

> **HDTV TEST CENTER**



# LACROSSE HDTV ANTENNA

Welcome Back to the 20th Century – or Not



We know what you're thinking. "An antenna? I should hook up my hi-def display to a relic from the 1950s?" But over-the-air is still the best way to get lots of HD stations that aren't yet being broadcast on cable or via satellite. There's also the price to consider. As in none. Other than the cost for the antenna, all the channels you pick up are free. Add that HD antennas are a lot more attractive and unobtrusive than their standard definition cousins.

**T**he Lacrosse is one of this new breed. Like any terrestrial antenna, it works best when facing in the direction of the towers that are sending the HD signals. But it also has a few tricks up its

sleeve -- not counting the industry's first lifetime warranty courtesy of a construction that is resistant to chemical and UV deterioration. Richard Schneider, President of Antennas Direct (which created this product), dissects it for us:

1) The elements of the Lacrosse are a type of passive phased array. It is tuned to resonate on the frequencies where most digital stations broadcast. These frequency-specific antennas offer significantly better performance on those frequencies, as well as employing higher levels of signal stability and reliability.

2) The Lacrosse's driven elements offer an extremely wide beam width (90 degrees) without sacrificing gain. This will provide more flexible aiming characteristics. It's similar to antennas used for passive tracking antenna systems for moving platforms video links (such as unmanned aerial vehicles and news helicopters), but is a new application in a digital TV antenna.

That all sounds impressive, but so did the Segway when it was first announced. So let's go up to the roof and give Lacrosse a try.

▲ The best way to receive HD signals is through an OTA antenna such as Antennas Direct's Lacrosse antenna.

## The Setup

Our apartment balcony faces the wrong way, so roof-mounting is really the only choice we have (had we a house, we could have tried it in the attic). The Lacrosse is pretty light and small, even though ours is a final prototype that is 15% larger than the final version. We opted for clamping it to a rail near the roof's edge with a clear view toward where the HD transmitters are located. It's an easy drop of the cable to our balcony. Were this a permanent installation, we'd mount it differently: the antenna would be securely mounted and the cable tacked down the side of the wall, entering the apartment through a small hole drilled at the baseboard level and filled around with silicone.

## Hooking Up to the Display

The model we have uses amplification -- basically, a small, white box with a rocker switch

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and an orange light indicating it has power. This is used inside, with the cable from the roof going into an input while another cable screws into the output and then makes its way to the TV display. There's a non-amplified version for use as well, but the advantage of amplified is that a long cable run from the antenna can be compensated for in this fashion.

Where you attach the cable from the amplifier depends upon your system: those using a satellite receiver might have a "terrestrial antenna" input that will then allow for combining the signal with that from the satellite (for example, DISH Network's HD satellite receiver 811). Pretty much all HDTVs are designed to accommodate a terrestrial antenna as well (and in many cases, the receiver or display's built-in program guide will integrate both the antenna's channels as well as the others being received). A great help is the screen that shows the signal strength coming in from the antenna, as you can then have someone on the roof make any minute adjustments needed. The Lacrosse laughed at that – the signal being "pulled" was nice and strong from the start.

## So How Does It Look?

Technobabble aside, there's really just one thing that you look for in an antenna – that it is able to grab a signal and send it to the TV so that the picture looks good, which the Lacrosse does exceedingly well. The shape also makes it well suited for use on a balcony, or even bolted to the wall outside a window (providing the HD towers can be reached from there, of course). It's a minor investment and a few hours of effort that bring high definition reward.



▲ The Lacrosse antenna is simple to install yourself, but be sure to be safe.

Go to [www.antennaweb.org](http://www.antennaweb.org) for information as to the location of HD channels in relationship to where you live.

## Safety Issues

While professional installation is always a good idea, those choosing to self-install should be aware of some general safety guidelines:

1) Never erect an antenna in an area that crosses over or under a power line or transformer. **Never.**

2) Give special consideration as well to the location of all nearby power lines when choosing the location. Double check to eliminate any possibilities of the antenna or its support structure falling into a power line.

3) It sounds obvious, but make sure you are physically able to do the install before you begin. Antennas are deceptively lightweight on the ground, but can be difficult to handle when you are actually on the roof. Factors such as wind and balance will have a strong effect on your ability to perform the task on the roof.

4) Lightning – even a nearby strike can deliver enough voltage down the cable to cook your expensive digital tuner. Protecting your property from an indirect or direct lightning strike is necessary. Electrical solutions for this vary by region; it's a good idea to check with a licensed electrician. You have been warned!

## Amplified vs. Non-Amplified

Generally speaking, amplifiers can be especially useful when your setup involves a long cable run or splitters. 100 feet of RG6 co-ax cable can reduce signal strength by 30% or more, and splitters can cut the signal by about 50% each time you add a terminal. Higher frequencies will also suffer greater loss from the cable run. Since digital broadcasts are typically on the UHF, your signal strength will generally improve with the addition of a low noise pre-amplifier. But location is also very important. If you live in close proximity to the transmitting towers, your amplified antenna can be more of a liability than an asset, as strong signals can cause amplifiers to fluctuate, producing false signals and interfering with DTV reception. Also, cheap amplifiers – such as those built into many of the mass market model antennas – are typically quite unstable and noisy. Strong signals can easily overload them. Digital tuners often have problems separating digital signals from background noise.

## Terrain

Most digital broadcasts are on the UHF band, and as such will be in line of sight. People who live in canyons or valleys or behind a mountain will have a more difficult time getting their signal. No matter the claims made on the antenna box, DTV reception is limited to about 70 miles, due to the curve of the Earth. However, range is improved if you live on top of a hill or have a tower.

## Placement

The rooftop is your best bet for signal strength, although antennas can oftentimes be successfully installed in an attic. Set-top antennas are often less successful simply because they are lower to the ground and have a harder time with the line-of-sight DTV signals.

## Signal Distribution

Often, an antenna signal will be split and routed to every room of the house. The use of splitters will dramatically cut signal strength.

## Set-top Box or Receiver?

There are varying degrees of sensitivity in set-top boxes. Some models also have more sophisticated multipath (reflected signals) rejection capability. Antennas Direct has found that outboard digital tuners generally perform better than the integrated tuners that are built in to many HD televisions. ●

Rating  
**96**

Lacrosse HDTV Antenna  
Non-Amplified  
MSRP: \$119

Amplified  
MSRP: \$149

Antennas Direct  
[www.antennasdirect.com](http://www.antennasdirect.com)