

The Amateur in You, Part 2

What have you been pondering?



Importance of antenna orientation

No matter what kind of radio or antenna you're using, one thing to keep in mind for effective communication is for you and your friend to send and receive radio waves that are aligned the same way. This is known as **signal polarization**. In order for you two to make your signal polarizations match, you both need to have the same **antenna orientation**. Orientation is simply the physical alignment of your antenna relative to the up-and-down pull of gravity, while polarization refers to the alignment of a radio signal.

Two antennas are aligned when they operate in **parallel**, meaning when they run in the same or opposite directions. This means that one antenna pointed up and another pointed down are both aligned and oriented vertically, because they point in directions parallel to each other. This results in their signal polarizations aligning vertically too. This is why a J-pole hanging upside down from a tree works just as well as when it's mounted upright.

Most of our communication using HTs, and mobile radios, and through repeaters require a **vertical orientation** of our antennas, meaning they are pointed either up or down. This is because most repeater and vehicle-mounted antennas are fixed pointed upwards. Then again, if you're talking with a friend on simplex, and his antenna is pointed horizontally, like to the side, you'll need to point your antenna to the side as well, to allow for the best reception between you two.

If your VHF antenna is not oriented the same as that of the repeater or your friend, only a portion of your signals will be received by each other. It's a little like trying to melt a popsicle in the sun shining through the blinds; you'll probably get the most coverage by orienting the popsicle sideways, rather than up-and-down, because it'll match the

polarization of the sun's rays through the blinds better. You might find that many hams using HTs will suddenly sound better, as they turn their radios so that their antennas are pointed upward.



An additional benefit of having a vertical orientation is that you don't need to worry about which direction the repeater or your friend is, in relation to your VHF antenna, while with a horizontal orientation you'll need to face the flat side of your antenna to them.

One last thing about antenna orientation. Make sure you don't point your HT antenna at your friend, or your signal might not be heard at all. Nearly all of an antenna's signal leaves it from off its side, and not the end, so pointing the end at the repeater will present it with the weakest signal possible.

These orientation principles also apply to HF "wire" antennas, such as dipole, end-fed, OCFD, long wires, even sloper antennas, and "rod" antennas, such as BuddiPole and Ham-Stick antennas. Wire and rod antennas tend to be mounted, and therefore oriented, horizontally, but in spite of the vertical advantage mentioned above, HF antenna orientation (vertical vs. horizontal) is not quite as critical, because signals refracting off the ionosphere end up with a circular or elliptical polarization anyway.

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