897D	(base style)	\$819.99	(has 6, 2, .7 meters)
FT-450	(base style)	\$819.99	(has 6, meters)

Alinco

DX-70-TH	(mobile style)	\$749.99	(has 6 meters)
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And before moving on, I should mention the one American manufacturer of Amateur gear, Ten-Tec. They start their line at what would be the other manufacturers' middle level. Their radios are top notch, some of the finest gear made, and their factory service is personal and superb. Ten-Tec equipment is available direct from the factory: <http://www.tentec.com>

Ten-Tec

Jupiter	(base style)	\$1549.00	
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A radio is a personal item, and you really should see one before you buy if possible. It never looks in real life just like the picture...

You will also need a power supply. It used to be that everyone used the older style "brute force" power supplies, but the smaller, lighter switching supplies are now quite comparable.

Astron (brute force)	RS-35A	\$149.99	
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Samlex (switching)	SEC-1223	\$99.99	
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Either one will probably work fine for you. I have discussed battery back-up and other alternatives before.

Antennas are an issue unto themselves. The antenna is the single most important component in a radio system, and is the ultimate limitation on performance. Start simple. Simple can be very effective if done right. Remember the three laws of antennas:

1. Any antenna is better than no antenna.
2. Every antenna is a compromise.
3. If little antennas REALLY worked as well as big antennas, no one would waste the time, money and effort to put up big antennas.

Rule of thumb:

If your antenna survived last winter, it's not big enough.

Seriously though, for the bands below 20 meters (160, 80, 60, 40, 30) the only practical antenna is a dipole or a vertical. The dipole is inexpensive and can be strung up over a weekend. You were paying attention in class, right?

Use half-inch (RG-8) coax. Use the formula $(468/F=L)$ [F in MHz, L in feet] to cut the half-wave long wire for the dipole. This is the finished length, so cut a little extra for twisting the ends. This gets cut in the middle and both (now quarter-wave) pieces connected to an insulator. A short piece of plastic pipe works just fine if you drill a couple of holes in it. The coax gets skinned back a ways and the center conductor connects to one dipole wire, and the shield braid connects to the other. Pay attention to weather proofing the exposed end. Water getting into the interior of the coax will ruin it. You can add another plastic insulator at each end, and use nylon or Dacron rope to suspend the ends from supports (tree, mast, fence, pole, house, the neighbor's dog, whatever). Higher, and in the clear is better.

STAY WELL CLEAR OF POWER LINES!!!!!!

You can hang dipoles for several bands on a single coax in what is called a "spider" configuration. Start with your longest band, probably 80 or 40 meters depending on lot size. Get that one working by itself. Then add another dipole for the next higher (shorter) band. Use the longer wire as a physical support, and suspend the new wire below it with sticks made from wood or plastic, keeping the two wires about 6-10 inches apart. The center of the new dipole connects to the center of the first one. You can stack several bands this way, three or four sets are not a problem. Note: a 40-meter dipole works on 15 meters also, so you won't have to hang a 15-meter one.

The coax should lead into the house through a waterproofed, bug-proofed, critter-proofed opening.

Most of the radios that have 6-meters use the same antenna jack as for HF. However, those that have 2-meters and/or 70-cm generally have a separate jack for those bands. You will want a dual-band vertical and another length of coax for that antenna.

Antenna tuners are a contentious issue. Personally, I don't use one. My Dad has one on his sailboat so he can tune the backstay for an antenna. Tuners really are designed for random length wire antennas. You can run a piece of wire across your yard and hook it to a tuner (that is hooked to a couple of ground rods) and load it up on any frequency you want (within limits). This is certainly a simple antenna, and can be disguised in areas that don't allow antennas. Folks have even used a rain gutter on a house as an antenna.

Many folks use tuners on their coax-fed antennas. They have a limited utility there. The radio sees a perfect SWR, so it loads up, but if you needed a tuner, there was something wrong with the antenna in the first place. The tuner doesn't change that. It just paints over it. Fix the antenna.

Antenna tuners have limitations on frequency range over which they can tune and power level they will withstand. If you feel you need or want one, the two best names in automatic antenna tuners are:

SGC Smartuner

SG-237	1.8-60 MHz	100-watt	\$299.99
SG-239	1.8-30 MHz	200-watt	\$195.99

LDG

Z-100	3.5-60 MHz	125-watt	\$149.99
Z-11Pro	1.8-60 MHz	100-watt	\$179.99

Someday, you might want a tower and a yagi for the bands from 20-10 meters. To begin though, a dipole can get you a long way. If you want to start on the most popular HF bands, they are 20-meters (particularly in the daytime) and 80 meters (particularly at night). Do some listening before you jump in to get a feel for what is happening.

There are many hams that spend a lot of time playing with antennas. We have a couple in our PCARC club. Modern computer antenna modeling software puts a lot of power in your hands, letting you build and test an antenna accurately all in cyberspace. Then when you have the design 'tweaked' to perfection, you can physically build it with confidence that it will work as predicted.

Upgrade your antennas before you buy an amplifier. You can't work what you can't hear.

Good luck & 73,

Frank (May 2008)