

Using the SEA Coupler to feed a Vertical

Ground Mounted: Almost any length vertical can be used with the coupler, but there are certain lengths that work better. Here is a list: 9 ft, 23 ft, 28 ft. I have used these lengths and had pretty good success. Obviously, the longer the length, the better the signal. As far as ground goes, you can either drive in an 8ft ground rod (if you hit the local water table) and go or build out a radial system. The coupler will work with 1 radial that is at least 10% longer than the vertical, but more radials equal more efficiency. More shorter radials also seem more efficient than less longer radials.

Mast Mounted: Mast mounting a coupler fed vertical is not all that different from ground mounting. Other than ensuring that the mast can handle the load of the antenna and coupler, the requirements are pretty much the same.

Using the SEA coupler to feed a “Random Wire”

Wire: Almost any wire will do, but, here are some recommendations. Use 12 or 14 awg stranded wire for strength. Solid core will do, but is more susceptible to breaking due to wind and general antenna movement. For the “ground” side of the coupler, bigger is better. If you are using an earth ground, the larger wire offers less resistance. If you are using radials, you can easily use the same size as the radiator.

Lengths: The coupler will tune almost any length of wire, but there are a few issues with certain lengths. A length of wire that is $\frac{1}{2}$ wavelength long on a particular band will present too high of an impedance to tune. There is a length that is not $\frac{1}{2}$ wavelength long on any amateur band and works quite well: 70 to 74ft. I have had extremely good luck with this length. If you have a lot of real estate (couple of acres or so) then you can go much longer, 300 to 700 ft or more and have a super efficient random or long wire. Also, bear in mind that if you want to run in “dipole” mode, the “ground” side of the antenna must be at least 10% longer. I have had

really good luck with 74' on one side and 125' on the other. Everytime , we go camping, this is the configuration I use with great success on voice and digital from 80M all the way to 10M.

Loops: The coupler will work well with loop type antennas. The longer and higher the loop, the better the DX. For NVIS, mount the coupler and hang the loop between 8 and 12 ft from the ground and you will have an excellent NVIS antenna good up to about 400 miles. The minimum length of wire for a loop is about 80ft. Shorter will work, but the efficiency goes way down. lengths up to 1000 ft have been used with good success.

Notes:

1. Always put a 5 to 6 inch coax choke at the coupler feed point. If the coax is longer than the "ground", the coupler sees the coax as part of the antenna. The 5" to 6" choke helps prevent this.
2. Always ensure that the "ground" is at least 10% longer than the "radiator". If it isn't, the coupler ties to tune the "ground" against the "radiator" instead of the other way around. In a ground rod type system, this is like burying your antenna in the dirt.
3. Ground rod: If you cannot hit the water table with a standard 8' ground rod and you do not want to go longer, create what I call a "ground grid". This consists of many ground rods all tied together to create what KOBG calls (and I agree) a "ground Image". Especially in a vertical configuration, try to center the "ground image" under the vertical. In a mast mounted vertical, the higher the mast, the less critical centering is.
4. "Ground Image" is what a lot of hams call a ground plane. If you are using a mast mounted vertical say on a roof, more is better. Try using chicken wire for the ground image. Make sure that it is bonded well. Clean off the galvanize at the connection points, use No-Ox and get as much under the elevated vertical as possible. Also, the chicken wire does not seem to be as much of an eye sore to non-hams.
5. If RFI is present with the 5" to 6" choke, add a couple of ferrite beads to both the coax and control cable. A 2" choke may also be needed. I needed all three for the camping setup, but on the verticals at the house, only the 5" to 6" choke was necessary (and actually, I didn't need a choke at all for the random horizontal wire I had setup. But I had a really good earth ground. High water table in SE Louisiana.)

Pictures



This is the camping setup. Notice the chokes feeding the coupler. I have a SO-239 barrel connector right after the 5" choke for my feed line to the radio.

Power Connection

Red: +12v

Black: Ground or negative

Green: Tuned Indicator

Connect the + or positive side of the 12V LED to +12V. Connect the ground side to the green wire from the coupler.