

Antennas are the most important part of any radio com system by far. I am listing several options that are all dual band. Dual band means they will cover the most popular 2 meter VHF 144-148MHz ham band as well as the 70cm or UHF 440MHz ham band. For preparedness, I highly suggest dual band antennas because these will also receive very well on the public service VHF and UHF frequencies as well as the FRS/GMRS frequencies that "Walmart" "bubble pack" radios operate on. While some will want to keep antennas on the shorter side and give up just a bit of antenna gain, others may have room for longer antennas that will provide a bit higher antenna gain. The following is a list I put together for you offering several shorter options as well as a list of longer "higher gain" antennas. In each category, I have listed these options in my preference by what I would choose personally. As with all antennas, HEIGHT VERY IMPORTANT! You want your antenna as high as you can get it. For a good dual band base radio, roof tops are great. A 20-30' mounting height makes a great station. Many radio operators use old Direct TV or other satellite dish mounts to mount their antennas to. By simply removing the old unused "dish" from the rest of the mount, this leaves a great mast for a antenna to be mounted to.

**Shorter Antenna Options;**

**Diamond Antenna X200A 8ft 5 inches long with 2M: 6.0dB gain, 70cm: 8.0dB gain**

**Jetstream JTB2B 8ft 4 inches long with 6 db gain on 2m and 8 db gain on 70cm**

**Jetstream JTB3 5ft 11-1/2" long with 4.5 db gain on 2m and 7.2 db gain 70cm**

**Diamond Antenna X50A 5ft 6 inches long with 2M: 4.5dB and 70cm: 7.2dB**

**Comet Antennas GP-1 4ft 1 inch with 2M: 3dBi 70cm: 6dBi**

**Longer Higher performance antennas;**

**Diamond Antenna X510HDM 17ft 3 inches long with 2M: 8.3dB and 70cm: 11.7dB**

**Jetstream JTB1B 17ft 3 inches long with 8.3 db gain 2m and 11.7 db gain 70cm**

**Diamond Antenna X300A 10ft long with 2M: 6.5dB and 70cm 9.0dB**

**Antennas must be mounted in an area clear of larger obstructions for at least 6-10 feet from every side.**

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The next item to consider is coaxial cable size and type. This is EXTREMELY important and just as much so as the antenna itself and here is why coax size and length matter. I will give you 1 small example of REAL numbers.

Lets assume the following is what your installation is just for this example...

**Radio output power on high is 50 watts**

**Antenna distance from the radio is 50 feet so you have a 60ft coaxial cable.**

**If we choose a coaxial cable of RG58 for this installation with your 50 watt radio, by the time that power hits the antenna through 60 feet of RG58 coax you would have a loss of 2.8dB so of your 50**

watts coming out of the back of the radio only 26.186 watts reach the antenna and radiate.

Now, if we chose LMR 400 coaxial cable for this installation the losses would only be 0.89dB so now of your 50 watts, 40.6 watts reaches the antenna!! Big difference right? It's also important to remember that those losses on transmit you will also have on receiving other stations!

This is not to say RG58 coax is junk because it's not. The coax length and the frequency band being operated dictate what coax cable is needed.

The following is a basic guide for you on selecting the right coaxial cable for you. I would also advise you that when you measure what length of coax you need, you add 5ft to that for a cushion if you need 40 feet or less. If you need 40 feet or more I would add 8 feet as a cushion.

**General Coax selection for dual band radios;**

Less than 20 feet coax length RG58 coax will do but RG8X coax would be preferred.

20-30ft coax, RG8X will be fine but if closer to 30ft, LMR400 coax would be best.

30-60ft coax would require LMR400 coax to keep losses low.

If you see the trend, LMR400 coax is always the better bet from 0-60+ feet. It is a bit more expensive but it is VERY important to keep losses low. Personally, I would use LMR400 if my coax was only 20 feet just to get everything I can out of my system.

**"CAN YOU USE A SMALL HANDHELD AS YOUR BASE STATION RADIO AND CONNECT IT TO A BASE ANTENNA AT YOUR HOME"? Yes, but.....**

You can absolutely use a handheld radio as a base radio and when connected to a base station antenna you will see HUGE range differences for sure. I do also have the adapters needed to connect a handheld radio to your base station antenna at home as well.

A few things to keep in mind if you choose to do this. A handheld has a ton of technology packed into a very

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tiny unit and in doing so they have a less sensitive receiver to listen to weaker signals. You are also limited to 4-8 watts of output power and looking at what I explained in coax losses, do you really want to lose half of your 4-8 watts of power in the coax? Like I said, there will be a huge improvement over the stock antenna on your handheld but NOTHING like having an actual base radio with 50 watts of power, easier to operate and having a better receiver. For this reason, I will give you a list of a few great mobile/base radios that would make a fantastic radio station with your base antenna and proper coax.

YAESU FTM-7250DR or ICOM IC-2730A or KENWOOD TM-V71A are all great radios that will work dual band. They can be found used and there are a ton others. My personal favorite is a Yaesu FT7900R. I run those both as a mobile (in car) and I run one at home as my base radio as well. I can help anyone with programming them as well. Any and all of these and many more have the ability to work ham radio frequencies as well as public service from police, fire ems, weather and FRS/GMRS Walmart bubble pack radio frequencies. I highly suggest folks buy from a reputable source such as Ham Radio Outlet and a few others that do not sell cheap Chinese copies of these radios. The Yaesu FT-7900R is a harder radio to find these days, you can find them on eBay however many are chinese copies and are junk. To weed out most Chinese copies, make sure it says made in Japan on the back and that it's VHF power output is rated at 50 Watts. Often, the knockoffs will be rated at 25-35 watts.

There is nothing at all wrong with buying a good working used radio either.

If you choose to buy an actual base/mobile radio to use as your base station radio, you will need a power supply. I have several to suggest that will be sufficient that are at or under the \$30 area.

I fully understand that this is an investment and not cheap. That said, this can be an invaluable tool and even a very rewarding and fun hobby all in one.

**Shane Nelson**

**KD8UJM Amateur Extra Class**

**ARRL Certified Examiner**