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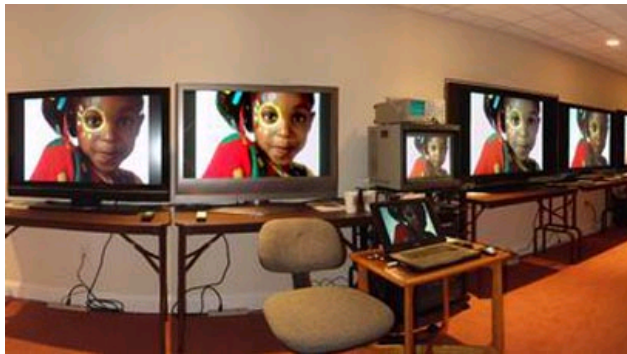


23 Tips for Buying the Best HDTV

Posted 06/24/10 at 02:01:34 PM by Dr. Raymond Soneira

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Buying the right HDTV is actually much harder than simply walking into a store and laying down some plastic - and certainly much harder than it should be. There are quite a few cautions but also quite a few things that you can do to prepare yourself. Virtually identical issues apply to buying **computer monitors**, so keep the following info and tips in mind the next time you're in the market for a monitor as well.



The Basics:

1. First, ALL manufacturer's published specifications are exaggerated by unknown factors - we discussed this in our previous [HDTV display story](#) - so you can't rely on them as part of your analysis. Within a particular manufacturer's own product line the specs will tell you a bit about the marketing pecking order for their own models, but DO NOT use specs to compare models from different manufacturers.
2. Do your homework. Read reviews from several websites and magazines, but note that there are only a handful of publications that do real objective testing and they can only test a small fraction of all of the available models (a few personal favorites include [DisplayMate's analysis](#), [Television Info](#) and [Sound and Vision](#)).
3. Visit the manufacturers website and read all of the model information carefully. If a manual for the HDTV is available online, study it very carefully - in my opinion it's by far the best evaluation tool you have.
4. Quick recommendation - get a plasma for HDTV viewing in subdued ambient lighting and an LCD when there is bright ambient lighting.
5. Next, get thee to a retailer - but, when choosing a store, keep in mind: There are big box retailers like Best Buy and Walmart, medium box retailers like Target and Sears, and finally the small box Audio-Video specialty retailers. The bigger the store the more the "look but don't touch" attitude prevails.

Once You're in the Store:

1. Most stores have their own continuously running demos, but they are designed to make everything look good - it's called "eye candy" for a reason. Generally, the picture quality of the demos are not very good. What is especially important is that all of the HDTVs show exactly the same video content at the same time.

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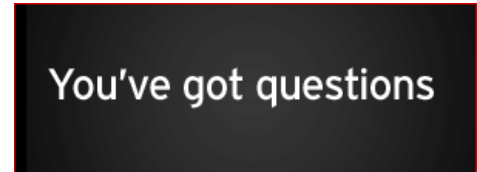
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2. If they are showing animated videos, ignore them. They're artificial images and as such, you'll have no absolute reference to evaluate them with. The brightest and most color saturated TV will appear to be the best in these circumstances, but isn't. The lack of an absolute reference also applies to movies such as Avatar (because the Navi are blue). It's a great movie, but not for the evaluation of picture quality and accuracy!

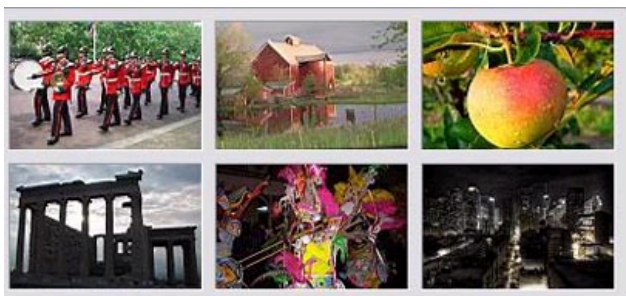
3. In-store HDTVs are almost always poorly and inconsistently adjusted, so you can't judge picture quality and color accuracy based on what you see. Even in Best Buy's high-end Magnolia Home Theaters, the TVs are often inaccurately adjusted. A TV that doesn't look first-class may be a misadjusted great TV, or a mediocre TV showing at its best. If the picture looks great that means it can likely do even better with your own adjustments or a professional calibration. It could also simply be the unit with the highest dealer profit margin.

4. Many retail stores still deliver video to the HDTVs using analog distribution instead of digital because it's a lot cheaper. Analog introduces a whole other layer of issues that further complicates displayed picture quality, so it's important to find out if the distribution is analog or digital.

5. Something to keep in mind: ambient lighting is generally bright, irregular and awful. Fluorescents are the worst; the dark is best.

6. The HDTVs are often placed at different heights, which introduces viewing angle issues which particularly affect LCDs. When evaluating an LCD be sure to stand directly in front of the center of the unit because of viewing angle issues (see below).

7. When TVs are displayed side by side, there is a natural tendency to believe that the brightest, most colorful TV with the highest image contrast is the best – a punchy picture that stands out from the crowd. A TV that is delivering an accurate picture will then appear bland. Most TVs come from the factory set to a vivid mode that exploits this psychological bias. Try to overcome that... because you won't want that sort of picture at home.



What you can do:

1. Live video isn't good for evaluating picture quality because it's changing continuously. Still image slide shows work best. You can then compare several HDTVs at once; also change your viewing position to look for viewing angle issues, which can be plentiful with LCDs.

2. Small box retailers will often let you bring your own favorite DVDs and Blu-ray discs – big and medium box retailers typically will not. However, they're a great evaluation tool because you have a pretty good idea what the pictures should look like. Four of my favorites: Seabiscuit, because of the great facial close ups and indoor scenes; Dark City and Escape from New York, because they evaluate very dark picture quality; and Over America for the fast moving spectacular day and night scenes. Make a list of the chapters that you want to look at.

3. Even better, bring a USB Thumb Drive with you loaded with evaluation photos; many HDTVs now have USB inputs and in many cases the store will allow you to use them. Include both challenging high quality professional photos and also family photos – they are the best absolute reference you have because you know exactly what everyone and everything is supposed to look like.

4. Talk to a sales person and see if they will let you play with the remote control. If they do, set the TV to a Cinema mode and explore the menus.

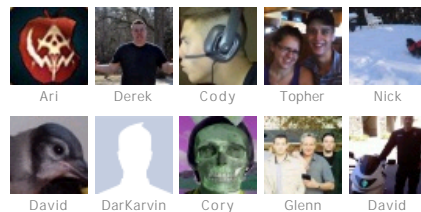
5. If you're adept enough, tweak the adjustment controls while looking at the content you've brought along to see if you can get better and more accurate colors and picture quality.

What to look for:

1. Check the screen for reflections and avoid glossy screens unless you will be watching in the dark. Many glossy screens introduce ripples in the image because they are glued on poorly. The best time to check for screen reflections is when the screen is black – then look for ripples in the screen reflections as you shift your viewing position slightly. Most store demos will go to black at least once. If you brought along a USB Thumb Drive, include a totally black picture by taking a photo with the lens cap on.

2. Obviously the best time to check the black level brightness is when the screen goes black – but this may be difficult to determine in a brightly lit store. Also check for screen non-uniformities, dead pixels, and backlight leakage around the edges of the screen.

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3. The picture on most HDTVs will change with viewing angle, this is particularly true with LCDs but the effect should be minor in plasmas. You'll need a still photo to evaluate the change with both horizontal and vertical viewing angle. Peak brightness, black brightness, contrast ratio, image contrast and color (both hue and saturation) will change with viewing angle. Use a nice colorful photo that includes a wide range of colors and intensities with a large face plus a number of well known objects for reference.

4. LCDs with IPS (In Plane Switching) technology will not show a strong color shift with angle changes like the other LCD technologies, but will show a large shift in black brightness which can have a considerable effect when viewing dark scenes. So watch the black photo or a dark scene from a broad and varied viewing angle.

5. LCDs all have trouble at the very bright and very dark ends of the intensity scale. Unfortunately, manufacturers often try to squeeze extra brightness out of every HDTV despite the fact that they are already plenty bright for most applications. They wind up overdriving the display into what is called white saturation or clipping – it makes the picture look like an overexposed photo with highlights somewhat washed out in color and contrast. Photos with very bright highlights are best for evaluating this (unless you have some special DisplayMate test patterns). If the highlights look washed out, turn down the Contrast Control. If that doesn't fix it, pass on that model.

6. One last thing to bear in mind: most HDTVs make noise – typically a power supply whine and fan noise. That's going to be very hard to evaluate in a noisy store, so get real close to the unit and put your ear right up to it and listen.

Related Links:

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About the Author

*Dr. Raymond Soneira is President of [DisplayMate Technologies Corporation](#) of Amherst, New Hampshire, which produces video calibration, evaluation, and diagnostic products for consumers, technicians, and manufacturers. See [www.displaymate.com](#). He is a research scientist with a career that spans physics, computer science, and television system design. Dr. Soneira obtained his Ph.D. in Theoretical Physics from Princeton University, spent 5 years as a Long-Term Member of the world famous Institute for Advanced Study in Princeton, another 5 years as a Principal Investigator in the Computer Systems Research Laboratory at AT&T Bell Laboratories, and has also designed, tested, and installed color television broadcast equipment for the CBS Television Network Engineering and Development Department. He has authored over 35 research articles in scientific journals in physics and computer science, including *Scientific American*. If you have any comments or questions about the article, you can contact him at dtso@displaymate.com.*

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Submitted by [repairservice13](#) on Sun, 07/11/2010 - 10:08am

What a fantastic story. I have followed your story from another article you have written till here.it is very nice article in site.

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outlet

Submitted by [Outlet My Store.c](#) on Sun, 07/04/2010 - 3:23am

This been truly a great article to read. Full of knowledge about television technology. This 20 tips gonna help every one to by best HDTV.It is very well information. All people want always to know all about things that you have been described here. It is very valuable that is very nice post! I will bookmark this blog.outlet.

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These are great tips,

Submitted by [JTM](#) on Sat, 06/26/2010 - 12:35pm

These are great tips, thanks. While I agree that watching still photos is good reference, I also think it's important to watch some live action. Or a bluray action movie at 1080p for example and see how well the tv

performs. I've noted some differences on varying displays with this. Yes it is subjective, but for me the differences stand out. In some poor models (or perhaps a model where the settings are not ideal) I can see heavy pixeling and poor coloring during transitions...

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Watching live action...

Submitted by RaymondSoneira on Sun, 06/27/2010 - 1:41pm

Watching an in-store video to evaluate motion processing and motion artifacts is really hard to do and get meaningful results. The best place to get that kind of information is in a good review article. I discuss motion artifacts in my "Display Myths Shattered" article on maximumpc.com and in greater detail in several articles in my Display Technology Shoot-Out article series on displaymate.com.

If you want to evaluate motion issues in a store then you'll need to bring along a Blu-ray disc, but you DON'T want 1080p - you actually want to feed the TVs 1080i in order to evaluate their deinterlacing, and the best source for that is the Over America disc that I mentioned in the article. It's shot in HD 1080i video, not film - a source from film is equivalent to 1080p because it doesn't need any motion processing when deinterlacing. Make sure the Blu-ray player isn't set to deinterlace the video - make sure the HDTVs are doing that.

Note that with fast motion video some of the artifacts are already in the video signal and also human visual processing generates its own optical illusions and artifacts. Finally you can't watch more than one HDTV at a time with fast motion so you'll need to play the same segment over and over again to do the comparison.

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good tips

Submitted by Slugbait on Fri, 06/25/2010 - 12:37pm

The wife gave me permission to move on from CRT last Sunday and I've been researching ever since. The place I've been hanging out is AVSForum: lots of knowledgeable people up there, including short reviews from ISF calibrators. After many hours of reading and then hitting the b&m to change every setting to get accurate color, I'm pretty certain I will get a Panny G25.

One more tip: unless physical space is a major factor, go larger than you think you want...you'll regret going too small. With all those big TVs lined up in such a large area, they will seem smaller in your HT room.

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Just buy one

Submitted by shalana on Thu, 06/24/2010 - 8:35pm

The stores lighting and hd feed and viewing angles may differ from yours at home. Just buy one, keep it for 29 days then return if you don't like and try a different TV.

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Bad idea to "Just buy one"

Submitted by RaymondSoneira on Fri, 06/25/2010 - 8:11am

Very cute... but it's a really bad way to approach buying an HDTV or any other product for these reasons: (1) big waste of time (2) the retailer won't let you do that more than once or twice before they refuse to sell anything more to you (3) you won't wind up with the Best HDTV just one that isn't awful (4) many retailers charge a restocking fee to protect themselves from this attitude. Excessive returns significantly raise the costs of selling things for both retailers and manufacturers - it hurts them and as a result they raise prices, so in the end it hurts all consumers.

That said, it's very important to buy from a retailer that gives you a 30-day return privilege - hopefully with no restocking fee if you can demonstrate that the unit is defective, performs poorly, or not as well as the floor model. If any of these apply you should get another sealed box brand new unit as a replacement with free delivery and no penalties.

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my dad could've used this,

Submitted by AndyYankee17 on Thu, 06/24/2010 - 2:15pm

my dad could've used this, god knows how many times i heard "but this one looks better" that day.

lcd != crt when making comparisons

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Nice outdated photo there...

Submitted by lunchbox73 on Thu, 06/24/2010 - 1:56pm

Nice outdated photo there...

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Updated Shoot-Out Photo

Submitted by RaymondSoneira on Thu, 06/24/2010 - 6:29pm

Oops, that was from our LCoS Shoot-Out in 2006. We've updated the photo to a recent LCD-Plasma Shoot-Out.

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Thank You

Submitted by **TheTrevon** on *Thu, 06/24/2010 - 1:44pm*

Thank you for all these types of articles. I'm looking into getting the Google TV and this is all good stuff.

Granted I'm sure Sony should come out with something good, but if it's too far out of my price range I will need all this info when looking into other options. Keep up the good work!

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