LCD-TV: The Pleasures of Selling a Commodity Product (Plus)

The conventional wisdom is that commoditization is bad for manufacturers and retailers, but good for consumers. After all, the product is a commodity because its performance and features are pretty much the same for all suppliers, and the only thing that's left to compete on is price. That sets up a race to the bottom, where suppliers suffer from razor-thin profits -- and consumers enjoy them. But this is the world of LCD television, where nothing is simple and opportunities can be found in unexpected places.

Syntax-Brillian Olevia 332H 1366x768 LCD-TV: Commodity with Quality

Benefits of commoditization

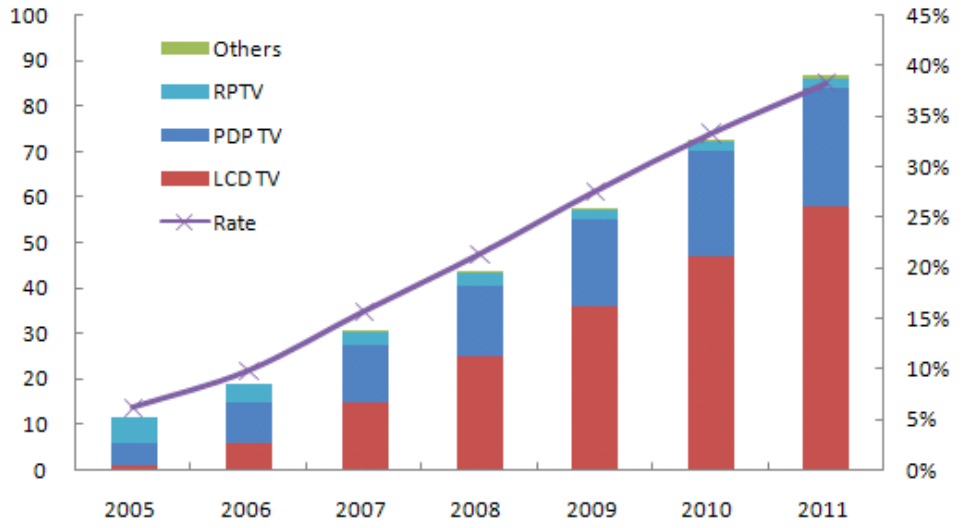
Commodity status has brought LCD-TV to a position of dominance compared to other technologies that was undreamed of even a few years ago. Rapid price reductions have brought what was recently a luxury product into the high-volume mainstream.

For example, in 2005, less than a million units of LCD-TVs with screens 40 inches and above were sold, according to the Korean market research firm Displaybank (see chart). In 2006, that grew to about 6 million units, and Displaybank projects 15 million units in 2007. By 2010 the number should be 45 million.

At the same time, prices have plummeted. A 42-inch LCD-TV from a good third-tier manufacturer sold through a ware-house style retailer can be had for about $1000, and a set of the same size from a first-tier manufacturer sold through an electronics retailer is averaging about $1600. Those prices bring large-screen HDTV within reach of many, many consumers.

And those consumers are buying, but not only because of relatively low prices. High quality and reliability, along with reasonably good visual performance, have earned consumer trust. Rising sales tell the tale: Consumers want to buy.

For TV set manufacturers, the large volume of commodity LCD-TVs has lowered the cost of key components and materials and led to the establishment of a mature and efficient supply chain. So set manufacturers now have a low-cost, high-quality system platform that can be sold as a value leader – and they can also use it as a foundation for value-added features and premium lines, which can be offered at higher but still very reasonable prices.



Source: Displaybank, March 2007

The baseline commodity TV platform

There is no one specification or characteristic that predicts a user's enjoyment of a TV. A variety of trade-off combinations can lead to enjoyable viewer experiences, which allows manufacturers to adopt different strategies and, to some extent, offer sets with different visual styles, as well as different features.

Still, it is possible to describe characteristics that are commonly found in commodity HD LCD-TVs. Sizes range from 26 to 42 inches, with a pixel format of 1366x768 (WXGA). Pixel response time is typically 8 ms, which is fast enough maintain motion blur at a level acceptable to many viewers.

Color gamut is 72% of the 1953 NTSC standard, which means the range of colors that the TV can display is about the same as what people have gotten used to on tube-type TV

sets. And this is the range of colors that broadcasters transmit. Luminance – often called brightness – is typically about 500 cd/m², and contrast is 600:1 or so.

There's still a lot of discussion about the range of angles from which LCD-TVs can be viewed without brightness, contrast, or color fidelity dropping to objectionable levels. In fact, for established manufacturers, viewing angles are more than good enough for the way people actually watch TVs in their living rooms.

Bottom line: The commodity HD LCD-TV provides great value and most viewers will be very happy with what they see.

But what will they pay? In late spring of 2007, a 32-inch Sharp LCD-TV was being shown at Costco for $899, with a Sony Bravia at $1199 and a Vizio at $599. Olevia models from Syntax Brillian were being advertised by web-based retailers for $499.

Westinghouse Digital's 42-inch full HD set was being offered by the highly reputable on-line retailer JandR Electronics for $1299.

Building on the base

What features are TV makers adding in their premium lines? There are all the features that have nothing to do with picture quality, such as better-designed cabinets with more expensive finishes, more HDMI connectors; better built-in audio system, perhaps a built-in DVD player. This is not to minimize the importance of design. One of the initial appeals of LCD-TV was, as LCD-TV Association President Bruce Berkoff said, that "it looks as good off as it looks on." Manufacturers are making sure that the comment still applies.

When it comes to picture quality, 2007 is the year when so-called "dynamic addressing" began to appear in premium LCD-TVs from a variety of first-tier and some third-tier manufacturers. The need for dynamic addressing arises from the "sample-and-hold" way that LCD panels are addressed. That is, the video signal intended for a particular pixel is not tracked by the pixel in real time. Instead, the signal is sampled at a particular time and the pixel is held at the corresponding color and brightness for one complete frame time. This is an important contributor to motion blur, in addition to slow pixel response time. In fact, even if you could bring the pixel response time down to zero, you would still have motion blur from the sample-and-hold addressing.

There are several techniques for implementing dynamic addressing – reducing the hold time – so the addressing approximates the true dynamic addressing found in CRTs. The technique that virtually all the manufacturers are using is frame-rate doubling, in which the panel is presented with 120 frames per second instead of 60, with the extra frames interpolated from the real frames presented by the video signal. Different makers have different names for their 120-Hz frame-rate solutions, but the basic technique is the same. Combine frame-rate doubling with a fast panel and a good video processor, and motion blur is reduced to such a low level that most viewers don't notice it, and very few viewers find it objectionable.

When the camera pans in movie scenes shown on large-screen flat-panel TV sets,

viewers can see severe juddering, or unevenness in the panned motion. Inexpensive integrated circuits are now available from Micronas and other vendors to perform de-juddering. They're beginning to appear now in sets from quality makers such as LG Electronics and Samsung.

Samsung, among other makers, is aggressively promoting frame-rate doubling. But not everybody has climbed on board. Sharp has reduced it's pixel response time to 5 ms, and with good video processing has reduced motion blur to an impressively low level. But Sharp is looking at frame-rate doubling for the future.

Increasing the color gamut of an LCD-TV from the usual 72% to 90% or more is a guaranteed way of grabbing a consumer's attention in a retailer's showroom. The effect is *not* subtle. Reds and yellows are typically much deeper, and there's a much greater range of blues and greens that give rippling water much greater depth and richness.

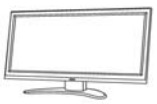
LED backlighting has been the most highly promoted approach to extended color gamut, but the first approach to be implemented by Samsung and others – so-called direct backlighting with red, green, and blue light-emitting diodes – is too expensive for all but very high-end sets. Sharp has implemented extended gamut in all of its 2007 sets by using cold-cathode fluorescent lamps (CCFLs). Externally, these CCFLs look like the conventional CCFLs used in the vast majority of LCD-TVs, but a more complicated mix of phosphors produce light with peaks at 4 or 5 different wavelengths instead of 3. Sharp uses the 4-wavelength CCFLs for its more economical line and the 5-wavelength version for its premium line. Sharp gets a significantly improved color gamut at a lamp cost only 30% greater than for ordinary CCFLs.

In 2007's sets, many makers are enhancing the basic contrast of their premium LCD sets by using dynamic contrast control. DCC dims the backlight for dark scenes, making blacks blacker. This can improve the contrast by a factor of two, three, or more. The current widely used version of DCC is relatively inexpensive to implement with direct CCFL backlighting or edgelit backlighting, so it's appearing in monitors and smaller-screen LCD-TVs as well as large-screen HDTVs. More sophisticated versions will be coming in the future that will be able to dim the backlight in selected areas of the image area, which will add to the tonal range in individual frames. As a side benefit, DCC also reduces power consumption.

And, of course, there's full high definition (FHD), 1920x1080 pixels, which provides much sharper images on very large screens or on moderately large screens that are viewed at short distances. Short distances are how TVs are viewed on the sales floor.

Selling the upgrades

Consumers can get very good added value with premium lines, but are retailers selling them effectively? It takes well-trained sales personnel to recognize and understand these high-tech improvements. But the whole point of this technology is to provide improvements in the picture consumers see. So the salesperson must be able to show the consumer the differences he's trying to sell.



Unfortunately many retailers still don't give their salespeople the tools they need to sell up. A basic requirement is that the same FHD signal be fed to all sets so the salesperson can show the consumer differences in motion blur, color gamut, contrast, judder, and resolution.

Also, some LCD-TVs don't show standard-definition signals very well. Retailers might not want to demonstrate this, but premium TVs that use premium display processors do better here, and it's a dramatic way of selling up. It's useful to note here that dissatisfaction with the way HDTVs handle SDTV signals is a leading cause of customer returns. In the long run, preventing those returns might pay off.

Third-tier strategies

Third-tier suppliers are differentiating their products, too. One strategy is to use good-quality components but to incorporate fewer features. When a feature is added, the manufacturer makes sure the buyer gets a big (and very obvious) bang for his or her buck. As an example of this kind of thinking, Syntax-Brillian's Sam Miller is considering using de-juddering in future large-screen sets and *not* utilizing frame-rate doubling because he thinks that choice gives the price-conscious consumer a more obvious effect for the dollar.

Buying LCD panels inexpensively is one part of the third-tier strategy. But now that panel oversupply is trending toward undersupply, third-tier makers my get less of a cost advantage this way.

Some third-tier manufacturers make a religion out of keeping overheads very low. That's something that will pay them continuing dividends – as long as they stay hungry enough to maintain the necessary discipline.

Where do we go from here?

The commoditization of basic large-screen HDTVs has created a golden opportunity both to sell to a cost-conscious mass audience and also sell large numbers of premium HDTVs with enhanced features and larger profit margins – if retailers do the sales-force training and create the kinds of displays and demonstrations on their selling floors needed to support the effort.

TV set manufacturers are building sets with enhanced features and image quality. Each year some of these enhanced features will become part of the commoditized baseline, but there's no shortage of enhanced features in pipeline.

The market for LCD-TV is very large – and on its way to becoming huge. Manufacturers are beginning to address that market the way the automobile industry addresses theirs. That market supports many distinct brands – from Kia to Porsche to Bugatti – and many models. Each has its own strengths and fans, and TVs have a similar chance to support many brands and styles with features and designs to match many price points and lifestyles.

But TV marketers have to describe their models and features clearly and simply. As Bruce Berkoff puts it, “TV companies must help buyers focus on what it is they can actually see and what it is they like, and they must stay away from specmanship and silly numbers.” Clearly if someone is there in the store to point out a deeper black level versus other’s light leakage, or a smoother image around a moving body part versus some motion blur, it would help those vendors who take the time to really focus on image quality customers can indeed SEE, not just talk about, but customers must also know what to look for, hence our goal in educating both the sellers and consumers in some of the things one can look for, and this is just the beginning.

END