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Joel Silver's Getting the Right Picture



The WHOLE picture, the RIGHT picture and NOTHING BUT the picture

What separates the winners from the losers in this business? The ability to deliver the whole picture, the right picture, and nothing but the picture to your clients. The dealers who get it right are going to be successful, and the others are not – it's just that simple.

So what are these three crucial measures of success? By the "whole picture," I'm referring to accurate pixel-for-pixel bit-mapping from the source to the display, with zero overscan, zero keystoneing, and the correct aspect ratio. By "right picture," I mean appropriate brightness levels for the customer's viewing environment, day or night. And by "nothing but" the picture, I'm talking about turning off all the "torch-mode" tricks that are used, along with excessive brightness, to sell HDTVs on the showroom floor. Mastery of these three areas is essential to delivering a successful installation, regardless of the client's system configuration or price point.

A Funny Thing Happened to My HD Program on the Way to My HDTV

1080p is the buzzword these days, so let's break it down pixel by pixel: 1920 side to side, 1080 up and down. Multiply the horizontal by the vertical and you get 2,073,600 pixels. That's the **whole picture**, one pixel at a time. Remember the movie Happy Gilmore? He tells the ball: "go to your home," and the ball goes into the hole. Well, each of the pixels in a 1080p movie should go to its respective "hole" in a 1080p TV, which has 2,073,600 of them. The technical term for this is bit-mapping, and when it's done correctly, you get a beautiful HDTV picture.

But when bit mapping doesn't occur properly, your picture can go bad in a hurry. One common culprit is overscan: the process of cropping and enlarging a picture slightly. Overscan in the analog world was the norm, all the way back to the dawn of TV time, because most old-school TV programming had rough edges. So you hid the edges by blowing the picture out a little higher and a little wider – hence the term "overscan." Fast forward to this millennium, where the edges are digitally encoded, and just as crisp as the rest of the picture. When you've got over 2 million pixels that you want to see, overscan is now a disaster of major

proportions, not just because you're missing part of the picture, but because you're now distorting every remaining pixel's "aim" toward the hole it's supposed to go into.

To ensure accurate bit-mapping, you need to test the source, the TV, and anything that might sit between the two, such as an AVR, by using a test-pattern disc. Sad to say, AVRs are commonly getting in the way of accurate bit-mapping. The only way to properly address this is to get tools to properly test bit mapping at every step.

Another aspect of delivering the whole picture is proper adjustment of whites and blacks – known as headroom and toerom. Some DVD players and most TVs need to be adjusted for this, but even with a properly adjusted TV and a properly adjusted DVD player, an intervening device such as a poorly designed AVR can ruin your picture by disrupting the signal path in the blackest and whitest areas. The HDMI specification call out correct video levels for the bright and dark parts of our HD content, but not all hardware components are fully compliant, and can basically destroy content on the way to the display by disrupting the dynamic range.

Once again, testing is an essential part of your job. It's also a relatively easy part. You'll need to buy test disks that have test patterns above and below white and black. At some point you're probably going to want to invest in a multiburst generator as well (we use the Sencor VP series).

It's also important to know which devices are problematic. For every product you're dealing with, you should know at what point in the product line you're going to get full compliance with the HDMI specification. Sometimes when you recommend a more expensive AVR, your client will indeed be getting what he pays for. And the ability to pass a signal cleanly is certainly a valid reason to step up.

Find the Turbocharged Image Quality Button Hidden in Your HDTV's Menus

Any HDTV product manager will tell you that TVs have to be tuned differently for showrooms than for people's homes. And the default tuning is going to be – you guessed it – showroom tuning. But every HDTV also includes a mode that's closer to a "best guess" of what a home environment would be like. Once again, simple test discs will put you on the right path. And if you happen to have one, a color analyzer is also a good idea, to measure how bright the TV is for day and night viewing conditions. To give you an idea how far things have gone, we recently completed a study for the California Energy Commission, submitting over 1,600 measurements of TV sets' light output at factory defaults vs. when they're calibrated for the home. Light output is measured in foot-Lamberts; as a point of reference, movie theaters when calibrated perfectly are at about 12-14 foot-Lamberts; your old tube TV set was between 20-25; plasma TVs are generally in the 40-50 foot-Lambert range; and LCDs are capable of even brighter levels, 60-70 foot-Lamberts a few years ago, but now we're seeing them as high as 120-140. Which looks marvelous in the showroom, but in your living room at night that's the visual equivalent of a sharp stick in the eye. Is it effective at selling TVs? Absolutely. But at home, not only do you not need it, it's fatiguing to your eyes and wastes a lot of energy. By setting the output back to 40-50 foot-Lamberts, not only is it easier on the eye, it can net your client a 30-60 percent energy savings. Now if daytime viewing conditions for your install are very bright, as with windows overlooking an ocean or a mountain, you may have to leave the output at something close to factory levels. But for nighttime viewing, you should use a meter to bring it back down to our recommended 40-50 foot-Lamberts, which is plenty.

Seek and Destroy Stupid HDTV Torch Mode Tricks

Along with off-the-scale brightness, HDTV manufacturers feel compelled to deploy enhancement modes to stand out on the showroom floor – features that exaggerate colors, exaggerate details, exaggerate blacks, exaggerate whites. All these features need to be turned off to make movies look like movies, not like cartoons. The best part about most of these torch-mode tricks is that they do come with an "off" switch. Once again, it pays to get familiar with a test-pattern disc so you know what a picture is supposed to look

like, then "search and destroy" these annoying tricks. Edge enhancement – exaggerating the edges within an image by adding white at the boundaries – is just distortion, pure and simple – nothing but a bunch of noise. The CNet editors have started calling this the "dancing pixels" effect: when you look at a quiet part of the picture, like a solid wall behind a character, it should not have little things dancing around in it. If edge enhancement features are turned on, or if sharpness is dialed up too high, you'll see these kinds of noisy visual artifacts. Thankfully the newest generation of plasmas and LCDs are better at this, and a lot less noisy. So don't bring the noise back by deploying features that add extra edges. Now this may require a little study on your part, but it's all in the job description. As a professional installer you should be able to look at every menu screen on a consumer's TV, know what every menu option does, and know how to set it for optimum viewing. That's your job, and if you're good at it you'll make an excellent living in this business. If it's as mysterious to you as it is to your customer, you're in the wrong line of work.