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# **“LCD TV Matters”**

**Volume 2, Issue 2**



***"A Great TV in Every Room"***

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# Chairman's Corner: A crazy few months...

by Bruce Berkoff

What a crazy few months it has been. From a worse than normal steep decline in prices during the start of a regular cyclical downturn in the \$100+ billion TFT LCD panel component industry as part of relatively normal supply/demand behavior starting over the summer (remember, we have had regular ~2-2.5 year cycles for about two decades now) to the once in a lifetime economic downturn we now face globally, the mood has shifted rapidly to one of uncertainty in almost all businesses around the world, not just the usually difficult consumer electronics industry. You might note that I wrote in this newsletter around 11 months ago about our USA recession that the Fed had not yet recognized, and indeed now they claim it started in Q4'07. I have always maintained that the LCD industry is one where you can usually tell how many units will be shipped (the same number that gets built) but not know at what price they will be shipped at. Well, in Q4'08 it became hard to gauge what would even get built given the uncertainty and fear that surrounded parts of the supply chain and all of the credit markets, which led to utilization rates in factories falling to their lowest levels ever admitted (but that public admission across the spectrum was a healthy sign of industrial maturity and rational behavior where that had been lacking).

So we are indeed in a unique phase in the growth of the LCD TV market, as we enter a period of strong unit demand in general, as the digital broadcast transition kicks in across the USA starting in Feb '09 and over a period of time rolls out globally across other markets as well. Units for second and third LCDs TVs in developed nations will grow and the first HDTV in a house for developing nations will surprise people for many years to come, but at what average price? (I have always said people will buy a TV before putting in indoor plumbing, as it is cheaper and easier to do, and that will continue to prove true!)



*Figure 1: The photo on the left is of Mt. St. Helens after it blew up – much like our current display market when you combine the normal cyclical downturn from this summer that we expect every couple years with the once in a lifetime economic downturn the USA ran into in the fall without fully noticing... The photo on the right is a 65-inch Olevia LCD TV, a company that had its own downturn, but on the screen is the movie title "The Chubb Chubbs Save XMAS" as we hope the USA consumer would do (and I believe they will again someday)...*

But this year we saw the supply chain and shipping markets collapse in early Q4 as the world's economic banking trouble boiled over onto Main Street (and shippers used to "letters of credit" had to often change their way of doing business or working capital requirements). The vast array of containers sitting eerily still on shipping docks in Chinese ports instead of hustling their way to USA's west coast in time for Xmas shopping reminded me of a spent volcano, like the aftermath of Mount St. Helen's (see *Figure 1a*) where an unbelievable amount of energy was "spent" and now the remains sit in awesome silence, awaiting the natural "rebirth" to come.

I still believe the USA consumer will spend more than they “should” (being less rational than even the LCD industry) but whether they will “save Xmas” (as do the “Chubb Chubbs” in the wonderful animated short film pictured in the 65-inch Olevia LCD TV in *Figure 1b*) will depend on your point of view. I personally think that unit volume will be OK for quite some time in the LCD TV space, on a relative basis, but it will always disappoint someone - especially in these days where negative overall revenue growth is possible due to such steep price declines (in general I am amazed by the gloomy analysts who see dire straits in any economic growth numbers that are even very small positive single digits, let alone small negative ones, forgetting of course that they represent millions of people still spending billions of dollars on things they want and need and voting with their wallets that our economy will indeed go on!).

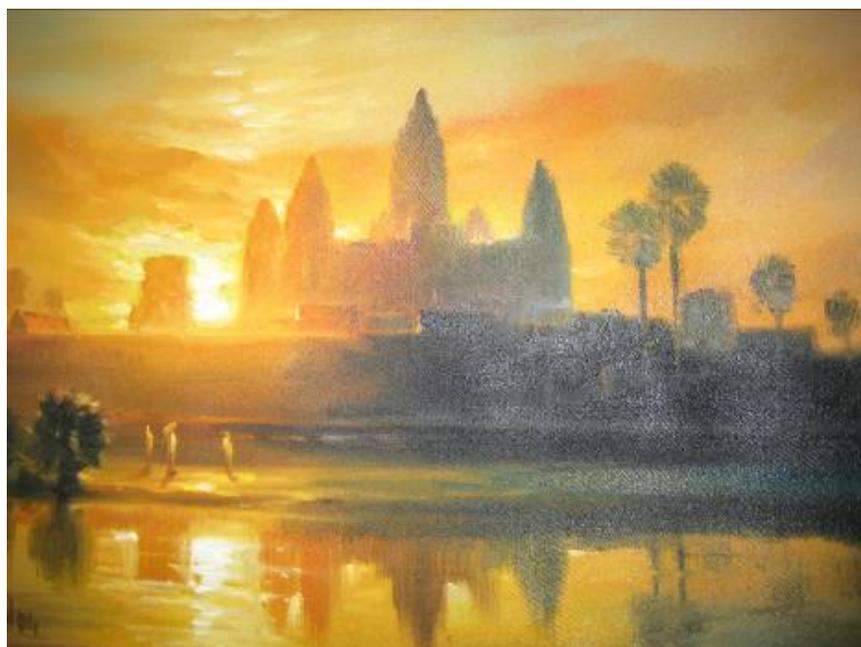
Yet I digress, too far from the essential points: 1) people will still spend money on LCD TVs of all types, and in all countries, and to a unit level that will grow to surprise most analysts over the next few years and 2) the US consumer will also do the same in 2009, beyond the big “digital transition” in America (which will not go quite as smoothly as the FCC would like nor of course as badly as the pundits would predict). “Entertainment” spending of all types will remain one of the most important industries in our economy.

Some past worries have already started to fade, as will “will OLED TVs replace LCDs anytime soon”?, with resounding “no’s” from the likes of Samsung and others who support the technology for small screen phone formats but admit (sorry Barry!) that larger screens need a supply chain and technology that does not quite exist and may not be economically feasible anytime soon (if ever!). As LED “edge lights” advance in ability and reach better cost points and begin to replace normal BLUs in LCD TVs as they have in notebooks, more of the few weaknesses left in LCDs will go away, and thinner and sexier models will come out, with higher “WAFs” and lower shipping and logistics costs (if they would just use some cool stand ideas to make the boxes smaller!).

LEDs will also lead to better energy conservation with regional dimming and better color and contrast as well as black levels.



*Figure 2: This is a reverse glass painting from China about 100 years old – the sort of thing that wealthy families would commission, not unlike what Chinese manufacturers felt before about getting into LCD-type thin flat glass displays.*



*Figure 3: This is an oil painting of Angkor Wat from Cambodia, an old-fashioned pretty oil painting of a lost kingdom's glory days in current ancient ruins – not to be confused with the current LCD market, which will shine again (well, at least for some)...*

A bigger question is what about older fabs and excess capacity (mostly in Taiwan) that is sitting idle. Will economic rationality prevail and some be shuttered (or at least repurposed to things like solar cells) or will corporate and national pride stand in the way of the correct market forces? Will China continue on its quest to be a major player in TFT LCDs rather than focus on markets that will create more jobs and reduce their imports (like renewable energy)? China has a long history of doing incredibly beautiful things on thin and flat glass (see the reverse glass painting in *Figure 2a*), but perhaps they will see the error of growing a market for which they already control the vast majority of back end factories (which create about 50 more jobs per \$ invested than does the automated and costly front end!). Often we forget how well some “old ways” work, as is represented on many levels by the beautiful oil painting in *Figure 2b* of Angkor Wat (where an entire advanced civilization was thriving during the West’s dark ages, but was forgotten and almost overgrown by jungle for hundreds of years). Sometimes the old ways are indeed best, and certainly beautiful. “Slow and steady wins the race” was a great motto for both the hare vs. tortoise and the growth of LCDs vs. CRTs over the past many decades. But time will tell whether there is anything to replace LCDs for the next many years (I very much doubt it, because improvements in TFT LCDs and LEDs will continue) and what the next big markers will be. Clearly monitors and notebooks are bigger but will stop doubling in size, as will LCD TVs (but not yet!), though I believe other new areas like video phone and public displays (large TV like screens in malls, etc.) will slowly catch on and with touch and wireless technology add great new value propositions and millions of square meters of panel sales in the future.

Only time will tell, but it is time for me to wish you all a very happy 2009. May all of the world economies and businesses begin the inevitable recovery and have a wonderful new year, and a healthy and happy one to you and your families as well.

Warmest regards,

Bruce Berkoff, Chairman, [bruce@lcdtvassociation.org](mailto:bruce@lcdtvassociation.org)  
LCD TV Association  
"A Great TV in Every Room"

**Mr. Berkoff is the chairman of the LCD TV Association, a global not-for-profit marketing trade association dedicated to “informing, promoting, improving and connecting” the entire LCD TV supply chain and their related companies, to help promote “a great LCD TV in every room in the house!” For over six years, residing in Seoul, Korea, Mr. Berkoff was also the executive vice president of marketing and chief marketing officer (CMO) for LG.Philips LCD. He has also been the CEO of a fabless semi start-up in the video processing space and general manager of Philips Flat Display Systems software and electronics business unit. Prior executive positions also include UMAX Computer Corporation, Radius, SuperMac Technologies and ZD Labs. Mr. Berkoff is a visionary speaker and author in the display and electronics industry. He has display related patents both granted and pending in the USA and China. He holds an undergraduate degree in physics from Princeton and a graduate degree in biophysics from the University of California Berkeley. Mr. Berkoff has sat on the boards of at least five publicly traded companies, & currently sits on the BOD of LG Display (LPL), and Unipixel (UNXL).**



# LCD TV News

compiled by Veritas et Visus

## Sharp unveils AQUOS Experience for holiday season

Sharp Electronics revealed a groundbreaking tower of AQUOS LCD TVs – the AQUOS Experience – in Grand Central Terminal, New York City's treasured landmark. As presenting sponsor of the Grand Central Terminal Kaleidoscope Light Show, Sharp designed the AQUOS Experience, which will be on display throughout the month of December, enhancing the holiday atmosphere in the terminal. As part of this initiative, Sharp will be making a significant donation to The HOPE Program, a charity that equips its participants with the skills they need to find, keep, and advance in jobs. With Sharp's donation, The HOPE Program will be able to launch the "Green Collar Project", a new program to help people find green collar jobs in an environmental field. This will not only allow participants to become economically self-sufficient, but will also help preserve the environment. The AQUOS Experience stands a staggering 26 feet high on the bridge between the Main Concourse of Grand Central Terminal and Vanderbilt Hall. The structure consists of 43 Sharp AQUOS LCD TVs in varying sizes, ranging from 19-inch screen class through 52-inch screen class, that form the shape of a tree. Video content, created by Fujisankei Communications International, runs in two to three minute vignettes, creating uniform scenic imagery that spans the height and width of the structure. Two kiosks flank the AQUOS Experience, where consumers can enter a sweepstakes to win one of the 43 TVs from the tower. For images of the AQUOS Experience check out: [https://www3.stantoncrenshaw.com/Sharp/112608/img\\_gallery.html](https://www3.stantoncrenshaw.com/Sharp/112608/img_gallery.html)



## Samsung introduces a 2000-nit 70-inch LCD panel

Samsung Electronics announced that it has developed a 70-inch diagonal, "super bright" LCD digital signage panel – the brightest panel in the world to be mass-produced. Samsung's new 2000cd/m<sup>2</sup> LCD panel is one-third brighter than the previous brightest digital information display (DID) display (1500cd/m<sup>2</sup>) and has been designed to optimally accommodate the large range of lighting conditions affecting outdoor displays. The new panel generates four times the brightness of a typical LCD TV today, and comes with a unique brightness control feature that allows outdoor advertisers to lower the brightness level at night to the level of a conventional HDTV. Using local dimming LED technology, Samsung's "super bright" DID LCD panel mitigates its added power consumption by continually adjusting picture brightness in very precise "localized" increments, thereby avoiding having to brighten areas that don't require brightening. Local dimming technology permits the new panel to increase its dynamic contrast ratio up to 200,000:1. In addition, it provides a Full-HD (1080p) screen resolution with 16.7 million colors. Weighing only 80 kilograms, the panel is 1630mm wide by 952mm high by 129.6mm deep, and can be used in either a portrait or landscape format. Samsung will begin sampling before year-end. <http://www.samsung.com>

## Panasonic Viera TH-PZR900 HDTV sports terabyte drive

Panasonic Corporation's latest Viera Hi-Def TV narrows the gap between TV sets and PCs: it boasts a 1-terabyte drive for recording shows and a LAN Ethernet port to access Internet content, particularly YouTube. One terabyte of storage holds about 86 hours of BS digital TV, or 121 hours of terrestrial digital TV. There's no dual-recording capability, so you can record only one channel at a time; there's also no external DVD player/recorder. Panasonic suggests its own line of DIGA Blu-ray DVD recorders. The 50-inch wide-screen plasma display with "Dynamic Black Layer" technology has a contrast ratio of 30,000:1. Other specs are Full-HD (1920x1080) resolution, digital and analog TV tuners, 36W speakers, and connection ports for HDMI, iLink (FireWire), composite video, S-video, analog audio, monitor, optical audio, analog RGB, and headphones. <http://panasonic.co.jp>

### LG Display shows off 480Hz LCD TV panel

LG Display's Trumotion 480Hz combines two technologies: scanning backlight and 240Hz. When the LED backlight is progressively scanned and combined with LPL's 240Hz technology, the LCD can refresh images at a rate of 480Hz. LPL is making good use of the LED backlight by incorporating local dimming to improve contrast ratio and reducing the overall brightness (assuming it has an ambient light sensor) to decrease power consumption. <http://www.lgdisplay.com>

### Viewsonic launches 24-inch 1080p LCD TV

On December 15, Viewsonic announced its VT2430 LCD TV. It's a 24-inch LCD TV sporting a 1920x1080 pixel format – the 1080p format continues to penetrate to smaller and smaller panel sizes. The new TV claims a 10,000:1 dynamic contrast ratio, 250-nits, HDMI/VGA/Component/S-Video/Composite connectivity and supports ATSC/NTSC/QAM protocols. The TV is sold at an MRSP of \$399. <http://www.viewsonic.com>

### Samsung introduces 52-inch "Touch of Color" LCD TV

Samsung's LN52A750 is a newly released 52-inch LCD TV, sporting their "Touch of Color" theme – there's a touch of red in the black chassis. The LN52A750 features a 1920x1080 pixel format a 120Hz frequency, a response time of 4ms, and four HDMI ports. The TV comes with an MRSP of \$2899.99, but is currently available at Amazon.com for only \$1936.34. <http://www.samsung.com>



LG Display's 480Hz panel (left); Viewsonic's new 24-inch 1080p HDTV (center); and Samsung's 52-inch "Touch of Color"

### HDMI adopted by 700+ manufacturers as new CE and PC products hit market

HDMI Licensing, LLC announced recently that more than 700 consumer electronics (CE) and personal computer (PC) manufacturers have adopted the HDMI specification, up from 417 just 12 months ago. The widespread adoption of the HDMI specification by manufacturers further strengthens its position as the worldwide standard for high-definition digital connectivity. A wide array of new products featuring the most advanced HDMI 1.3-enabled connectivity such as x.v.Color, Deep Color and the finest high bit-rate audio have come to market from major players including Denon, Mitsubishi, Onkyo, Panasonic, Pioneer, Samsung, Sharp, Sony, Toshiba and Yamaha, with many more products expected to be introduced during the holiday season. In addition to CE products, where HDMI is now a check-mark specification, the HDMI specification is experiencing rapid growth in the game console and PC markets, as manufacturers meet consumer demand for multimedia convergence. Nearly 200 million devices incorporating HDMI are expected to ship in 2008, with an installed base of nearly one billion HDMI-enabled devices projected by 2010, according to market researcher In-Stat. More than 120 HDMI-enabled PC products are currently available, including nearly two dozen desktop and notebook PCs, families of HDMI PC monitors and a broad range of motherboards and graphics cards. Major PC makers including Dell, HP, Acer, Gateway, Sony, Toshiba, ASUSTek, and Hitachi have already announced or delivered desktop and notebook PCs with the HDMI interface. The HDMI interface can also be found on products from leading motherboard and graphics cards manufacturers including ASUSTek, ATI Technologies, Inc., Diamond Multimedia, Gigabyte Technology Co., nVidia Corp. and VisionTEK Products LLC, and on PC monitors from Acer, BenQ, NEC, LG, Sceptre, Sony, Viewsonic and Westinghouse. <http://www.hdmi.org>

### Sharp releases world's first LCD TV with built-in Blu-ray Disc recorder

PC World reports that Sharp will begin selling the world's first LCD televisions with a built-in Blu-ray Disc recorder in Japan. The televisions should go on sale in the United States before the end of last year and will begin selling in Europe in 2009. The Aquos DX-series models will be available in 26-inch to 52-inch models and will include dual digital tuners, so it will be possible to watch one channel while recording another. The Blu-ray Disc recorder embedded in the televisions will support the more efficient MPEG4 H.264/AVC digital encoding format, which means up to five times more video content, can be recorded on a standard Blu-ray Disc than with earlier models that support just the MPEG2 format. In the case of a 25GB disc, almost 11 hours of high-definition (HD) TV can be recorded using the more efficient compression. According to Nikkei Net, Sharp Corp. is on track to sell 11 million LCD televisions in the global market during its fiscal year ending March 2009 despite a global economic slowdown. <http://www.sharp-world.com>



*Sharp Aquos DX Series LCD television*

### Sony unveils world's thinnest LCD TV

Sony unveiled what is to be the world's thinnest LCD television to be made in November at around 490,000 yen. The 40-inch Bravia ZX1 is 28 millimeters at its thickest point and only 9.9 millimeters at its thinnest point. These specifications make the ZX1 thinner than products from competitors such as Toshiba, Sharp and Samsung. The ZX1 uses side-mounted light-emitting diodes, and uses a wireless connection to bridge the separate display and tuner components. The tuner is built in to the "Wireless Media Receiver". The monitor and the tuner transmit signals with each other via 5GHz wireless communications. A speaker unit is incorporated in to a table top stand and if the TV is hung on a wall, a dedicated speaker unit is attached below the monitor. When hung on a wall, the distance between the wall and the front surface is less than 50mm. A dedicated wall-mounting unit was developed with a thickness of 19.5mm. The mounting unit can be tilted up or down. The monitor weighs 12.2kg, and the dedicated wall-mounted speaker unit is 1.8kg. The TV weighs less than 15kg in total when it is hung on a wall.

Sony also introduced the W1 series, which employs the "Motionflow 240Hz" technology to enable a 240Hz driving speed. The "Motionflow 240Hz" is an advanced version of the Motionflow, technology, which creates double-speed images after correcting the blur in each of the original 60fps images. The W1 series comes in 40-inch and 46-inch models. <http://www.sonystyle.com>

### LifeSize introduces the next-generation telepresence and high definition video communications

LifeSize Communications unveiled the next generation in high definition video communications and telepresence: Full HD, standards-based 1080p at 30 frames per second and 720p at 60 frames per second. LifeSize Room 200, the first Full HD video communications solution and LifeSize Conference 200, the first Full HD telepresence solution, integrate technology to deliver a superior experience with bandwidth flexibility and price performance. LifeSize also announced the all-new LifeSize Team 200, a feature-rich HD communications system for less than half the cost of comparable systems. In addition, LifeSize announced a number of significant infrastructure and software capabilities that expand interoperability and enable video as a critical extension to enterprise communications. LifeSize also announced advanced interoperability with leading IP-PBX systems including Microsoft OCS, Cisco Call Manager, Siemens HiPath and ShoreTel Shoreware. LifeSize will also support call scheduling through Microsoft Outlook, greatly increasing the flexibility companies have to integrate video communications into their enterprise environment. <http://www.lifesize.com>



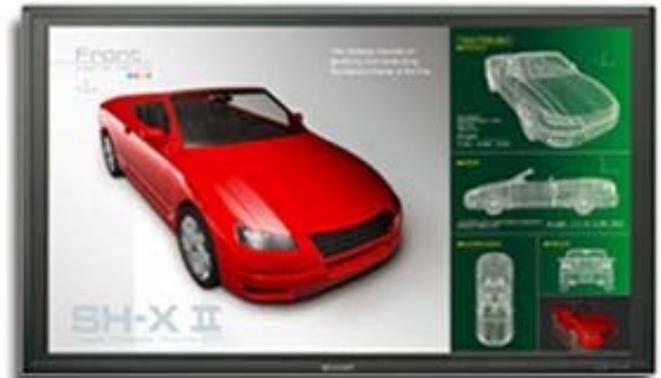
### Sharp adds enhanced inputs and network connectivity to HD LCD line-up

Sharp is expanding its comprehensive line-up of professional LCD displays with the announcement of two monitors that represent upgrades to two successful “PN” series monitors. The new PN-S525, designed for extended use in both landscape and portrait mode, replaces its predecessor (model PN-525U), while the new PN-S655, designed for extended use in landscape mode, replaces its predecessor (model PN-G655U). These new models offer high image quality and performance, adding a new LCD component panel for improved resistance to image retention, as well as additional inputs including HDMI and RJ-45 LAN. <http://SharpLCD.com>

- The PN-S525U 52-inch class monitor is designed for the most sophisticated digital signage and display applications in both landscape and portrait modes, with virtually no concern for image retention. This full two-megapixel HD monitor utilizes Sharp’s Advanced Super View (AVS)/Black TFT panel with a high contrast ratio (1800:1) and a pixel response time of 6ms, enabling professional presentations of information and images. An ultra-high aperture LCD achieves high brightness and wide 176-degree viewing angles for a crisp picture that can be seen from virtually anywhere in a room. Expanding on the former PN-525U’s extensive array of inputs including DVI-D, Component Video and RS-232C for system control, the new PN-S525 adds an HDMI input for digital 1080p content as well as an RJ-45 LAN input, allowing the monitor to be controlled, monitored and have diagnostics performed from a central location.



- The PN-S655 65-inch class LCD monitor is designed for landscape operation, offering superior performance for use in a wide range of commercial settings. A full 1920x1080 two-megapixel HD resolution and a 2000:1 contrast ratio enable the monitor to offer accurate and precise image reproduction with nearly no image retention, and a bright picture in virtually any lighting condition. To show multiple types of content sources in high definition, the monitors utilize DFE (Dual-Fine Engine) technology, which provides superior display of both digital and analog sources so the customer can display computer and video content flawlessly. The monitor also has a full complement of input and output connectors to show all types of content, from DVD to varying PC resolutions up through 1920x1080 native mode from both analog and digital (DVI-D) sources for all types of presentations. The PN-S655 also adds an HDMI input for digital 1080p sources and an RJ-45 LAN input for remote diagnostics and control.



### Panasonic launches PZ850 Web-enabled TVs – features H.264 and four HDMI ports

Panasonic announced the availability of its Web-enabled PZ850 series of Viera plasma HDTVs in the States. The line offers “Viera Cast” which gives access to what the company describes as some of the most popular content sites on the Internet today – YouTube, Google’s Picasa Web Album and Bloomberg. As well as the Internet functionality the range has an SD card slot and compatibility with the H.264 codec for displaying videos from a HD camcorder, as well as still images. There are four HDMI connections, a PC input and hook up with Viera LINK. Specs comes in at a native resolution contrast ratio of 30,000:1, a dynamic ratio of 1,000,000:1, 24p native reproduction, Digital Cinema Color Re-Mastering and Studio Reference Mode. The range includes the 46-inch TH-46PZ850, the 50-inch TH-50PZ850, the 58-inch TH-58PZ850 and the 65-inch TH-65PZ850 with pricing at \$3000 for the smallest model and \$8000 for the biggest. <http://www.panasonic.com>

### Schaub Lorenz introduces \$130,000 40-inch LCD TV



Schaub Lorenz, a pioneer in digital audio and video technology, has unveiled the world's most expensive and ultra luxurious LCD TV in the Middle East market for \$130,000. The 40-inch LCD TV is studded with diamonds and white gold. Each diamond is of V VS1 brilliant white color. "The TV is completely hand-made – piece by piece construction – without screws and welding. The television screen functions are all activated by feather touch," said Dr Jean Shahdadpuri, director, Nikai group of companies. "The eco-friendly TV is made with degradable and reusable components consisting of 47 per cent glass, three per cent aluminum and 10 per cent iron allowing the TV to be 45 per cent more recyclable than a normal TV with many plastic parts." She said customers are free to make their selection and the cost of the TV will depend on the screen dimensions, the type and weight of the precious stones varying from emeralds, amethysts and rubies. <http://www.schaub-lorenz.com>

### Philips Research reveals ultra-thin backlight technology for TVs

Philips Research recently unveiled its thinnest 32-inch LCD prototype. With a 1mm light guide, Philips Research created a display prototype of only 8mm. When incorporated into a TV set, Philips expects that this ultra-thin LCD will tap into consumers' desire to easily hang their flat-screen TVs on the wall. "At just 8mm thick, our ultra-thin display concept will enable the thinnest 32-inch LCDTV," says Fred Boekhorst, Senior Vice-President Philips Research and Program Manager Lifestyle. "Our concept is also very light – around 5 kg – enabling a 32-inch LCDTV that is around 10 kg lighter than existing comparable TV sets. As a result, hanging such an LCD-TV becomes simple and easy." Philips Research has based this ultra-thin design on its extensive expertise in optical design and backlighting technology. The novel technology involves a very thin light guide plate illuminated from the top and bottom by high-power, energy-efficient LEDs. Using Philips' patented light in-coupling structure and a fine-tuned out-coupling pattern, light can be distributed over the whole display area in a uniform fashion. <http://www.research.philips.com>



### LG and Samsung join forces to develop mobile digital TV standard via ATSC

LG Electronics and Samsung Electronics announced that they will propose their jointly developed technology as the North American technology standard for mobile DTV. The two companies agreed to cooperate in order to assure rapid adoption by the Advanced Television Systems Committee (ATSC) of a single common in-band mobile DTV standard. Technology for the jointly proposed system will reflect the findings of the IDOV (Independent Demonstration of Viability) conducted by the Association of Maximum Service Television (MSTV) on behalf of the Open Mobile Video Coalition (OMVC). A report on IDOV will be submitted by the OMVC to the ATSC. The jointly promoted mobile DTV solution uses the existing terrestrial digital TV broadcast bandwidth, with no impact on existing digital TV and with minimum broadcasting equipment investment. ATSC is expected to adopt the mobile/handheld DTV standard for the North American market in early 2009 following trials of the technology by the Open Mobile Video Coalition (OMVC), a group of leading US broadcasters who are vigorously promoting the development and early deployment of mobile DTV. According to a study commissioned by the National Association of Broadcasters (NAB), with the adoption of a single ATSC mobile/handheld DTV standard, the US market for mobile DTV phones will reach 130 million units by the end of 2012, with the market for portable media device mobile DTV receivers growing to include an additional 25 million units. <http://www.atsc.org>



### eyevis introduces 56-inch LCD TV at 3840x2160 pixels

Especially for professional applications which have to rely on every pixel, eyevis developed its EYE-LCD5600QHD, a 56-inch LCD at 3840x2160 pixels. eyevis argues that there are numerous applications for these systems where images need to be displayed in a large format and still have to be sharp when viewed from a shorter distance. The resolution of the display per inch can be compared with that of a standard desktop monitor. For example, it is possible to show various sources in native resolution. These sources can be placed freely on the screen without disturbing gaps between them, as with systems using several conventional monitors. The displayed sources also do not suffer from a loss in quality, which happens when the display in use provides a lower resolution than the source. The eyevis Quad HD monitor guarantees outstanding image properties over the entire active screen area. Thanks to its ultra-short response time it can also be used with fast moving images. Amongst several applications, a popular field is in clinical environments, where the monitors are used as display solution for the results of radiological examinations. The display has already proven its reliability in this sector during clinical studies in Germany. <http://www.eyevis.de>

### AUO and Qisda form JV to manufacture LCD TVs

According to a report from DigiTimes, AU Optronics Corporation (AUO) will invest NT\$120 million to form a new joint venture in Taiwan with Qisda (formerly known as BenQ) with AUO holding a 60% share while Qisda holds the remaining 40%, according to an AUO filing with the Taiwan Stock Exchange (TSE). Qisda will invest NT\$80 million in the NT\$200 million joint venture. Although the filing did not provide details about the joint venture, recent rumors have linked the two affiliated companies, with market whispers indicating LCD panel maker AUO would take more control of Qisda's LCD TV business. Qisda responded to those rumors by stating the two companies have been in discussions about further cooperation, but there would be no transfer of a business group. Earlier this year, Qisda teamed up with AUO to expand its LCD module (LCM) facilities in Europe in anticipation of the EU imposing tariffs on LCMs next year.

### ATSC approves AVC within DTV transmissions

On July 29, the ATSC approved and published A/72 detailing the methodology to utilize Advanced Video Coding (AVC) within an ATSC DTV transmission. The standard can be found in two parts, "Video System Characteristics of AVC in the ATSC Digital Television System" and "AVC Video Transport Subsystem Characteristics", downloadable from: <http://www.atsc.org>

### NEC introduces 82-inch professional-grade LCD for digital signage



NEC Display Solutions of America announced its largest LCD yet, the 82-inch NEC MultiSync LCD8205. The professional-grade LCD provides unsurpassed quality, and the ability for companies and organizations to showcase brand messages in an eye-catching, large format, with rich color and amazing clarity. The LCD8205 can be installed in either portrait or landscape orientation and even tiled together for a video wall up to four displays high and four displays wide, to create a massive video canvas of 328 inches diagonal viewable area. Automatic ambient light sensors also monitor changing light conditions to subtly optimize the brightness level to the environment. The new display also performs with 600cd/m<sup>2</sup> high brightness for easy viewing in bright rooms and a high 5000:1 contrast. NEC's XtraView+ delivers an extremely competitive 178-degree viewing angle for excellent off-axis viewing, which is crucial in public settings where viewers are often viewing from the side. The LCD8205 also features a 1920x1020 pixel format. <http://www.necdisplay.com>

### Fairchild Semiconductor's LCD TV design achieves 90% efficiency

Fairchild Semiconductor's Global Power Resource (GPR) design center in Japan has developed a design for LCD TVs that achieves 90% efficiency. The new design reduces the traditional four layers of PCB board to two, by utilizing the highly integrated FAN5069 and N-Channel MOSFET products. The FAN5069 combines a Pulse-Width-Modulated (PWM) controller and a Low Drop Out (LDO) linear regulator controller in a single package to provide high efficiency over a wide range of load current. Efficiency is further enhanced by using low-side MOSFETs with low RDS(ON) to sense current. The N-Channel MOSFETs reduce switching losses and optimize conduction losses. Both products are highly integrated to increase system efficiency and reduce component count. <http://www.fairchildsemi.com/designcenter/>

### ZeeVee now shipping ZvBox for PC content streaming

ZeeVee is now shipping its ZvBox, a media streamer that allows users to watch Internet TV and/or computer content on all the HDTVs in a home. The ZvBox, which doesn't require a subscription, uses existing coaxial cables to turn the PC monitor output into an HDTV channel called Zv. It then "localcasts" the channel to the HDTVs in the house. ZvBox also enables viewing of e-mail, Web browsing, photos, music, DVD players and more. It comes with the new wireless ZvRemote. The ZvBox is available from the following companies: Amazon, Best Buy, J&R, NewEgg, TigerDirect and ZeeVees' online store. MSRP for the ZvBox is \$499. <http://www.zeevee.com>



### GAO reports DTV transition making progress

A US government report says the analog-to-digital move is going well for most full-power TV stations. The GAO says that of the 1,122 full-power stations from which they received data, around 91% already broadcast a digital signal. Over 68% are transmitting it on the channel intended for broadcast after the transition and the same percentage are doing it at full power. 72% of these responders were commercial and the rest non-commercial stations. 97 stations told the GAO that they have yet to broadcast a digital signal, they being the still-working-on-it 9%. These tended to be smaller stations that serve audiences about half the size as the stations already streaming a full-power digital broadcast. All but three of these smaller stations have told the GAO that they plan to have their digital gear up and running by the Feb 17 cut-off date. <http://www.gao.gov/new.items/d08510.pdf>

### Broadcom to acquire digital TV business from AMD

Broadcom and AMD announced that the companies have entered into a definitive agreement for Broadcom to acquire AMD's digital TV business. The acquisition of AMD's DTV business is expected to enable Broadcom to immediately scale its DTV business, and, in conjunction with its existing products, to offer a complete product line that covers all segments of the DTV market ranging from low-end value and mid-range quality to high-end interactive platforms and panel processors. The acquisition also is intended to expand Broadcom's existing tier one customer base, which includes the top DTV brands worldwide. In connection with the transaction, approximately 530 members of AMD's dedicated DTV team, in addition to certain employees directly supporting this team, located in six primary design centers around the world, will be invited to join Broadcom. AMD's DTV product line includes all Xilleon integrated DTV processors and complete turnkey reference designs, as well as NXT receiver ICs, the Theater 300 DTV processor, and a line of panel processors that perform advanced motion compensation, frame rate conversion and scaling. In connection with the acquisition, Broadcom will pay approximately \$192.8 million in cash in exchange for AMD's DTV assets. <http://www.broadcom.com>

### Best Buy survey says confusion remains on digital TV switch

A recent survey conducted by electronics and media retail chain Best Buy found that 88% of consumers are aware of the digital broadcast transition, but nearly half (45%) said they plan to wait until after it happens to take any action. The survey found a majority of consumers (60%) knew that Feb. 17, 2009 is the date when their analog TVs will stop working, but more than half (54%) still do not understand why the transition is happening. Nearly a third (31%) of TV owners don't know what type of TV they have - analog or digital, while 21% believe they simply cannot afford to do anything to prepare for the transition, and 18% of analog TV owners mistakenly believe their sets will still be working normally after the transition. <http://www.bestbuy.com>

### VIZIO supports CUT FATT

VIZIO announced its support of the Coalition to Terminate Financial Abuses of the Television Transmission (CUT FATT). VIZIO is petitioning and urging the FCC to take action and protect American consumers from excessive patent charges for DTV that have already exceeded \$1 Billion. The coalition was formed to protect American consumers purchasing televisions from excessive unregulated patent fees charged by companies claiming to own the patents needed to comply with FCC standards for digital televisions (DTV). Formed in mid-2008, CUT FATT's mission is to raise awareness among Members of Congress and the FCC about the uncontrolled price gouging of these patent holders. The petition asks the FCC to hold abusive parties responsible for excess charges, and to impose new rules for patent licensing to end the overcharging. It is estimated that in 2008 and 2009 alone, the aggregate royalty cost to American consumers will be well over one billion dollars for fees that would total only about \$65 million in Europe and Japan. <http://www.VIZIO.com>

### LCCR criticizes DTV transition process

A coalition of civil rights groups has called the nation's scheduled move from analog to digital full power television a "transition in trouble" and is urging the government to provide more guidance and money to address the challenge. "There is an absence of clear federal leadership and a comprehensive transition plan to address the needs of those most vulnerable to the transition," Mark Lloyd of the Leadership Conference on Civil Rights (LCCR) said. "And there seems to be no rapid response capability to deal with what we are certain will be problems on or after February 17th, 2009." That date is the last day of analog broadcasting for full-power TV. LCCR cites media and government surveys suggesting that the transition will face "very serious problems". These include a May 2008 Nielsen report from which the group has concluded that "23 million households will wake up on February 18th either completely or partially unready to receive digital broadcast television services", and a June 10th Government and Accountability Office (GAO) survey suggesting that about half of them "are still unprepared for the switch". Prominent among these households are non-English speakers, the elderly, people with disabilities (particularly people with hearing problems), and rural households. <http://www.civilrights.org>. LCCR's report – "Transition in Trouble" – also offers an array of recommendations that address key areas where the transition could go bad after February 17th. Here are three:



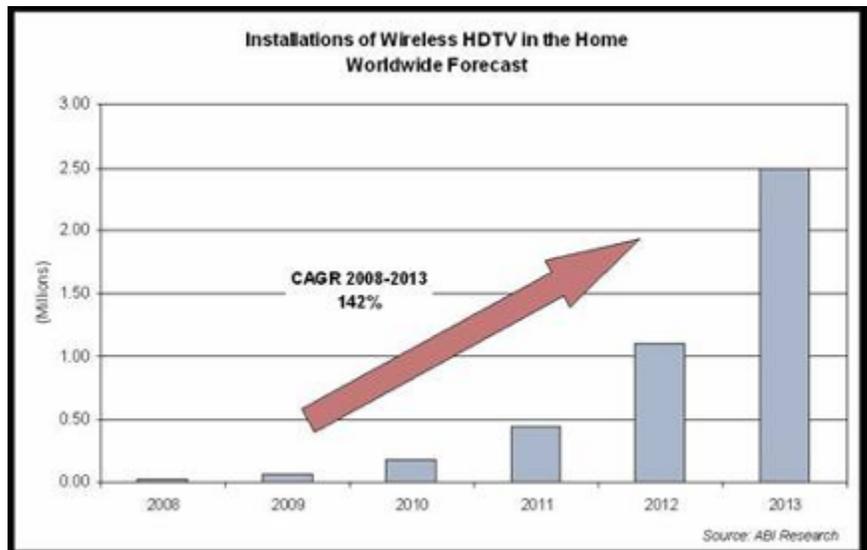
- **Organize rapid response teams to help people after February 17th.** These teams should be ready to move starting on January 1, 2009; LCCR says, with the Federal Communications Commission and NTIA providing consumer assistance lines, "fully staffed" with people able to help non-English speakers and TV watchers with disabilities. "Community-based organizations should be empowered and funded to mobilize teams that will assist their members who are unsuccessful in making the transition." LCCR recommends: "The NTIA and FCC should be prepared to conduct significant and rapid outreach to media outlets that may reach those who have lost television service, such as community and ethnic newspapers and radio."
- **Make the converter boxes more accessible and affordable.** LCCR suggests that the NTIA eliminate the expiration dates for the converter box coupons "or at the very least extend the expiration date to March 2009". Tens of thousands of already ordered coupons have expired, forcing consumers who have been confused about the process to re-order them. People with hearing disabilities have had a particularly difficult time identifying which converter boxes are most user-friendly. In addition, LCCR notes that households are eligible for two \$40 coupons only, a restriction that may limit the benefits of the program to smaller families.
- **Put more money and presence into the project.** So far Congress has allocated \$5 million for the DTV transition educational project. LCCR calls that sum "not nearly enough", and notes that the government just collected \$19.5 billion in the recent 700MHz auction. "A small portion of that money should be devoted to public education about the transition," the coalition suggests. President Bush should produce a public service announcement on the transition, LCCR says, and every government agency should display a DTV transition link on its website.

### Blockbuster says DVD to Blu-ray shift will be slower than VHS to DVD

Film rental firm Blockbuster has said that consumers will be slow at swapping their DVD libraries over to Blu-ray. According to a report by *Home Media* magazine, Thomas Casey, CFO of Blockbuster said at a recent investor conference in New York that he doesn't think Blu-ray's replacement of DVD is "going to be nearly like DVD replacing VHS". Although he didn't give any timeframe for consumer adoption of the HD format, he hinted that the wholesale and retail prices of Blu-ray films could be one of the problems slowing consumer uptake. He also claimed that Blu-ray still has a market penetration of less than 5%. The Blu-ray Disc Association recently predicted that Christmas 2008 would be good for the HD format. Market watcher Futuresource has also predicted that 12 million Blu-ray Discs will have been purchased in Europe this year and that sales will be at 250 million units a year by 2012. <http://www.blockbuster.com>

### ABI Research reports lukewarm reception for Blu-player purchases

A new study from ABI Research finds only 23% of consumers surveyed plan to buy a Blu-ray player by sometime in 2009. "Blu-ray: Consumer Survey Results" says over 50% of the 1,000 respondents don't have any desire to purchase a Blu-ray player, saying they have "other priorities". ABI Research principal analyst Steve Wilson says much of the lukewarm response is attributed to the perception about the value Blu-ray offers. Half of the respondents say Blu-ray's quality is "much better" than DVD, while 40% say the quality is only "somewhat better". The survey says the price of Blu-ray players and Blu-ray discs and the need for an HDTV are also major barriers delaying wider adoption. "We expect that player prices will remain above \$300 for Tier One models for the remainder of this year," says Wilson. Despite Harris Interactive also saying Blu-ray lacks interest, there are some bright spots, according to ABI: Sony's PlayStation 3, which many think is the best Blu-ray player on the market, continues to sell. <http://www.abiresearch.com>



Installations of wireless HDTV in the home worldwide forecast

### ABI Research says one million wireless HDTV installations by 2012

A new study conducted by ABI Research has revealed that after wireless phones, wireless Internet and wireless home networks, wireless high-definition TV is going to be the hot product. However, the wireless high-definition TV market is still in its infant stage, as less than 100,000 devices are expected to ship this year. The report expects that by the year 2012, a milestone of one million wireless HDTV installations worldwide will be achieved. <http://www.abiresearch.com>

### EMA predicts Blu-ray to outsell DVD in 2012

A report by the Entertainment Merchants Association predicts Blu-ray sales will surpass standard DVD in 2012 and be about \$9.5 billion. The 2008 Annual Report on the Home Entertainment Industry found that sales of nearly 9 million high-definition discs in 2007 generated more than \$260 million in consumer spending. The EMA believes in 2012, Blu-ray Disc sales will be around \$9.5 billion. Even with a decline from a peak of nearly 14,000 in 2005, standard DVD releases totaled 12,177 last year, according to the report. The EMA also reported that the PlayStation 3 appears to be the Blu-ray player of choice, as 87% of PS3 owners watch Blu-ray movies on their console, and says the PS3 will remain the driving force behind Blu-ray sales until 2009. Microsoft, which did not integrate a HD-DVD drive into the Xbox 360 sold only 316,000 HD-DVD add-ons for the console in 2007, the reports says. PS3 sales, in large part because of its Blu-ray compatibility, were close to 3 million by the end of 2007. The report also says Blu-ray will outsell standard DVDs in 2012, generating more than \$9.5 billion in sales. <http://www.entmerch.org>

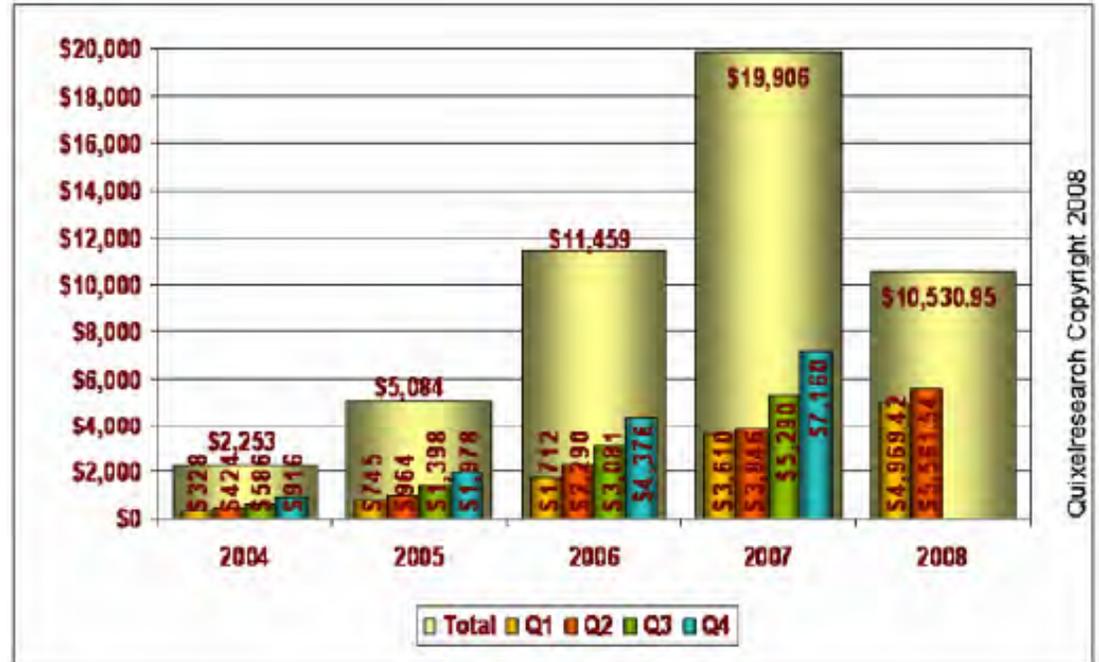


### Quixel Research reports 25% LCD TV increase in Q2'08

In Q2'08, a variety of model sizes supported a 25% increase in LCD TV growth. After a modest seasonal decline, the LCD TV category was back in full swing during Q2'08 and posted a 25% quarter-to-quarter increase in unit sales. Quixel Research's recently published LCD TV Market Review revealed that the increase was supported by a variety of screen sizes with less emphasis on 1080p models. From Q1'08 to Q2'08 unit sales for the 32 and 40-

42-inch screen size segments were up 22% and 26% respectively. However, it was the new 19W and 22W models launched in the second quarter that showed the real dramatic growth. Unit sales for the 19W segment increased 121% quarter-to-quarter, while the 22W segment was up 262% for the same time period. The increased sales of small and mid-sized LCD TV models fueled a 30% increase in 720p unit sales for Q2'08 or close to the 33% increase in 1080p unit sales. Overall value for the LCD TV category was up

12% quarter-to-quarter, with revenues for the category topping \$5.5B in Q2'08 compared to \$4.9B in Q1'08. Year-to-year the LCD TV category posted a 45% revenue increase. The total value of the advanced TV market in the US was worth over \$7B in revenues in Q2'08. The LCD TV segment represented almost 80% of that market in Q2'08 in revenues and 85% in volume. Quixel Research's projections for the US LCD TV market in units show the category increasing out to 2010. <http://www.quixelresearch.com>



Quixelresearch Copyright 2008

### Display Insights predicts HDTV silicon sub-component revenues to rise to \$6.7 billion by 2011

Display Insights believes the outlook for the HDTV silicon ecosystem is strong due to recent innovations across functional partitions, maturing regional standards, combined with image quality and cost breakthroughs as outlined in its recently introduced 2008 report "The HDTV Silicon Ecosystem Revealed". The complete report profiles 92 HDTV semiconductor companies and their products, including component-level pricing and company-specific roadmap analysis. The detailed findings uncovered a powerful inflection point among the four competing HDTV silicon sub-architectures that could dramatically alter current leadership positions. As an example, today's 4D sub-architecture, defined in the report by the number of discreet ASICs leveraged, their functional partitioning and the use of unified versus discreet memories, is anticipated to decrease from a dominant position of 58% market share in 2008 to 29% by 2011. The 4D sub-architecture's corresponding system electronics bill-of-materials (BOM) is expected to decrease from \$53 to \$44 over the same time period. In contrast, today's 3U sub-architecture is anticipated to be the fastest growing, with a CAGR of 29% yielding more than 54% market share by 2011. The 3U is also the only HDTV silicon sub-architecture to anticipate a component price increase, growing to a system electronics BOM of \$39 by 2011, says Christian Prusia of Display Insights. <http://www.displayinsights.com>:

"Due to the rapid change within sub-architecture design, the HDTV silicon ecosystem is expected to consolidate from today's 100+ firms to 25-40 companies by 2011. This consolidation will likely result in three to five large firms that compete across all HD functions, along with two or three specialized firms within each primary HD silicon category. This consolidation is a logical next step as the industry pushes to achieve a region-free, single-die ASIC or multi-chip module (MCM) that physically and functionally integrates all of the required HDTV processing blocks."

### iSuppli reports that HDTV shipments surpass standard TVs

Significant price reductions and the increasing availability of content over multiple distribution channels are driving sales of HDTVs, according to iSuppli. As a result, HDTV shipments are expected to increase at a compound annual growth rate of 20% from 97.1 million units last year to 241.2 million by 2012. Shipments of standard definition TVs, on the other hand, are expected to decline at a CAGR of 27% from 114.8 million units in 2007 to 23.1 million units by 2012, iSuppli said. In 2008, HDTV shipments will reach 124.2 million units, while non-HDTV shipments fall to 86.6 million. <http://www.isuppli.com>

### Wide viewing angle performance remains crucial in LCD TV says DisplaySearch

DisplaySearch released its Q3'08 Quarterly Wide Viewing Angle Technology Shipment and Forecast Database, which states that 70% of the LCD TV panels shipped in 2008 on an area basis will be of the VA (vertical alignment) type. The share for IPS (in-plane switching) panels will be 24%, and the TN+WVF (wide viewing film) share will be 6%. VA suppliers include AUO, CMO, CPT, Samsung and Sharp. IPS Alpha and LG Displays are currently supplying IPS panels, and BOE in China is forecast to provide a type of IPS panel called FFS (fringe field switching) starting in 2011. Drawing on analysis of LCD TV panel supplier capacity expansion plans, as well as product development strategies for LCD TV panels, the report forecasts that VA will continue to dominate the LCD TV market, but the areal share will fall to 65% in 2012 while IPS share (including FFS) will increase to 28%.

*LCD TV panel wide view angle technology share by area*

	2006	2007	2008	2009	2010	2011	2012
TN+WVF	6%	7%	6%	5%	6%	6%	7%
IPS/FFS	26%	26%	24%	26%	27%	28%	28%
VA	68%	66%	70%	69%	67%	65%	65%

In LCD TVs smaller than 26 inches, IPS and VA types will disappear from 2009 due to the large adoption of TN+WVF LCD monitor panels such as 19-inchW (wide format), 22-inchW, and the coming 15.6W, 18.5W, 20W and 21.6W. For 26-inch LCD TVs, TN+WVF type is forecast to grow rapidly to 81% in 2012 after starting with a 4% share in 2006, when it was first introduced. The reasons for the rapid growth are that TN+WVF panels have a cost and yield rate advantage and can now provide performance similar to the VA or IPS type. In 26 inches, the IPS type will be phased out from 2010, and VA share will drop to 19% in 2012. <http://www.displaysearch.com/>

### 120Hz panels accounted for 27% of 40-inch and larger LCD TV panels in Q3'08, says DisplaySearch

Analysis from DisplaySearch's Quarterly Large-Area TFT LCD Shipment Report reveals the latest trends for 120Hz double frame rate LCD TV panels and for notebook panels with LED backlights. Shipments of 120Hz LCD TV panels reached 3.6 million units in Q3'08, which is 57% growth from 2.3 million units in Q2'08. In Q3'08, 120Hz panel shipments has accounted for 16% of all 32-inch and above and 27% of 40-inch and above LCD TV panels. Meanwhile, due to cost reductions and the launches of new notebook PC models, shipments of notebook panels with LED backlights grew by 63% Q/Q to 2.1 million in Q3'08 from 1.3 million in Q2'08. The share of LED backlights in notebook panels reached 5.4% in Q3'08 and is expected to reach 12.2% in Q4'08. <http://www.displaysearch.com>

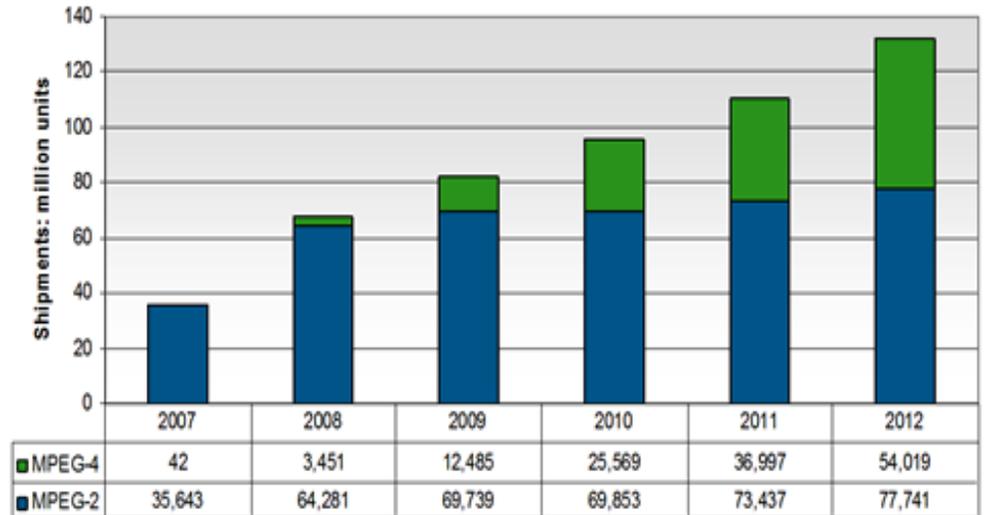
Application	Item	Q2'08 Shipments	Q3'08 Shipments	Q/Q Growth	Y/Y Growth
LCD TV	32"+ panel shipments	19.8	22.8	15%	33%
	120 Hz panel shipments	2.3	3.6	57%	21%
	120 Hz penetration	12%	16%		
Notebook PC	All NB panel shipments	37.9	38.6	2%	21%
	LED Backlight panel shipments	1.3	2.1	63%	200%
	LED penetration	3.4%	5.4%		

\*In this table, notebook PCs include 10.1-inch and 10.2-inch mini-note panels.

### Worldwide TV IC market will reach \$1.33 billion in 2008 says DisplaySearch

The worldwide market for flat panel TV ICs is expected to be \$1.33 billion in 2008, and is forecast to grow to \$1.35 billion in 2011. This is one of the findings in DisplaySearch's latest Quarterly TV Electronics Report. The share of MPEG-integrated video processors is expected to surge from 22% to 37% of flat panel TV ICs this year, due to design wins from Mediatek and Zoran reaching production in Samsung and Taiwanese ODMs. See figure for a forecast of shipments of TV decoding capabilities by compression type.

The forecast also represents an upward revision of 12% of TV IC revenues in 2011. Previous forecasts had anticipated a decline; however, new features are gaining acceptance and increased penetration of digital reception means that revenues are expected to remain broadly flat. "The industry has managed to find new ways to add value, through MPEG-4 decoding and 100 or 120Hz refresh rates," said Paul Gray, director of European TV research at DisplaySearch. "Broadcasters moving to MPEG-4 are triggering a fresh round of innovation in TV set-



2007 to 2012 forecast of TV digital decoding capabilities by compression type

making. The potential for refreshing the role of the TV is significant. The decode capability makes networked TV a mainstream opportunity. However, a continuation of recent hyper-competition would see the market pushed back into declining revenues in spite of its shipment growth." He added, "Set-makers are keen to revitalize televisions and keep them at the center of the home. Chipmakers are rising to this challenge, but a round of consolidation will be inevitable, if only because the development costs for these sophisticated devices can only be recouped over large shipments." The report includes an analysis of the different applications of MPEG-4 and H.264 decoding by region. 120Hz frame rate conversion systems are covered in the report and also analyzed in greater detail including LCD panels and TV sets in the 120Hz Value Chain and Forecast Report. <http://www.displaysearch.com/>

### Leichtman Research survey shows HDTV sets now in more than one-third of US homes

New consumer research from Leichtman Research Group found that 34% of US households have at least one HDTV set, about double the percentage of households that had such TVs two years ago. The growth of HDTV sets has largely been driven by on-going consumer purchasing of TV sets coupled with a dwindling supply of lower-end non-HDTV sets being sold, according to Leichtman. Overall, 22% of all households purchased a new TV set in the past 12 months, with 43% of this group spending over \$1,000 on a new TV. These findings are based on a survey of 1,302 households throughout the United States, and are part of a new LRG study, "HDTV 2008: Consumer Awareness, Interest and Ownership". <http://www.leichtmanresearch.com>

### AUO predicts that penetration rate of LED backlighting for LCD TVs to only reach 10% in 2012

Due to high production costs, the penetration rate of LED backlighting in LCD TV applications may only reach 10% of the total LCD TV market by 2012, according to LCD panel maker AUO. According to a report published in *DigiTimes*, AUO executives indicated that currently the price for an LED lamp for a 42-inch LCD panel is 3.4 times more expensive than the price of a similar CCFL lamp. In terms of the entire backlight unit (BLU), Chi Mei Optoelectronics (CMO) noted that a white LED backlight unit (BLU) for a 42-inch LCD TV panel is 2-3 times more expensive than a CCFL solution, while a RGB LED BLU is five times more expensive than a CCFL BLU. In terms of LED backlight technology, the AUO executives commented that the current direct-type LED backlight technology with local dimming and boosting would be replaced by edge-type LED backlight technology in the future and LED lighting efficiency will improve 10-20% annually. AUO is planning to equip its LCD TV panels with edge-type LED backlight technology, which require fewer, but higher-powered LEDs in 2010. <http://auo.com>

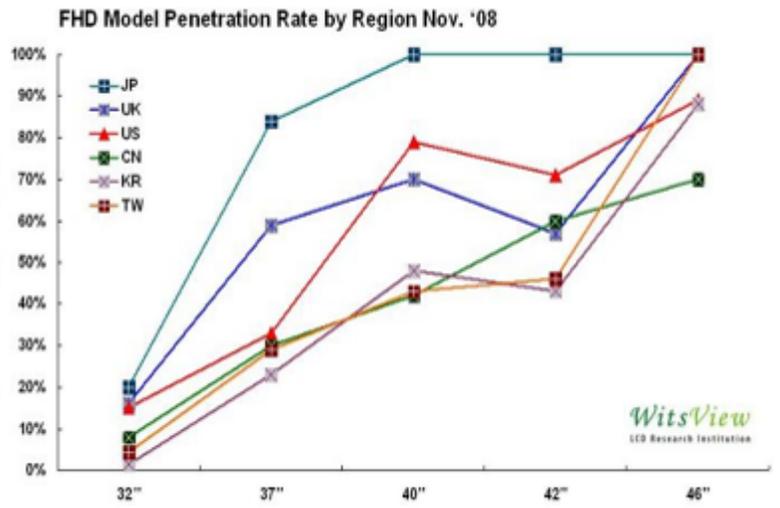
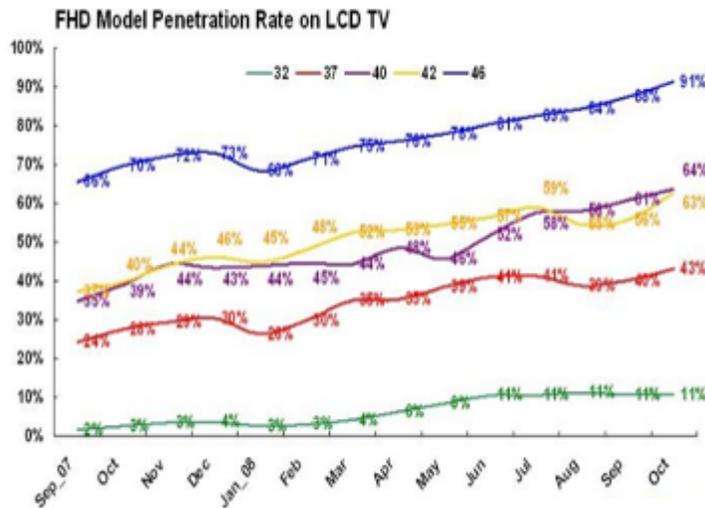
**DisplaySearch reports that Mediatek replaces Trident as the market leader in TV IC sector**

In recently published shipment data for the Quarterly TV Electronics Report, DisplaySearch reported that the world-wide market for TV ICs was 26.6 million units in Q1'08, up 26% from Q1'07. Shipments were down 6.4% from Q4'07, as TV set makers cut back in line with seasonality. Mediatek took the #1 spot with a 19.5% share, as design wins at Samsung reached mass production and demand grew from Taiwanese ODMs. Trident fell to #2 with a 15.7% share, down from 18.9%, which tied for #1 with Mediatek in Q4'07. Uniquely, Zoran actually managed to increase shipments in the quarter, to 1.9 million units as design wins at ODMs came to fruition, as shown in the table. <http://www.displaysearch.com/>

Q1'08 top five TV IC suppliers by unit shipments (in thousands)					(in thousands)
Rank	IC Supplier	Q1'07	Q4'07	Q1'08	Share
1	Mediatek	2,450	5,400	5,200	19.5%
2	Trident	5,100	5,400	4,200	15.7%
3	Genesis	2,600	3,595	3,100	11.6%
4	MStar	320	2,300	2,200	8.2%
5	Zoran	675	1,500	1,900	7.1%
	Others	10,088	10,315	1,0078	37.8%
	<b>Total</b>	<b>21,233</b>	<b>28,510</b>	<b>26,678</b>	

**WitsView says 46-inch Full HD market penetration rate exceeds 90%**

According to a WitsView's survey, FHD is now widely accepted by the market. Mainstream models that support FHD experienced notable growth over last year. Currently, the FHD 46-inch accounts for 90% of all 46-inch models. During September of last year, the ratio was only 66%. In addition to the price competition between the 40 and 42 inch, leadership in the FHD penetration rate has also been intense. For FHD 37-inch sets, the market penetration rate was only 24% last year during September. A year later, it has risen to 43%. Finally, FHD 32-inch models were only available in Japan and the US during September 2007. But in 2008, all the major regions have started to sell such sets. It should be noted though that up until now very few Tier 2 makers offer such TVs. At the moment, the FHD penetration rate of the 32-inch has grown relatively stagnant. Region-wise, in Japan, the 40-inch and above models are all FHD now. For the 37-inch and 32-inch, they have respectively reached 80% and 20%. Among the top three Japanese TV makers, their respective FHD product planning has been a bit different. For Sharp's spring lineup in 2008, its 32-inch and above models were all FHD. But for sets introduced this October, the new 32DX1 is only equipped with 1366x768 (at 16/9 aspect ratio) resolution. For Sony, during the first half of 2008, among the three new 32-inch models (Sony does not sell any 37-inch sets in Japan), only the 32F1 supported FHD. For the 2008 autumn lineup, Sony did not launch any new 32-inch sets. Finally, Toshiba's above 37-inch sets all supported FHD for this year. However, FHD 32-inch sets have not been included in its product portfolio for the Japan market. <http://www.witsview.com>



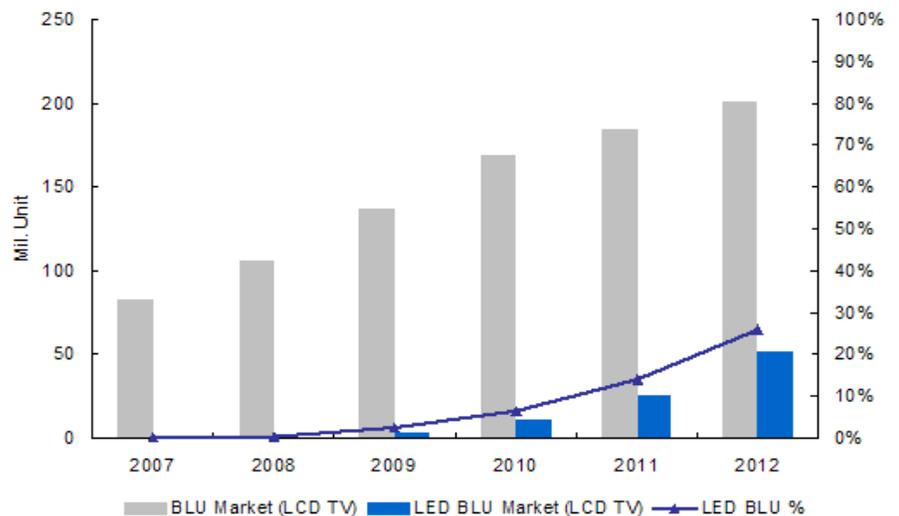
### DigiTimes reports that panel makers considering white LEDs over RGB LEDs in TV BLUs

Although using LED-backlighting for large-sized LCD TVs expands the color gamut and improves the quality of the viewing experience, as well as reducing power consumption for the TVs, LEDs are seldom adopted in LCD TVs due to the higher price of LEDs compared to CCFL backlighting. Such LED backlit TVs are only available on the high end of the market. An article in *DigiTimes* recently revealed that these models have mostly incorporated RGB LEDs in their backlight units (BLUs), but now more LCD panel makers are looking to instead use white LEDs in the BLUs, which may help to popularize LED-backlit LCD TVs, according to market sources noted. While admitting that the performance of white LEDs in terms of color performance is not as good as the performance of RGB LEDs, white LEDs cost less and have the same advantage in terms of energy saving. Industry players estimate that players such as AU Optronics (AUO), Sharp, LG Display, among others, may introduce 40-inch or larger white LED-backlit LCD TV panels in 2009, and the price for LED-backlit panels may drop and help to drive demand LED-backlit LCD TV. <http://www.digitimes.com>

### Slim LCD TVs with LEDs to rise radically to reach 26 million in 2011, says Displaybank

Displaybank predicts that launches for LCD TVs with LED backlights are expected to exceed 10 million units in 2010. It is likely to account for 25.9% of the total LCD TV shipments with 25.6 million units in 2011 and 52.3 million units in 2012. The slim trend will be the biggest marketing point for LCD TV makers in the future and LED BLU applications are to expand further. In 2004, Sony employed RGB LED and launched LED LCD TV for the first time in the industry. In 2007, Samsung Electronics used white LED and launched LED LCD TV. The two companies have been leading LED LCD TV market and major TV makers including LG, Sharp, and Hitachi are actively entering the LED LCD TV market. <http://www.displaybank.com>

*LCD TV LED BLU demand forecast*



(Mil. Unit)	2007	2008	2009	2010	2011	2012
BLU Market (LCD TV)	82.7	105.9	136.4	169	184.8	201.8
LED BLU Market (LCD TV)	0	0.2	3.3	10.9	25.6	52.3
LED BLU %	0.0%	0.2%	2.4%	6.4%	13.9%	25.9%

### IMS Research says 225 million households worldwide to receive HD programming by 2013

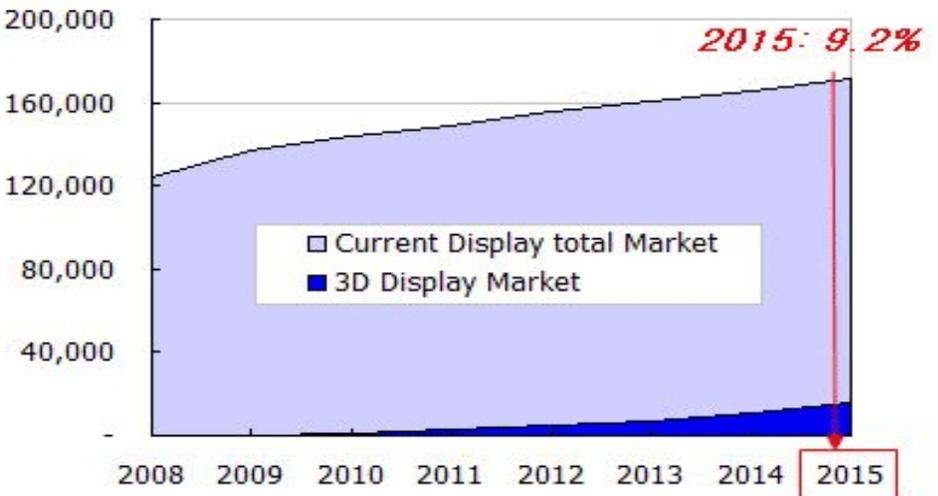
The number of households worldwide with HDTV service delivered via satellite, cable TV, IPTV and over the air will grow to 225 million by the end of 2013, up from an estimated 45 million as of the end of last year, according to a new study from IMS Research. The study, "The Worldwide Market for High-Definition TV Equipment & Services – 2008 Edition," also forecasts that the Blu-ray disc market will experience strong growth during the next five years, particularly as Blu-ray disc drives in new PCs become more common, reaching a forecast \$46 billion in revenues in 2013. Direct-to-home satellite remains the leading platform for HD service uptake because of the platform's rapid transition from analog to digital households and the greater availability of HD programming, said Shane Walker, research analyst and author of the study. IMS Research forecasts the number of DTH HD households to grow 27.5% annually to 97 million by the end of 2012. Skewing the numbers is the fact that 62% of cable customers worldwide are in the Asia-Pacific region where there's been a slow conversion from analog to digital service, he said. <http://www.imsresearch.com>

### LG Display establishes IPS technology alliance with Chinese TV makers

LG Display announced that it has established an alliance to promote the marketing and sales of IPS (In-Plane Switching) technology together with other television manufacturers including Hisense, Skyworth, and Haier. Under the agreement, all parties have agreed to use the "Hard Screen" logo representing IPS technology in their advertising. LG Electronics and Panasonic have also joined the IPS alliance. <http://www.lgdisplay.com>

**Displaybank says 3D to take 9.2% of the total display market by 2015**

Displaybank’s latest report forecasts the 3D display market till 2015 based on the short to mid-term market prediction model by conventional device. 3D display is expected to show 95% average annual growth rate in terms of price and increase from \$140 million in 2008 to \$15.8 billion in 2015. Of the total display, 3D display is likely to take 0.1 % in 2008 and 9.2% in 2015 in terms of price. Key issues in the “3D Display Technology, Industry Trend, and Market Forecast” are: 3D display and human factor research trend; stereoscopic: glasses type/no-glasses type; 3D: multi-view, volumetric display, holography; 3D display related trend in companies and research centers by region; Korea: SEC, SDI, LGE, LGD, Pavonine, ETRI, KIST, and others; Japan: Sanyo, Sharp, Toshiba, Hitachi, NHK, Tokyo University, and others; US/Europe: Vrex, Fakespace, Philips, MIT, and others; 3D display application field; 3D display market forecast by device. <http://www.dispslaybank.com>



Upper chart: 3D display market forecast by device (\$ millions); Lower chart: 3D display market share of total display (\$ millions)

(Source: “3D Display Technology, Industry Trend, and Market Forecast” report, Displaybank)

**Digital UK reports sales of digital TVs boom in UK**

Nine-out-of-ten sets sold are ready for TV switchover according to figures released in mid-December by Digital UK In the year through October 2008, UK consumers bought nine million televisions. This figure is up almost 10 per cent on the same period in 2007. Ninety percent of televisions purchased in October 2008 were digital, the highest proportion ever recorded. The take-up of digital TV in the UK is one of the highest rates of take-up in the world. Ofcom’s Digital Progress Report for the three months to the end of September 2008 shows 88.2 per cent of households have digital TV on their main set. <http://www.digitaluk.co.uk> The data was prepared by GfK in a report compiled using point of sale data from more than 7,000 major multiple retailers in England, Scotland and Wales, including DSGi, Comet, Argos, Tesco, Sainsburys, Asda, John Lewis, Amazon, plus a representative sample of independent retailers:



Number of TVs sold (year to Oct 07)	8.2 million
Number of TVs sold (year to Oct 08)	9.0 million
UK spend on digital TVs (year to Oct 07)	£2.8bn
UK spend on digital TVs (year to Oct 08)	£3.5bn

### **New Toshiba DVD player aims to improve look on high-definition TVs**

After losing out in the battle to define the high-definition successor to the DVD, Toshiba Corp. has turned its attention to the next best thing: the DVD player. The Japanese electronics company is releasing a DVD player that it says does more than previous models to improve the look of standard-definition DVDs on high-definition TVs. The XD-E500 will sell for a suggested price of \$149.99, twice as much as regular “upconverting” players, which also improve the look of a DVD, but less than half the price of a Blu-ray player. The Blu-ray disc, championed by Sony Corp., early this year beat Toshiba’s HD-DVD to become the dominant format for high-definition discs. In a demonstration to reporters, Toshiba played the same disc in an XDE player and a standard, \$70 upscaling model on side-by-side LCD high-definition televisions. The new player produced a subtle but noticeable sharpening of the image. Toshiba did not demonstrate the XDE against a Blu-ray or HD-DVD player. <http://www.toshiba.com>

### **Panasonic ships first tru2way HDTVs to Chicago and Denver**

Panasonic announced that it is shipping new HDTVs enabled with tru2way technology to the two US markets where they can actually be used. The first Panasonic models with this interactive technology are the TH-42PZ80Q and TH-50PZ80Q, 42-inch and 50-inch members of the company’s VIERA line. Since Comcast is the first of tru2way’s many licensees to get the tech running in two of its markets, these TVs will first appear at Abt Electronics in Chicago and Circuit City and Ultimate Electronics in Denver. More cities are expected to go live with tru2way technology in the coming months. tru2way was formerly known as the OpenCable Application Platform (OCAP) that will be built directly into HDTVs, PVRs, and similar devices. tru2way is a platform now jointly developed both by cable operators and hardware manufacturers to provide interactive content and applications directly to an HDTV with no set-top box. <http://www.panasonic.com>

### **New Belkin FlyWire delivers HD video and audio wirelessly**

The new Belkin FlyWire is the simple solution that allows the freedom and flexibility to place a HDTV anywhere without cables. Featuring an intuitive and simple setup, FlyWire wirelessly connects devices such as Blu-ray players, receivers, video-game consoles, and set-top boxes to HDTVs and projectors, transmitting high-definition 1080p True Cinema picture resolution with whole-home range. As the first offering in the FlyWire family, this solution provides a whole-home range with the capability of penetrating walls and AV cabinets. A projector can also be mounted on the ceiling without the hassle of cables. Operating in the open 5GHz band, FlyWire offers a completely robust connection. It intelligently manages its own connection, adjusting both frequency and power to avoid interference and overcome impedances. Because FlyWire does not compress video, it transmits video content with no latency. Even the most demanding AV applications, like video games, will not be impaired by the wireless transmission. FlyWire’s SD card slot also allows for upgrade and expansion options. FlyWire comes with a transmitter that connects to AV components (digital HD or analog) and a receiver that mounts to a HDTV, allowing one to place a HDTV in the living room, kitchen, or even outdoors. FlyWire became available late October 2008 in US, Canada, Europe, and Asia. <http://www.belkin.com>



### **Pulse~LINK’s CWave platform named an approved retransmission technology**

Pulse~LINK announced that its CWave UWB Wireless-for-HDMI platform has been certified as an Approved Retransmission Technology (ART) by Digital Content Protection - the administrator of the HDCP specification. This, along with the FCC Certification CWave received in December 2007, represents the primary certification requirements for the commercial release of its CWave Wireless-for-HDMI products. The first products were available fall 2008. Westinghouse, one of the leading LCD manufacturers in the US, will begin shipping its new 42 and 47-inch wireless HDMI HDTVs in the commercial market this fall. The fully integrated wireless displays feature Pulse~LINK’s CWave UWB chipset. To receive ART compliance, the technology solution must first be HDCP licensed. High-bandwidth Digital Content Protection (HDCP) technologies protect high-value digital motion pictures, television programs and audio against unauthorized interception and copying between a digital set top box or digital video recorder and a digital TV or PC. HDCP is a specification that protects digital entertainment across the DVI/HDMI interface and provides a robust, cost-effective method for transmitting and receiving digital entertainment content to compliant displays. <http://www.pulselink.net>

### Electronics giants support WHDI standard

Sony, Samsung and other consumer-electronics heavyweights are uniting to support a technology that could send high-definition video signals wirelessly from a single set-top box to screens around the home. The consortium is an important development in the race to create a definitive way to replace tangles of video cables, but it doesn't end there - both Sony and Samsung also are supporting a competing technology. In the new consortium, Sony Corp. and Samsung Electronics, along with Motorola, Sharp and Hitachi, will develop an industry standard around technology from Amimon Ltd. of Israel called WHDI, for Wireless Home Digital Interface. Amimon is already selling chips that fulfill part of that promise, but the creation of a broad industry group makes it more likely that consumers will be able to buy WHDI-enabled devices from different manufacturers and have them all work together. TVs with Amimon's chips are expected to reach stores in 2009, costing about \$100 more than equivalent, non-wireless TVs. Wireless streaming of high-definition video is a relatively tricky engineering problem that many companies are trying to tackle. It can be done with the fastest versions of Wi-Fi, a technology already in many homes, but that requires compression, or reduction of the data rate, with picture quality degrading as a result. There's also a delay in transmission as chips on both ends of the link work to compress, then decompress the image. That's prompted much research into radio technologies that are faster, requiring less compression. A leading contender is WirelessHD, centered on technology from SiBEAM of Sunnyvale, California. It uses an open portion of the radio band, at 60 gigahertz, for ultra-fast transmission of uncompressed video, but it could be years away from commercialization. Its range is limited, meaning that it would be used for in-room links rather than whole-house networking, like WHDI. Sony is part of the WirelessHD group as well, and is supporting WHDI to have "wider options", the company said in a statement. Samsung, on the other hand, looks at WHDI as a stopgap technology until the higher-picture-quality WirelessHD takes over. The company believes WirelessHD will be the "ultimate solution in the long run". <http://www.wirelesshd.org>



### CEA to consider standards for 3D video

The Consumer Electronics Association is forming a discussion group to look at standards for the delivery and presentation of 3D video to the home. The first meeting of the "3D Video Discovery Group" took place at the association's Technology & Standards Fall Forum held in conjunction with the CEA Industry Forum, October 22 in Las Vegas. CEA's announcement comes on the heels of a similar announcement from the Society of Motion Picture and Television Engineers, who held a confab on August 19 in Los Angeles to develop a standard in the production of 3D video. The organization, which is a standards-setting body for audio-video production, planned to announce its strategy within six months. An industry standard for the delivery and presentation of 3D video to the home could help accelerate the market for 3D video use and prevent potential interoperability problems. "Currently movies are being produced and shown in 3D in cinemas with advances in digital cinema improving the experience," said Brian Markwalter, CEA vice president, technology & standards. "Pre-packaged content and games have the storage and processing power to deliver 3D video and televisions are available today that can render 3D content. Standards ensuring 3D content is usable to the maximum extent by consumers will benefit the industry." Samsung and Mitsubishi are selling "3D-ready" HDTV sets using DLP technology from TI. IBM, Philips and LG Electronics are also involved in developing the technology. <http://www.CE.org>

### LG Display, CPT, and Sharp sentenced for LCD price fixing

In November, the US Justice Department assessed announced a settlement with LG Display, Sharp, and CPT for LCD price fixing. A Justice Department statement explained the details:

"The crimes committed by LG Display, Sharp and Chunghwa and their co-conspirators are among the largest and most far-reaching price-fixing conspiracies the Antitrust Division has ever detected. In the first two cases, (LG Display and CPT) which involved the same conspiracy, the defendants have agreed to pay a total of \$465 million in criminal fines. LG Display, and its U.S. subsidiary LG Display America, have agreed to pay a single fine of \$400 million, the second largest criminal fine in the history of antitrust criminal prosecutions. Chunghwa Picture Tubes has agreed to pay a \$65 million criminal fine. CPT is the first Taiwanese company to ever plead guilty to criminal charges in the United States for participating in a price-fixing conspiracy. In the third case, Sharp has agreed to pay a \$120 million criminal fine for participating in three separate price-fixing agreements for sales of LCDs to three major purchasers".

### Leading consumer technology manufacturers select NXP for PCTV products

NXP Semiconductors, the independent semiconductor company founded by Philips, announced that its family of hybrid PCTV solutions – SAA7231 – is the preferred choice of leading consumer technology manufacturers, including ASUS, AVerMedia, Creatix, Medion and Pegatron. Each company is delivering NXP-based PCTV products, including portable computers, laptops, living room PCs and PCTV cards. As small as half a mini-Express Card, the NXP SAA7231 is a single-chip hybrid solution that supports worldwide broadcast standards, making it ideal for manufacturers targeting different geographical markets with PCTV-enabled products. The SAA7231 family of PCTV solutions includes 12 variants to suit a variety of manufacturer uses to offer the maximum flexibility in design and integration. Incorporating a channel decoder for DVB-S/T, a video decoder for all analog standards, a stereo audio broadcast decoder with stereo base band inputs, and a PCI/PCIe interface, the NXP SAA7231 family offers industry-leading integration, enabling developers to achieve significant design and bills-of-material (BOM) cost reduction. Sophisticated power management capabilities ensure ultra-low power consumption for uninterrupted streaming of AV content, enabling extended playback time on portable devices. <http://www.nxp.com>

### Mirics develops solution for TV on a PC using software demodulation

Mirics Semiconductor announced the Mirics FlexiTV broadcast receiver, a complete RF, host interface and software demodulation solution for the PC platform. Mirics FlexiTV enables reception of all global analog and digital broadcast standards (e.g. FM, DVB-T, ATSC, DTMB), to become a standard feature on all notebook PCs. The solution also enables a sub-\$5 bill of materials for a complete PCTV MiniCard, allowing manufacturers to develop a single broadcast receiver for global deployment, thereby benefiting from simplified manufacturing logistics and substantial economies of scale. Mirics has combined its multi-standard RF tuner capability with its algorithmic expertise to develop the world's first universal antenna-to-LCD broadcast receiver solution. By implementing software demodulation running on a host processor, Mirics FlexiTV leverages the power and abundant system memory of today's PC platforms. This allows nomadic reception of global analog and digital broadcasts without requiring multiple silicon-based demodulators or additional system memory. In addition to reducing system cost and silicon real estate, the Mirics FlexiTV solution provides an easy standards upgrade path via software re-configurability, enabling future-proofing against emerging or variant broadcast standards. <http://www.mirics.com>



### Industry's lowest-power Full HD H.264 codecs unveiled by Qpixel

Qpixel Technology, a Silicon Valley, US-based innovator in video compression silicon and software solutions, unveiled at Computex, its High Definition (HD) QL303 and QL305 codecs. The new chips provide the industry's broadest H.264 feature-set by supporting Baseline, Main, and High profiles of the H.264 standard for resolutions ranging from 320x240 to full HD 1920x1080. Qpixel is also raising the power-performance bar by being the first to offer full HD H.264 encoding at less than 275mW of power, confirming Qpixel's leadership in innovative codec design and its commitment to green technology initiatives for lowering energy consumption in consumer electronic devices. The combination of flexibility and high performance provided by the QL300 family stems from Qpixel's multi-core architecture. In addition to its powerful H.264 codec engine, Qpixel's HD codec family features an on-chip DSP for flexible audio processing, a JPEG compression/decompression engine for simultaneous still frame processing, and an ARM core for audio/video synchronization, bit stream packetization, and peripheral interface management. <http://www.qpixeltech.com>

### SiTune launches lowest-power universal mobile TV silicon tuner

SiTune Corporation announced a state of the art hybrid (universal) CMOS TV tuner. STN-25T1000 is a highly integrated tuner that exceeds all of global digital and analog TV standard requirements for under 150mW. The company says the STN-25T1000 is the world's lowest power consumption and most highly integrated silicon TV tuner, which minimizes the cost of total BOM for universal adaptation. It offers state-of-art performance for both analog (NTSC, PAL, SECAM) and digital (ATSC, DVB-T, ISDB-T) TV reception. It uses proprietary architecture that incorporates novel RF, mixed signal and digital signal processing techniques. SiTune will demonstrate the STN-25T1000 by appointment during CES 2009, Las Vegas, January 8-11. Engineering sample and evaluation kits are available Q4 2008 and production quantities are scheduled for Q1 2009. <http://www.situne-ic.com>

### **Gefen delivers wireless video using TZero technology**

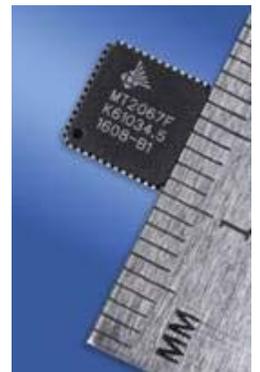
Connectivity solutions provider Gefen launched its Wireless for HDMI Extender using TZero Technologies' ultra wideband (UWB). This no-cable extender delivers wired-quality audio and video from Blu-ray players, set-top boxes, digital video recorders and gaming systems to high-definition televisions at ranges greater than typical cabled HDMI solutions. With built-in interference cancellation technology, the Gefen Wireless for HDMI Extender is immune to noise from nearby wireless technologies such as cordless phones, Wi-Fi networks and cellular phones. With the Gefen Wireless for HDMI Extender, users can place their HDTVs in remote or hard-to-reach locations without being tethered to cabling, streamlining installations while providing a reliable method of transmission. Resolutions up to 1080p with 5.1 surround sound multi-channel audio are supported at 10 meters (33 feet) in distance. <http://www.tzerotech.com>

### **Analog Devices enables Hitachi wireless video hub to deliver HD to LCD HDTVs**

Analog Devices announced that Hitachi is using ADI's Advantiv advanced television solutions ICs to drive high-end wireless functionality and seamless high-definition (HD) connectivity in Hitachi's new consumer wireless transmission hub, the TP-WL700H. Available exclusively in Japan, Hitachi's TP-WL700H is a stand-alone device that is designed specifically to deliver high-definition (HD) entertainment content wirelessly to Hitachi's Wooo UT LCD-TV models. In Hitachi's new wireless video hub, ADI's Advantiv ICs are used to accurately reproduce and transmit the same rich HD viewing experience consumers expect with a wired HDMI (high-definition multimedia interface) connection – only delivered wirelessly and without the hassle and expense of cables. Hitachi's TP-WL700H wireless unit, which employs UWB (ultra wide band) wireless technology, uses three Advantiv ICs to provide enhanced HD video compression, decompression and transmission technology. Hitachi's wireless hub leverages several video and audio solutions from ADI's Advantiv portfolio. Analog Devices' ADV216 Wavescale compression technology video CODEC is a key enabler of high quality, wireless HD video. The CODEC's low-latency and scalable resolution produces stunning HD video – without requiring external memory. ADI's Wavescale compression technology significantly reduces the impact of errors that can occur during transmission, resulting in the delivery of flawless HD entertainment to a Wooo UT HDTV – without running any new wires. The Hitachi TP-WL700H also leverages Analog Devices' wireless HDMI reference design that allows multiple entertainment HD sources to be connected wirelessly to a single Wooo UT HDTV. <http://www.analog.com>

### **Microtune's new tuner chip brings high-speed digital TV to automotive entertainment**

Bringing its radio frequency (RF) silicon electronics to the automotive industry, Microtune introduced a first-of-its-kind tuner chip for high-speed in-car TV. The Microtune MT2067 is an automotive-grade TV tuner engineered to provide superior, stable TV reception for passengers in vehicles traveling at top speeds along freeways. It enables automakers to improve performance, increase reliability and minimize total RF systems costs when adding real-time broadcast TV to increasingly popular rear-seat entertainment options. At 7x7mm, the miniature MT2067 chip allows automakers to replace conventional bulky modules with advanced silicon TV tuner chips. In addition to its very low profile, the MT2067 enables customers to design multi-standard global TV receiver platforms: it supports worldwide analog and digital terrestrial standards that include NTSC, PAL, SECAM, DVB-T, DVB-H, ISDB-T, DTMB, ATSC and ATSC-M/H. <http://www.microtune.com>



### **NECEL of Japan develops next-generation interface technology for large LCD TVs**

NEC Electronics (NECEL) has developed "Advanced PPmL" with the next generation interface technology for large LCD TV, with Point-to-Point mini-LVDS (PPmL). This is the interface technology to connect the LCD driver IC and timing controller IC to send the video signal on the LCD TV without delay, and it also uses the clock embedded technology to insert the clock data recovery circuit onto the interface for separating the video data and clock signal. Because of this, the wiring number can be reduced by a half compared to the existing PPmL, and the video data transmitted to the separate wiring and clock signal can be transmitted in one cable. In addition, the driver IC is available on the thin print board and it is easier for the input and output timing synch of clock signal and visual data. Such an interface technology brings the effect of saving the development cost, slimming down of OCD TV and minimization of bezel thickness, and introduction of 120Hz high-speed operation technology will be easier. <http://www.necel.com>

### **Cidana and Siano team to bring ready-to-use CMMB DTV to consumer makers**

Cidana announced the successful integration of its advanced software package for Chinese mobile TV (CMMB) with a USB stick reference design for CMMB, provided by Siano. The combined hardware-software platform, supporting CMMB (the Chinese Multimedia Mobile Broadcasting standard) brings a mature, ready to manufacture solution to makers of portable PCs, mobile Internet devices, and accessories for such devices. CMMB is a new mobile DTV standard backed by China SARFT. The CMMB spec, based on Chinese homegrown technology known as STiMi (short for Satellite and Terrestrial Interactive Multiservice Infrastructure), operates in the 2.6GHz frequency range, using 25MHz of bandwidth to offer 25 TV and 30 radio channels for each RF channel. CMMB signals are deployed in 37 cities in China including Beijing, Shanghai and Guangzhou. From 2009 onwards, CMMB will offer broadcasting and data casting for news, entertainment, traffic, weather, education, medical, stock and other information delivery. Nationwide coverage is planned for 2009, via satellite broadcast, combined with the existing terrestrial broadcast. The latest cooperation in China represents a long-term partnership between Cidana and Siano, following previous joint developments in DVB-T and DVB-H. <http://www.cidana.com>

### **Tensilica ports RealVideo codec to 388VDO video engine to display Internet content**

Tensilica has ported the RealVideo codec from digital entertainment services company RealNetworks to the 388VDO video engine, increasing the versatility of this video chip subsystem. The RealVideo codec expands the applicability of Tensilica's 388VDO video processor to products that efficiently display Internet content on mobile devices to extended standard definition DTV. The RealVideo codec is fully compliant with RealVideo 9 and 10, so users can experience high-quality video from numerous sources in China. By using new technology that employs rigorous analysis to decompose and compress video content as well as more sophisticated image segmentation and motion analysis, it provides the same quality video at 80% lower bit rate than MPEG-2, 75% lower bit rate than HDTV, 45% lower bit rate than MPEG-4 (ASP), 30% lower bit rate than WMV 9, and 15% lower bit rate than H.264. Tensilica's 388VDO video engine is fully programmable and Tensilica provides full software support for RealVideo in addition to H.264 Main Profile decode, MPEG-4 Advanced Simple Profile decode/encode, VC-1/WMV9 Main Profile decode, and MPEG-2 Main Profile decode. <http://www.tensilica.com>

### **Mobile DTV Alliance forms key liaison with Broadcast Mobile Convergence Forum**



The Mobile DTV Alliance announced that it has formed a strategic liaison with the Broadcast Mobile Convergence Forum (bmcoforum) in order to better address the needs of key stakeholders in the expanding mobile digital TV market. The bmcoforum is an international non-profit organization focused on developing an open market environment for mobile broadcast services. The MDTVA also announced the signing of an agreement with the Global Certification Forum (GCF). The GCF is an active partnership between network operators, device manufacturers and the test industry. The liaison and agreement reflect the broader mandate the MDTVA adopted earlier this year to incorporate additional broadcast systems such as ATSC mobile/handheld, as well as its original commitment to DVB-H, with the goal of making mobile digital TV a mass-market service. The liaison with the bmcoforum also provides the MDTVA a valuable opportunity to build on the knowledge acquired by the bmcoforum through their extensive deployment and testing in mobile DTV markets outside of North America. <http://www.mdtvalliance.org>

### **Silicon Image introduces 225MHz HDMI solution for CE applications**

Silicon Image announced its 225 MHz HDMI version 1.3 PHY solution, consisting of the SiI9204 HDMI v1.3 transmitter PHY semiconductor and companion HDMI v1.3 link layer intellectual property (IP) core for use in consumer electronics and high-end mobile device applications. This latest offering complements the Silicon Image family of HDMI v1.3 transmitters which include stand-alone discrete semiconductors, PHY semiconductors for use with link layer IP cores and full HDMI v1.3 link and PHY IP cores. Today, IC providers have the option of either using external discrete HDMI chips or fully integrating HDMI functionality into their consumer electronics ICs. Silicon Image now offers an HDMI v1.3 transmitter solution that provides the benefits of both approaches, with a lower bill-of-materials cost compared to discrete IC implementations and faster time-to-market compared to a fully integrated system-on-a-chip (SoC) solution. In addition, Silicon Image's HDMI v1.3 transmitter technology is a silicon-proven, high-volume solution that has shipped in more than 10 million HDMI v1.3 transmitter chips since 2007. <http://www.siliconimage.com>

### Chrontel offers advanced HDMI CEC chip

Chrontel announced a new HDMI CEC (consumer electronic control) device, the CH7323. The CH7323 adds CEC functionality to digital TVs, PCs, video recorders and other A/V products that support the popular HDMI standard. The CH7323, the second device in Chrontel's family of CEC ICs, incorporates several advanced features that reduce system complexity, cost and development time. CEC channel wiring is a mandatory component of the HDMI specification. With CEC capability embedded into consumer electronics, viewers can control multiple HDMI-linked devices with a single remote control, enhancing the user experience. The new CH7323 integrates multiple pre-programmed hardware interrupt lines so that standard control commands like Stop, Pause, Rewind and Eject can be directly accessed without delay or extra software development. The CH7323 also has advanced control options that handle additional CEC commands, including audio control. Many A/V products use MPEG decoders or DTV ICs that have internal HDMI transmitters. The CH7323 allows such systems to add CEC functionality without the cost of an additional, redundant HDMI-CEC transmitter and without a CPU for CEC message processing. The CH7323 can also be coupled with stand-alone HDMI transmitters that do not integrate CEC capability. In addition to its standard, pre-programmed commands, the CH7323 can also be customized to support vendor-specific commands. The CH7323 is compliant with HDMI 1.3a. CEC-compliant consumer products are available from leading global CE manufacturers. Leveraging HDMI cable, CEC-compliant devices are capable of interconnecting with any other CEC product from different manufacturers. <http://www.chrontel.com/products>

### Lighthouse offers HDMI integrated LED processor for True HD

Lighthouse Technologies, a LED display solution provider, claims to be the first in the industry to offer an HDMI-integrated LED processor for True HD image reproduction, the LIP-HD. By using Lighthouse's LIP-HD, users will have the ability to conveniently link up any HDTV, HD camcorder, Blu-ray player, or any other HD device to their LED display. With support for 1080p Full HD resolution and enhanced 12-bit deep color depth, the LIP-HD allows for larger displays with ultra-deep color in both indoor and outdoor applications. Certified to meet the exacting HDMI 1.3 standards for the deepest color reproduction, this processor is HDCP compatible, allowing users to play video that requires this standard. It also provides excellent source flexibility, able to receive and transmit video at a variety of resolutions from 640x480 up to the 1080p Full HD standard. <http://www.lighthouse-tech.com>

### Quantum unveils new video touch personal TV media player

Quantum and Siano announced the launch of a new convergence media device developed by Quantum incorporating Siano's DVB-H front-end technology. Siano's DVB-H silicon receiver chips together with the SMS8021 internal chip antenna have been integrated into the personal TV media player by Quantum, becoming the first connected PMP in the world featuring OSF IPDC and OMA BCAST personal mobile TV and GPS navigation. Based on Siano's leading DVB-H silicon and additional SMS8021 chip antenna, Quantum's Personal TV Media Player convergence device offers unparalleled DVB-H reception, in both indoor and outdoor locations, in rural areas, and mobility performance that will support mobile TV whilst traveling on high speed trains or vehicles, eliminating the need for external antennae. <http://www.qtmtv.com>

### Micronas and Oregan Networks partner on solution to bring Internet TV, movies, pictures



Micronas announced that it is partnering with Oregan Networks to offer a complete solution for next-generation internet-connected televisions. The solution is based on Micronas' Pegasus IDTV platform running a software suite from Oregan Networks that includes a web browser to access TV channels and Internet content such as YouTube, NetFlix and Flickr. A media client is included to display in-home content such as home videos, music and digital pictures in HD, via a DLNA network. 'Widgets' are also provided that pop up information such as sports news, stocks and weather reports. With this home-network connected and Internet-ready platform, Micronas and Oregan Networks are now able to provide manufacturers with a fast-track solution for advanced DTV products that provide consumers with a seamless interface to a variety of media formats and sources. <http://www.micronas.com>

### NCTU researchers suppress color breakup in LCDs

The National Chiao-Tung University (NCTU), Taiwan, has developed an innovative approach that significantly improves display performance while simultaneously enhancing the resulting contrast ratio and reducing power consumption. Field-sequential-color LCDs (FSC-LCDs) potentially offer greater overall light-emission efficiency compared with conventional devices, as well as lower use of power. Their spatial color mixing differs from that of traditional LCDs (which employ color filters) by rapid sequential display of the red, green, and blue (R, G, B) fields for each optical frame. The individual color components are thus perceived separately by the retina, which could degrade the image quality when a relative velocity exists between the object on the screen and the observer's eyes. This well-known visual artifact, illustrated in *Figure 1*, is called color breakup (CBU). The researchers propose the "Stencil-FSC" method to effectively suppress CBU based on a field rate of only 240Hz (for four subframes), which is achieved using traditional LC response modes. They propose displaying a basic multicolor image on a first subframe, after which the luminance of the other three primary-color images is used to modify the details and render an image in vivid colors. As a consequence, less primary light is seen and CBU is suppressed.

To capture an image affected by CBU, a digital still camera (Fujifilm-F50) was set up on a moving stage. *Figure 2* shows that CBU can be suppressed successfully using the Stencil-FSC method, as illustrated in *Figure 2(b)* and *(d)*. In addition, the dynamic contrast ratio (CR) was enhanced to 5973:1 for a power consumption of only 44W. The performance of 32in RGB LED-based LCD TVs using full-on, RGB-FSC, and Stencil-FSC technology was measured. These results show the advantage of this approach over the conventional FSC method. The researchers' next step will be to simplify the system to comprise just three or even two multicolor fields, which will be more amenable to commercialization. The Stencil-FSC method both significantly reduces CBU and increases dynamic CR while reducing power consumption. As such, the proposed FSC-LCD is a very promising development toward the next generation of "green" LCD TV applications.

<http://www.ieo.nctu.edu.tw/main.php>

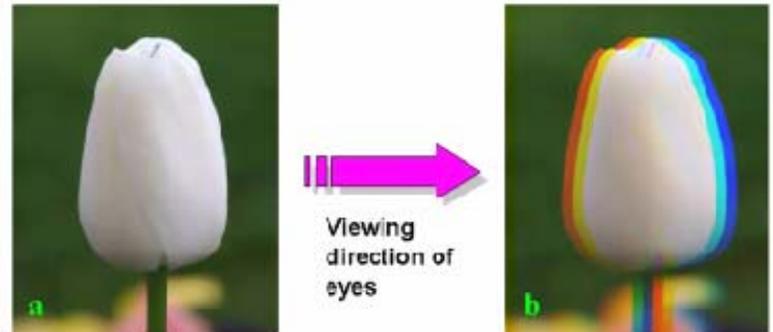


Figure 1: (a) Stationary and (b) color breakup image

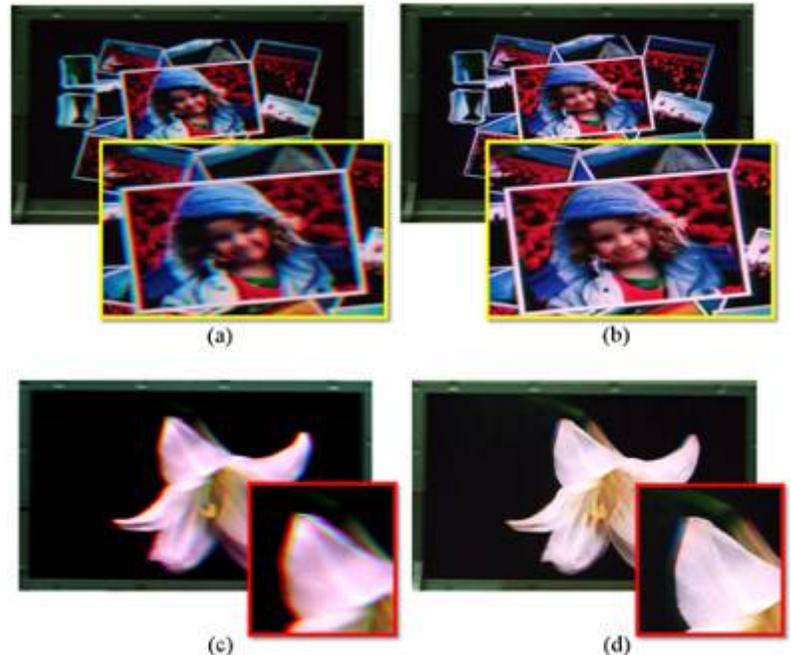


Figure 2: Experimental CBU results of (a, c) conventional RGB-FSC and (b, d) the Stencil-FSC method

### Kaleidescape launches two new movie players

Kaleidescape introduced the 1080p Player and 1080p Mini Player – two movie players that produce video quality from ordinary DVDs, providing a viewing experience that rivals Blu-ray. The new family of players makes it possible to enjoy the Kaleidescape experience even with DVDs and CDs that have not been imported into a Kaleidescape system, and a new form factor makes it possible to place a 1080p Mini Player anywhere in the home. The 1080p Player is designed as a 1U rack mount device, and includes a DVD/CD-ROM drive for import and direct playback of DVDs and CDs. The 1080p Mini Player offers the video and audio performance of the 1080p Player, in a smaller package with a lower price. It is ideal for inconspicuous installation in viewing rooms where owners desire that A/V equipment be hidden. <http://www.kaleidescape.com>

### Singapore Airlines shows off first Airbus A-380

The first Airbus A-380 aircraft was delivered to Singapore Airlines last October and their maiden flight was from Singapore to Sydney, Australia, and some tickets were as much as \$10,000. All 455 tickets were sold out, with the proceeds going to charity. The video systems in the new airplane are quite impressive, both in economy and the luxury classes. <http://www.singaporeair.com>



*Singapore Airlines has purchased 19 of the Airbus A380 and finally the first A380 super-jumbo was delivered to Singapore Airlines on October 15, 2007 in a move the French aircraft manufacturer said kicked off a "new chapter in aviation". A 23-inch, LCD video screen hangs on one wall of 12 special compartments as well as a "honeymoon suite", where passengers can view a selection of up to 100 movies and more than 180 television channels. The same entertainment system includes a word processor and spreadsheet programs as well as multiplayer video games. As depicted in the image on the lower left, the new Airbus A-380 is an enormous machine.*

### Malata selects Xceive smart silicon tuner for latest digital television line

Xceive Corporation announced that Malata, a top Chinese electronics manufacturer and a division of Wanlida Group Co, Ltd., has integrated the Xceive's XC5000 tuner IC within 19-inch and 22-inch integrated digital/analog television sets aimed for the European and Australian markets. This tuner drives Wanlida's entrance into the European DVB-T market where each country uses a different variant of major TV standards. The XC5000 supports not only worldwide digital and analog terrestrial broadcasting standards but also analog and clear QAM digital reception for cable TV broadcasts. By enabling worldwide compatibility with all analog and digital modes the XC5000 provides a simple solution to managing the wide variety of television broadcast formats in Europe and Australia. These include PAL I in the UK, PAL B/G in Germany, Secam L in France, PAL B in Australia and DVB-T for digital. The XC5000 provides superior reception and video quality critical to TV manufacturers. As the only global hybrid TV tuner with an on-board DSP controller, the XC5000 ensures reliability and performance so TV manufacturers don't need to worry about fine-tuning to meet performance requirements. <http://www.xceive.com>

### **Ambric's latest platform accelerates development of multi-codec video processing**

Ambric announced its new Ambric Rapid Media Processing (RMP) platform, a comprehensive collection of five elements: the Am2000 family of massively parallel processing array (MPPA) devices; the aDesigner tool suite and libraries; the Am2045 GT family of reference boards; a rich set of codec IP content; and the OpenVIS compliance specification which enables interoperability of codecs under a common host application and hardware platform. The RMP platform enables users to quickly create unique multi-codec media processing solutions. It harnesses the power of 336 processors on a single chip and utilizing a practical structural object-programming model. The reconfigurability and scalability of the platform are two of its most important benefits. These benefits enable the deployment of multiple codecs on the same silicon. AVC-Intra, DNxHD, DVCPro HD, DV, IMX, JPEG 2000, H.264, MPEG-2 and many other video codecs and accelerators have been deployed utilizing this platform. In addition, by using the RMP platform, existing solutions can be easily upgraded in software without changing hardware or modifying system interfaces. <http://www.ambric.com>

### **Harmonic introduces multi-screen transcoder for mobile, Internet and TV applications**

Harmonic introduced the ProStream 4000 multi-screen, real-time transcoder. This all-IP, software-based solution enables a converged "any-to-any" video experience by providing Internet TV, 3G/4G mobile TV and "sync-and-go" video delivery to devices such as mobile phones, personal computers, personal media players, IP-enabled set-top boxes and digital televisions. The ProStream 4000 transcodes MPEG-2 or MPEG-4 AVC (H.264) content into a variety of formats suitable for mobile and Internet TV delivery, as well as for synchronizing content from a digital video recorder for on-the-go viewing on portable media players. The high performance ProStream 4000 delivers up to 16 channels in a compact one-rack unit (1-RU) design and is software upgradeable, providing operators with a highly scalable system. The all-IP solution drives down system costs and is easily integrated into existing IP head-ends. <http://www.harmonicinc.com>

### **China Digital TV and ViXS Systems announce secure digital video broadcasting for China**

ViXS Systems and China Digital TV Holding, the leading provider of conditional access (CA) systems in China's rapidly growing digital TV market, announced the launch of a line of secure PC-based digital TV tuner products. This new line of smart card secured, DVB-C tuner products will serve digital cable television customers in China, and allow users to turn their PCs into powerful and secure high-definition home theaters. Working with both PC manufacturers in China and ViXS Systems, China Digital TV has created DVB-C products for PCs that are compatible with over 180 digital cable TV network operators across China. These new products support high-definition television playback, time-shifting, digital video recorders, scheduled program recording, electronic program guides and other digital cable TV features. <http://www.vixs.com>

### **DIVA Consortium unveils a new interface standard for next-generation interactive digital TV**

At the China Digital Living Forum & Showcase 2008, the formation of the DIVA Consortium was formally unveiled to the Chinese consumer electronics industry. The China Video Industry Association (CVIA) announced its support of the DIVA Consortium's efforts to create a new interface for next-generation



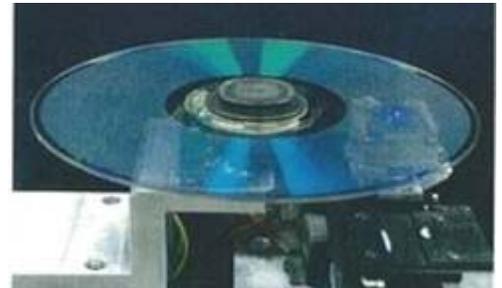
interactive digital television and consumer electronics (CE) networking. DIVA's interface technology promises to combine uncompressed high-definition video, multi-channel audio, and high-bandwidth, bi-directional data transfer over a single cable. Once connected with DIVA, CE devices will be networked locally so they can be easily set up and controlled from any TV on the DIVA network, passing video, audio and bulk data between devices. DIVA technology enables an 8B/10B encoded forward channel for transporting uncompressed video up to 13.5Gbps, which is capable of handling video transmissions well beyond 1080p resolution with deep color and high refresh rates. In addition, DIVA enables a high-speed, bi-directional hybrid data channel that can operate at up to 2.25Gbps, and can be divided into sub-channels that transport audio, command and bulk data. The protocol for the hybrid channel can be bridged to other wired and wireless interfaces, allowing DIVA interface products to easily connect to a home network that is comprised of a variety of devices. At the China Digital Living Forum & Showcase 2008, the DIVA protocol was demonstrated working over a single CAT6 cable, with only 8 wires (four differential pairs) to show its potential for rapid and cost-effective adoption. <http://www.diva-interface.org>

### Shanghai United Optical Disc launches Blu-ray disc rival

Shanghai United Optical Disc said that it has completed the first production line for CBHD (China Blue High-definition Disc), a high-definition optical disc format, which comes with a substantially cheaper copyright royalty fee. Based on Toshiba's now-redundant HD-DVD format, the government-supported CBHD is being positioned as China's alternative to Sony's Blu-ray disc. With lower costs for setting up a production site - \$800,000, compared with the \$3 million needed to do the same for Blu-ray - and a much smaller royalty fee (\$8.10 per player) for producing CBHD players, CBHD is expected to be considerably cheaper than Blu-ray. But industry observers aren't necessarily convinced about the fledgling format, which was known as CH-DVD before Toshiba lost the high-definition format war to Sony. While acknowledging Blu-ray's dominance, Hideki Ono, general manager of Shanghai United Optical Disc, told *The Hollywood Reporter* that there is still enough room in the Chinese market for the new format to grow. Unlike Blu-ray, which has alliances with major Hollywood Studios, CBHD has not tied up with any major studios. This is not China's first attempt to introduce a video disc format. China attempted to launch EVD (Enhanced Video Disc) in 2004 and again in 2006, in order to save manufacturers from paying royalties to foreign patent-holders, but manufacturers never brought the product to market.

### Pioneer unveils 400GB Blu-ray disc

Pioneer's new Blu-ray disc is capable of holding 400GB of information. The disc uses 16 layers to hold all the information at 25GB per stack, compared to the dual layer 50GB discs. The process of manufacturing such a disc is difficult, as the layers used often want to all be heard at once, so interference is common. But by using techniques from the DVD manufacturing process, Pioneer has apparently solved the problem. According to the company: "Since the optical specifications of the objective lens are the same as those for the existing BD discs, it is possible to maintain compatibility between the new 16-layer optical disc and the BD discs." <http://www.pioneerelectronics.com>



A 400GB Blu-ray disc from Pioneer

### InPhase delays holographic storage drive shipments

InPhase Technologies has delayed the first shipments of its Tapestry holographic storage drive, which had been planned for late May. InPhase chief technology officer Kevin Curtis said the plan was to ship 150Gb evaluation drives in May, with the final 300Gb product to ship in the fourth quarter of last year. Now that plan has been pushed back. Curtis said in an e-mail June 5 that InPhase will ship only a couple of drives now "because we need them for more testing". He said the delay is because "we realized that we had more work to do before we could get to and release the 300GB product". Curtis cited product development issues, including susceptibility to shock and vibration, as well as the reliability of Tapestry's field-replaceable laser. InPhase developed the tunable laser for 405 nanometers, kinematically mounted into the drive, so it can be replaced without shipping the drive back. Curtis said that the company is working to solve the technical issues "with potential customer engagements with 300GB units at end of 2008 if it goes well". <http://www.inphase-technologies.com>

### NBC uses Olympics as research lab for new media viewership



How we watched this summer's Olympic Games could significantly shape the future of online and on-demand video. NBC tracked viewership of the Games on broadcast and cable TV as in past years, but this time they also closely tracked online and mobile users. The network is referring to the Olympics as a "billion-dollar research lab" and hopes that the data it compiles will help give it - and advertisers - a better idea of how we consume its content. In addition to the 3,600 hours of programming on network and cable TV, NBC also put 2,200 hours of streaming video on its website at [NBCOlympics.com](http://NBCOlympics.com). Quantcast helped NBC determine the statistics of who was using the site, what the people were doing there, and for how long.



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**Sustaining Members:  
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*"A Great TV in Every Room"*

# What a difference a year makes

by Paul Gagnon

**Paul Gagnon is director of North American TV Research at DisplaySearch. His 10 years of retail and manufacturing experience in the consumer electronics industry adds value and insight to DisplaySearch's leading industry analysis. At DisplaySearch, Gagnon calls upon his expertise in consumer purchasing behavior to provide in-depth analysis of US sell-through trends and sales forecasting. Before joining DisplaySearch, Gagnon served as a senior marketing analyst for Hitachi America LTD's Home Electronics Division. There, his responsibilities included the development and implementation of retail sales incentives as well as the forecasting and analysis of ever-changing TV and video market trends. Gagnon has also been a member of the CEA Video Division Market Research Committee.**



At this time last year we were looking at a TV market in 2008 and 2009 that seemed robust and healthy. Despite some early indicators that economic conditions were weakening, few had reason to expect the calamitous events that rocked the financial markets and the global economy during the second half of 2008. Even if the economy weakened, it was expected that demand for TV's would remain strong as consumers either 'cocooned' by staying home with a new HDTV to watch movies instead of going on vacations, or that the digital TV transition would drive people who had yet to convert into stores in droves.

Well, TV's are just as susceptible to sharply curtailed consumer spending as Starbucks lattes and Rolexes, especially when the economic outlook doesn't look to get better any time soon.

But watching LCD TV shipment activity through Q3'08, you'd hardly know it. DisplaySearch reported that global LCD TV shipments were up 47% Y/Y during each of the first two quarters of 2008, with North America climbing more than 50% during each of those quarters. A small correction to slower growth was expected in Q3'08, especially in North America, as the demand environment seemed poised to weaken and Q2 shipments seemed excessively strong. However, Q3'08 global LCD TV shipments were up 32% Y/Y, admittedly weaker than any previous quarter, but more than 4% higher than DisplaySearch's forecast.

As with any unexpected result, the determinants are not too hard to find. In late July and early August the supply/demand balance began to push to oversupply as panel makers expanded capacity but demand failed to grow as quickly, pushing panel pricing down. A rather intense battle for global market share among major TV brands like Samsung and Sony began in Q2, and lower panel prices allowed many brands to push more products into the retail channel on the promise of lower pricing. Inventory began building throughout the supply chain however, as demand failed to rise in accordance with the lower pricing.

Many of these brands and retailers have fairly elongated supply chains, and it's difficult to change procurement strategies on a dime. During late September and into October, it became clear that the toll of enormous stock market declines, frozen credit markets and rising unemployment was going to have a big impact on consumer demand. Monthly LCD TV Y/Y unit sell-through growth in the US, as tracked by the NPD Group, softened suddenly from more than 30% Y/Y during most of 2008 to just 10% in October. On top of this came predictions of a very weak holiday selling season. Q4 typically accounts for at least a third of annual LCD TV shipments, and although this strong holiday seasonality will naturally slow as penetration of total TV shipments rises, it still means that a weak holiday selling season could have a significant impact on total year sales, not to mention profits.

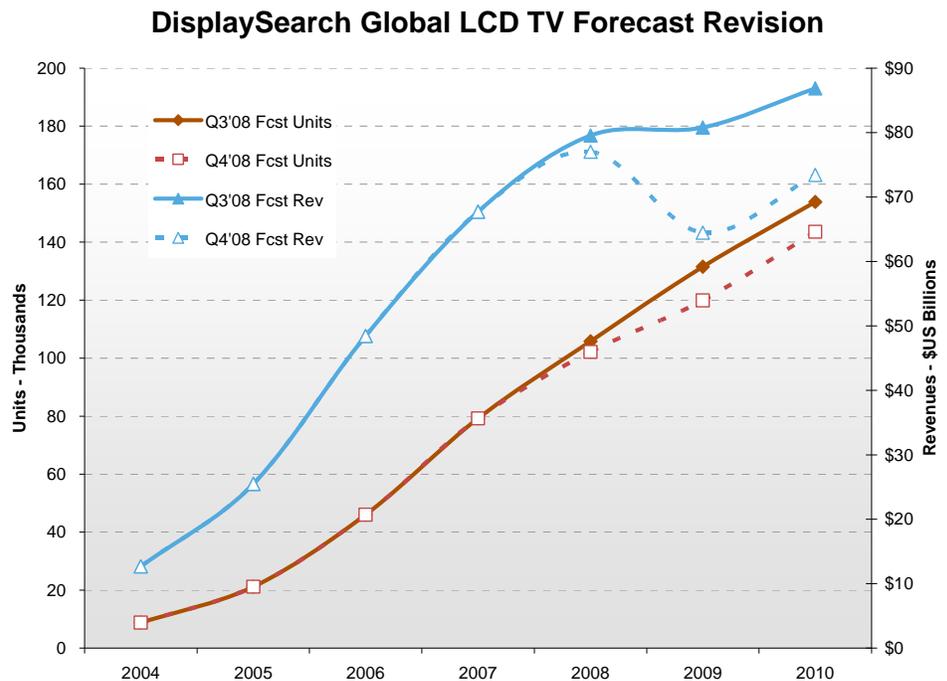
As we have gone through the holiday season, unit sales have not been as strong as in years past, but are still positive. However, this came at the expense of deep cuts in prices and resulted in much slower revenue growth than unit growth. Shipment results for Q4'08 are not final, but looking at NPD's weekly sell-through growth for the 5 week holiday period this year vs. last year, it seems that LCD TV units were up about 24% and revenues up 12%, most of this growth coming after Black Friday. Retailers maintained specials through most of the holiday season, enticing shoppers any way they could to help clear holiday inventory levels. It's unclear at this time though just how successful they were, and the implications for Q1'09 are significant.

2009 will be a tough year, no doubt about it. Numerous announcements of workforce and production cutbacks have been made, while LCD fabs remain at low levels of utilization to draw down inventory and attempt to stabilize pricing. Clearly the industry is preparing for a tough period. Early 2009 had already been shaping up to be a down period in the TFT LCD Crystal Cycle, but economic conditions are conspiring to make it more severe. At this time it looks as if Q1-Q2 2009 will be the toughest period with margins and prices continuing to fall, but LCD TV panel pricing should stabilize during the second half, perhaps even rise as panel makers maintain low utilization levels.

This brings us to the 2009 outlook for LCD TV demand. DisplaySearch has made significant reductions to our outlook for global LCD TV unit shipments, revising down from our previous forecast of 132M units to a best case of 120M units. While much reduced, this would still represent growth from just over 100M in 2008; however, there is the possibility of another 10M unit reduction when we update our forecast next quarter if it appears that rapidly growing emerging markets will cool as well. In our forecast, DisplaySearch is factoring in demand recovery during Q4'09, but there are significant risks to when this demand recovery occurs as it is contingent upon an improving outlook for the global economy. The downturn in demand lagged the downturn in economic conditions, and likewise, any recovery should also lag improving economic conditions. Also, economic recovery can take many forms, not all of which are conducive to demand recovery. If stock markets rebound or credit availability improves, this may not necessarily improve TV consumption as much as increasing home values or a reduction in unemployment would, as these are much more closely tied to consumer discretionary spending. Of course, if the economy or financial markets take longer to improve, recovery may be pushed to 2010 and our forecast will need to be adjusted lower to reflect this.

The impact of prices also cannot be ignored. LCD panels account for over half of BOM costs and most brands and retailers are eager to pass along these reductions to consumers to keep demand going. But the price declines may only serve to slow the demand fall-off, rather than increasing the market.

There is also a likelihood that as consumers become more price sensitive over the next year, so that sales of upscale models may be impacted as consumers gravitate towards the most value-oriented models, further impacting revenues and margins. The impact on global LCD TV revenues next year thus will be severe as a result. DisplaySearch has revised our global LCD TV revenue forecast down from \$81B to just over \$64B, a 21% reduction. This impact to the top line will have ramifications for the bottom line throughout the industry and the weakest companies may find it difficult to survive. DisplaySearch's revised LCD TV forecast outlook for units and revenues can be seen in the following chart.



Source: DisplaySearch Q3'08 and Q4'08 Global TV Shipment and Forecast Report

Overall, 2009 will be challenging to the TV industry, and is a far cry from the healthier outlook envisioned a year ago. Even the US digital TV transition will have a more muted effect on demand for flat panel TVs as those households that are most impacted by the transition (low-income, elderly) will seek out a \$20 converter box after rebate rather than a \$200+ digital LCD TV. As significant as DisplaySearch's revised outlook for 2009 is, there are even lower projections from other sources, although it seems the industry will do whatever it takes to avoid a market decline from 2008 to 2009 and world leaders are eager to fight the downturn. We expect that the TV landscape will be different after 2009, just as it changed rapidly over the last 10 years.

# Retail price survey of LCD TVs in Q3'08

by Tom Lo

Tom Lo is a senior analyst at WitsView. His main research focuses on the LCD TV and LCD monitor industries. Before joining WitsView, Tom worked at DigiTimes, where he conducted DTV (digital TV) research. WitsView is a subsidiary brand of DRAMeXchange, which provides prompt and credible market insights covering the quantitative pricing trend for both TFT panels and finished goods, industry updates and market intelligence. <http://www.witsview.com>



Based on WitsView's Q3'08 survey, the Q/Q price change of the 20~52-inch sizes reached -6.4%, higher than the -4.1% during Q2'08. On a Y/Y basis, the average price change hit -15.7%, a little lower than last quarter's -16.4%. Meanwhile, the 46-inch slipped past \$2,000 for the first time, and the 37-inch moved closer to the \$1,000 level.

**Below 32-inch (price below the \$1,000):** The average price of the 20-inch was \$411, down by 7.7% from last quarter's \$446. The cheapest region was the US (\$335), where prices stood flat. As for the most expensive Japanese region (\$530), prices plunged by 11.2%. Separately, the 26-inch reached \$615, down by 4.4% M/M. China is the first region to see prices fall past \$500 (down by 6.1% M/M). In the UK, prices fell from \$647 in Q2'08 to \$574 in Q3'08, the 11.2% drop was the most substantial among the varying regions.

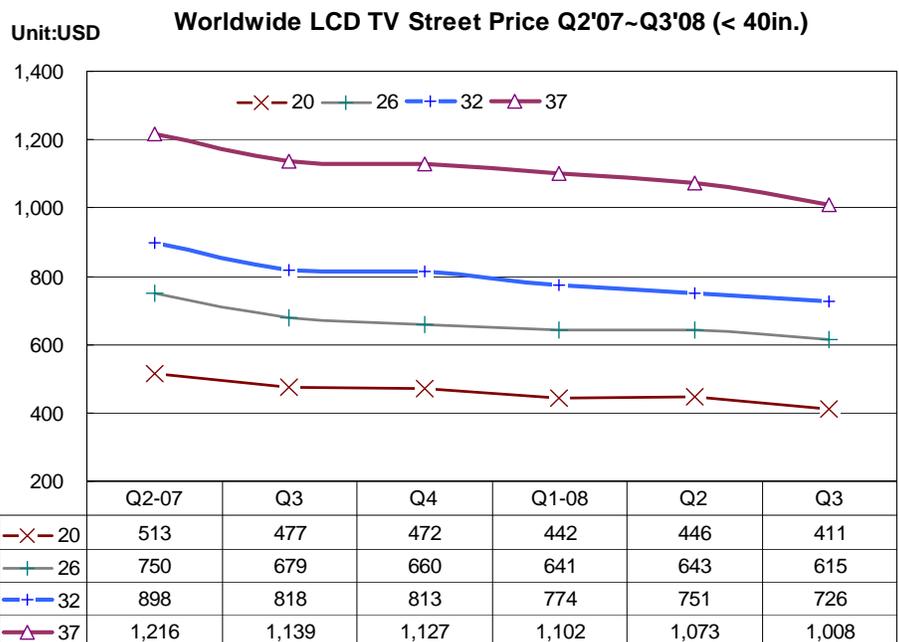
The average price of the 32-inch reached \$726, down by 3.3% M/M. In China and the US, which are the two cheapest regions, prices remained the same at \$658 and \$670, respectively. The 8.1% fall in the UK was the most notable, hitting \$705 at the end of Q3'08. As for Japan, the most expensive area, prices were instead up by 1.2% Q/Q to \$934. This further increased its price gap with the global average to more than \$200.

**37~42-inch (\$1,000~1,300):** The 37-inch was retailed at \$1,008, down by 6% Q/Q. But if we look at September's price levels, the 37-inch has already fallen below the \$1,000 level. In the US (\$824) and China (\$886), which own the lowest-priced models, prices fell respectively by 4.8% and 4.6% Q/Q. Meanwhile, the UK (\$943) and Taiwan (\$918) also simultaneously fell past the \$1,000 level by the end of Q3'08.

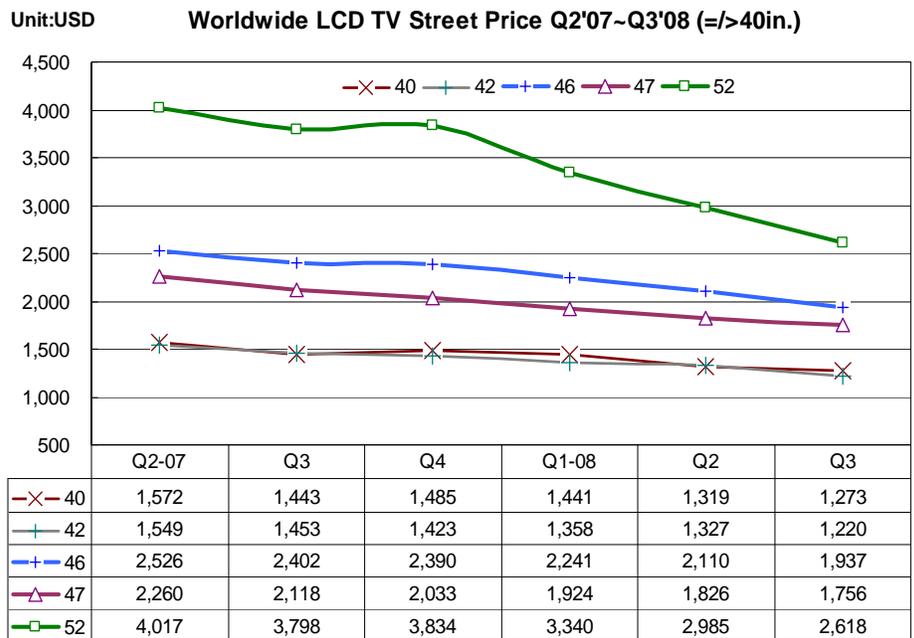
The 40-inch was sold at an average of \$1,273, down by 3.5% Q/Q. Its price gap with the 37-inch reached \$265. Among the major market regions, including the US (\$1,141), UK (\$1,164), Korea (\$1,145) and China (\$1,065), their price difference with each other was small. This was mainly attributed to the dominance of

Sony and Samsung in the 40-inch segment. Separately, prices were higher in Japan and Taiwan, reaching \$1,579 and \$1,543, respectively. The higher prices in Japan stemmed from the many high-end models in the market. For its new 2008 autumn lineup, Sony has started selling the world's thinnest 40-inch model – the 9.9mm KDL-40ZX1 (\$4,348), and the KDL-40W1 (\$2,566) that supports 240Hz refresh rates.

As for the 42-inch, its average price was \$1,220, down by 8% Q/Q. During Q2'08, the 42-inch was priced higher than the 40-inch. For this quarter, it was instead \$53 cheaper than the 40-inch. Double digit declines were seen in the UK, Korea and Taiwan. In Japan, again the most expensive region, prices remained the same at \$1,769.



**46~52-inch (\$1,700 above):** The 46-inch slipped by 8.2% Q/Q to \$1,937. During Q2'08, the 46-inch still entailed a price tag of \$2,000. Despite the launch of new premium models, such as Sony's XBR6 and Samsung's 850A and 950A during 3Q08, the 46-inch average price in the US still fell past \$1,500, down 6.3% from last quarter's \$1,584. In the UK, aside from the retail price drops of current models, the foreign exchange changes resulted in the 46-inch to plunge by 17.3% from \$2,045 in Q2'08 to \$1,690 in Q3'08. As for the 47-inch, it fell by 3.8% to \$1,756. This narrowed the price gap with the 46-inch to \$181. Big price differences were witnessed among the different regions. In the US, the 47-inch price inched down by 2%, while in Japan it rose sharply by 11%. As for the other regions, the price drop ranged between 8.6%~11.5%. In Japan, JVC was the only supplier of the 47-inch during H1'08. But beginning from Q3'08, Hitachi has also begun to offer such sizes. In the past, Hitachi only adopted plasma technology for its above 42-inch FPD TV segment. Due to Hitachi's launch of several super-slim high-end models under its UT series, it significantly pushed up the 47-inch retail price in Japan during Q3'08.



Like the previous two quarters, the 52-inch maintained a double-digit decline during Q3'08. Falling by 12.3% Q/Q, it was priced at \$2,618 by the end of Q3'08. Compared to the same period of last year, this was equivalent to a drop of more than 30%. The previous \$1,396 price difference with the 46/47-inch narrowed to \$681. In the US, the 52-inch fell past the \$2,000 level, down by 3.9% from last quarter's \$2,043. In the UK, again due to the foreign exchange issue, the price fall reached 15.7%. Despite the price drop of some models in Taiwan, which resulted in a 23.6% quarterly drop, it is still the most expensive area. The island's average price stood at \$3,500, still much higher than other markets.



### About the LCD TV Association

The LCD TV Association is a global, non-for-profit marketing trade association, formed to help the entire LCD supply chain and retail channel through to the end consumer via various communication tools, including speeches, interviews, sponsored research, as well as industry newsletters, meetings and standards settings – resulting in better information and distribution of this information, as well as better understanding of the rapidly changing world of flat TVs and HDTVs for all related parties. Participating at the many industry trade and consumer shows around the world to help promote members' interests, as well as create better LCD TV products for everyone, our goal is to serve both the industry needs and promote the consumers best interests. We encourage and engage in discussions to promote the industry overall, as well as helping foster healthy competition and create better products with higher value propositions for consumers and retailers alike. The LCD TV Association can help fight the growing "specsmanship" in trade publications and refocus conversations on true image quality and understanding for consumers, and help the whole LCD TV ecosystem to improve and thrive. For more information on the LCD TV Association, it's membership, or to join at one of the various levels available, please visit us on the web at <http://www.LCDTVAssociation.org>.

# Interview with Jeff Allen from Rallypoint

Jeff Allen is a leading international executive and expert in digital media and consumer technologies. Mr. Allen is the CEO of Rallypoint, a cutting-edge company at the forefront of the consumer electronics and digital media industries. Prior to Rallypoint, Mr. Allen was founder and managing partner of Rocket Ventures, Silicon Valley-based venture capital firm focused on software, semiconductors and digital media services, where he sat on the Board of Directors. Mr. Allen is a frequent speaker for the venture capital marketplace, entertainment and content distribution, the digital home, and advanced media technologies. Mr. Allen has also advised the U.S. Department of Commerce, the Invest In Sweden Agency, the Small Business Administration, and the State of California on economic development activities as it relates to regional technology competencies. Mr. Allen holds a BSEE from the University of Michigan.



**Please give us some background information about Rallypoint.** Rallypoint gives users the ability to watch their favorite TV programming, and get information from the Internet at the same time – all on their HDTV without having to connect a set-top box, personal computer, or any other equipment to their TV. There are two components to the Rallypoint business.

- First and foremost, our business model is to make money on services offered on the Internet-enabled television. For us, we think the “killer applications” are around centered around a better sports experience. One of the top reasons new HDTVs and HD services are sold is to enhance the sports experience. Related to this is social networking, or giving consumers the ability to communicate with their friends, colleagues, and like-minded strangers. Combining these two general categories of users gives us our initial focus: a very large community of fantasy sports fans.
- The other component of our business is really about enablement. We want to see the TV industry deploy as many Internet-enabled televisions as possible as fast as possible. But television manufacturers are adopting different Internet-enabled platforms, and at different paces. For example, Sharp uses a web-browser based system, and others are considering the Yahoo TV widget engine announced in September 2008, which uses processing-heavy components like Flash.

Most TV manufacturers do not have the processing power or memory requirements to run the more advanced systems, which will limit the roll-out of services like our sports and social networking services. And when you look at the business model of the typical TV manufacturer, it’s hard to see that many of them will deploy these platforms on very many TVs anytime soon.

So, we developed some core technology and assembled our own widget platform that TV manufacturers can deploy (so that we can deploy new infrastructure and services). The client portion of the widget platform runs very efficiently, and works on TODAY’S television platforms from leading HDTV chipset vendors. The server portion of the platform manages user accounts and service directories so that secure transactions can occur over the IP connection. There is also a widget development SDK under development.

All of this is not only available to the TV manufacturer for free, but our business model is to provide them with a significant share of the revenues if they meet certain deployment timelines.

In addition to the performance advantages of the Rallypoint widget platform, we also provide a better user experience, which is talked about later. BUT – we have and will continue to deploy Rallypoint services on all platforms. Again, first and foremost, we want to be on ALL Internet-enabled TVs regardless of the technology platform implementation. With Rallypoint, users can mix and match real broadcast TV with Web-based TV widgets from their favorite Web sites without having to change the channel. Using the TV’s remote control, users can “pop-up” or close down TV widgets “over” the video easily and seamlessly. Rallypoint’s widget browser enables the consumer to decide not only what applications are displayed at any given moment, but also how they are displayed on their own HDTV. The core client technology and patent position covers user-control over the location, transparency-opaqueness, and re-sizing of “TV widgets”.

By way of example, Rallypoint will operate an interactive fantasy sports service on The Ultimate Sports HDTV offered by TV OEMs, sold in retail. For a nominal annual fee, consumers can monitor their fantasy leagues and detailed game stats – at game time, in real-time, through the remote control. Further, Rallypoint’s solution makes direct connections to Web providers and therefore does not require any integration with cable head-end networks. What technologies are needed to improve upon the PC-based browser when deploying Web-services in a TV environment? How are these Web-based services delivered to Internet-enabled TVs? How are services monetized? How are Internet-enabled TVs with these services marketed and sold? What application architecture and Web interfaces will be built into TVs to enable this? Rallypoint provides the solution to all of these industry-wide questions/problems by providing a “TV portal” “software as a service” solution so that consumer electronics manufacturers and Internet content providers can meet the demands of consumers quickly and seamlessly.

**How does Rallypoint work?** It depends on the implementation of the TV manufacturer’s platform, but we are encouraging TV manufacturers to allow users to turn on the system from the remote control, provide a number of function buttons, allow the user to access their favorite content without pressing too many buttons, and use a motion sensing remote control. We also prefer what’s called an “over the top” experience, which allows users to see the channel or video content they are watching with their widgets or Internet content laid “over the top”. We think this is much more usable than some of the other designs that put video side-by-side with Internet content, or embed the channel within an “interactive page”.

(I mean think about – the reason a person buys and watches TV is to watch TV first and foremost, not to turn their TV into a computer program or video player.)

From some sort of menu system on the TV, Rallypoint would appear as “favorite” according to the wishes of the user. We also are adding the ability to change the skins – or look and feel – of Rallypoint services. We are pretty early to market, so we fully expect we will be the “featured” or most prominent content on the menus when the first products hit the market, and are inking deals that would guarantee such placement. We call all of this “personalizing your TV”.

**Where did this idea come from?** From the simple need of a rabid sports fan – all I wanted was to get my sports scores on my TV on demand, immediately, by pressing a button on the remote. As a technologist, I knew it was a simple application to build. I thought it could look as nice or better than the ESPN ticker, or any broadcaster’s scoreboard, and I knew the data was available from the Internet. From there, it was a matter of putting together the business partners – TV manufacturers and content owners – to make it happen. As I found out, there were some missing software links to make it really appealing to the user, so we set out to create and provide them.

**Tell us more about the market for Fantasy Sports and how it is that Rallypoint is suited for this market.** Well, we’ve all seen the stats: sports programming is at the top of the Nielsen charts (notably the Super Bowl and NFL football), that the primary driver for HD television – in terms of TV sales as well as HD programming – is the sports fan. There are over 20M fantasy sports participants, and they drag out their laptops to pour over scores and stats while they are watching the games on TV. Fantasy football is by far the largest game, but baseball and basketball are pretty popular too. Looking at stats and scores is not a particularly deep experience to develop. There’s a lot of data, yes, but it’s mostly about putting in a user name and password to access your personal profile, then clicking on a familiar menu item and pressing the re-fresh button over and over. Once you understand this, you understand that the design of the application is perfectly suited for the remote control.

**Describe some of the other applications in which consumers will use the Rallypoint solution?** Getting specialized niche sports content from the Internet on the TV, for example, user-generated (“Amateur”) real-time sports commentary, maybe even mixing new audio channels in with the broadcast.

- Social networking – seeing friends and like-minded strangers’ profiles
- Chat – texting and even talking with friends using the TV and its remote control
- Advertising – using the “over the top” Internet plane and the user’s profile to tailor advertising messages
- Shopping – buying things related to not only to what shows you are watching but what activities you are DOING

**Since TVs in most homes are community property, can you get multiple customized setups for various family members?** That's definitely part of the plan – setting up “profiles” for individuals within the family, or logging onto your profile on your friends' TVs.

**Are Rallypoint applications designed primarily to run simultaneously with a TV show, or will users put the TV show into background while they shop on eBay or what have you?** Both. For sports applications, we think that fans will be watching the game, and popping up information screens regularly and often throughout the broadcast. Sometimes users will probably look at the information for a few seconds, and other times they will study the information. We've talked with a few broadcasters about creating voting applications or content specifically for their TV shows, like what American Idol does with SMS text messaging, or what NBCs' Heroes does with their interactive games.

**The Rallypoint concept of “voting” on line and interacting with live TV via the remote is intriguing. But so much of TV content is recorded or time-delayed media. Is there a level of frustration created when the interaction doesn't work?** Sure there is, but I think some of the more compelling content from broadcasters will either take this into account, leaving the voting windows open – or better yet – change user behavior because it's that much more fun to participate by not DVR-ing the program. Within sports, most rabid fans and fantasy sports nuts WANT to watch TV in its real-time state (or maybe slightly delayed), another reason why we are focusing on these consumers.

**Tell us about your vision related to interactive advertising for the future.** First, let's put it into a little context. Americans watch an average of 127 hours of TV per month compared with 26 hours a month on the Internet, and 2 hours and 19 minutes of watching Internet video. TV is CLEARLY the place to be when it comes to advertising. Despite this enormous time differential, TV advertisers have a tough time targeting specific viewers or viewer types, except on the basis of what programming is being aired. How would an advertiser know that someone that is looking to buy a new truck is watching Oprah or Monday Night Football? Our vision here is to provide advertisers with a way to target TV viewers based on what they are watching, on their profile or interests, or what they are DOING on their TV (completely opt-in of course). Some broadcast television advertisers might want to use the Rallypoint applications as a way to complete calls to action such as purchasing a product, or to bolster existing broadcast advertising purchases (for example to get real-time feedback on television commercials or product placement slots they've purchased). We are helping advertisers get all the benefits of interactive Internet style targeting on a device that consumers use more than any other device (by far).

**For many families, TV is still mostly a social event. In some ways it seems that Rallypoint serves to personalize the TV. (Not everyone watching the football game will want to see the Fantasy Football statistics in the middle of the action). Please comment.** When it comes to sports, I think those that are watching in a social setting are already talking smack with one another and part of the experience is and will be arguing about (or betting on!) which team or player is better than the other. Using the remote control to prove your point without passing the laptop around the room adds a whole new dimension to it. Of course, this goes back to our preferred “over the top” approach: if the experience allows the graphics to pop up in such a way that the others in the room can still see the action while the information is displayed, you have a winning experience. Or if you can make the graphics semi-transparent, or can move them around on the screen using a remote control, even better!

**Same question – worded differently. Today, “control of the remote” is a big issue in many households. If the remote now enables the user to send text messages, bring up personalized news, and order DVDs in the middle of the TV show, doesn't that exacerbate the “control of the remote” issue?** In many households, there are a lot of times when the TV is just “on” and no one in particular is watching it – except perhaps when a movie is on or a DVD is playing. I would concede that the movie watching scenario is pretty weak on interactivity (except for, again, that time when someone in the room asks the others “what movie was that star in before?” and they are compelled to look it up through the TV). But for the rest of the time when the TV is “just on”, I would argue that the control of the remote is not an issue. Even so, maybe everyone should have their own remote control for the graphics. I'm supportive of that – we have several devices and applications in mind for that eventuality.

**Blu-ray Live offers some on-line interactivity. Will Rallypoint work with such recorded media?** I suppose we could but our main focus is providing sports and social networking applications surrounding the most popular of broadcast television programming – sports being one of the best. Going back to an earlier point, I think the case for interactivity for movies or recorded media is pretty weak in this context.

**Most TVs don't currently come with built-in Ethernet or wireless access – can Rallypoint also work through a PC hookup?** There are ways to do this through a PC hook-up, but it's difficult to configure your PC to work with Comcast or Dish set-top boxes. You could watch Internet content this way, but when it comes to sports programming for live games, there's nothing compelling available on the web on game day. Throwing in an HD experience on top of that ... the Internet can't compete with what (video) is delivered over cable and satellite.

**Why not just have a PC hookup? If TV buyers want Internet access, wouldn't they also occasionally want PC functionality?** I supposed people might want to use their big screen HD sitting in the living room as a dumb monitor with a wireless keyboard, but that's not what we do.

**Tell us about your "widget-style" user interface.** In our widget platform, we allow users to see widgets "over the top" of the channel they are watching, allow them to adjust the transparency levels on the fly, and allow them to move the widgets anywhere on the screen they want. I think I've seen all the other platforms out there either publicly or under NDA. The Yahoo platform (which we support and we expect to be on some TVs soon) uses an over the top approach. So far, only Rallypoint implements user-adjustable transparency and re-sizable and moveable widgets using a motion sensing remote control. Once people see a demonstration of this, they see the power of what we are talking about.

**Does your technology work with any display technology, or is there something specific about LCD TVs that makes Rallypoint particularly appealing?** Rallypoint services work on any platform. Rallypoint's widget engine works with any display technology, and works with "fast" OSDs. Some OSD layers have slow re-refresh rates, so performance may not be great. But overall, we shouldn't have a problem porting to most HDTV chipsets running embedded Linux.

**Are you offering a software solution, or is there also a hardware component to the Rallypoint product? How do you make money?** Back to point 1. Our business model is about delivering consumer services, initially to sports fans. Some of these services will be ad-supported, and some premium services will be delivered using a subscription, download, or "usage" business model. The only thing that is needed is an Internet-enabled TV running a software platform that we develop on. We probably won't write to platforms that do not mix the video signal with the graphics OSD.

**Do you need a special remote control, or will an existing remote enable Rallypoint to work?** Most TV OEMs we know will deliver a special remote control with their Internet enabled TVs.

**Are the Rallypoint dialog boxes customizable or are they fixed? Do they scale based on display resolution?** Goes back to the implementation platform... But using the Rallypoint widget engine, the dialog boxes are completely customizable, re-sizable, and scale based on the display. Other platforms do not offer this flexibility.

**1080p solutions enable more information content to be presented than 720p solutions. In terms of Rallypoint, more pixels enables more information, or the same amount of information and more of the TV image, to be viewable at any one time. In other words, it would seem that 1080p TVs are better for Rallypoint than 720p solutions. Please comment.** Actually, both work great. The issue is really whether the graphics PLANE supports 1080i or 720p. But, yes, implementing in 1080 gives us more pixels to work with. Generally this means a richer image more so than more information or text.

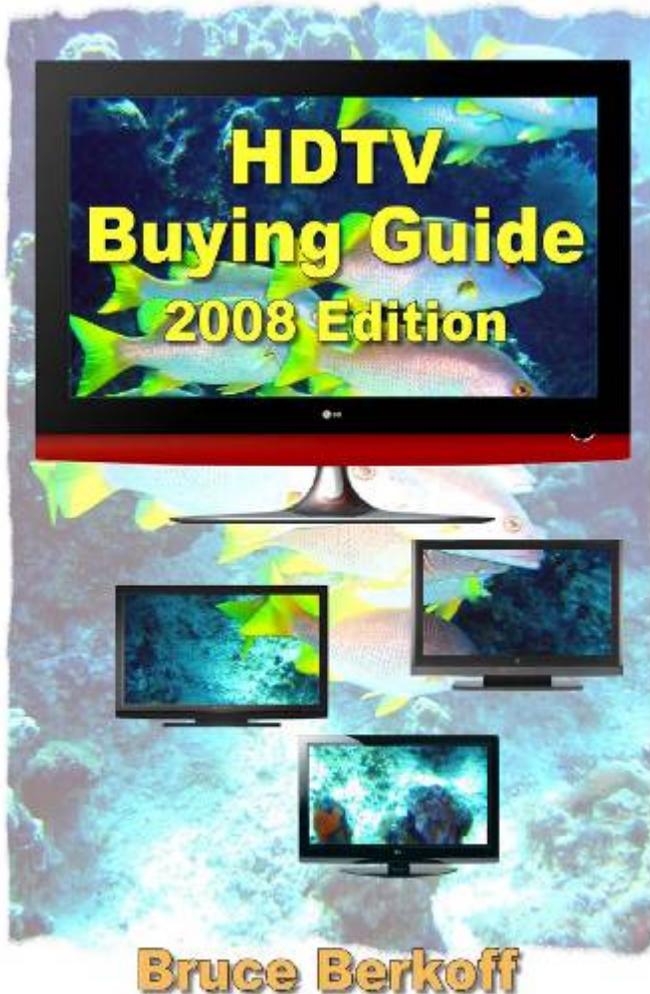
**What advantages do you offer to CE manufacturers and retailers with the Rallypoint product?** All of this is not only available to the TV manufacturer for free, but our business model is to provide them with a significant share of the revenues if they meet certain deployment timelines. In addition to the performance advantages of the Rallypoint widget platform, we also provide a better user experience, which is talked about later.

## 2008 HDTV Buying Guide released

Authored by Bruce Berkoff and edited by Alfred Poor, the 2008 edition of the HDTV Buying Guide is newly available. The 68-page paperback book can be ordered at Amazon for \$13.45, qualifies for free shipping status, and is available immediately: <http://www.amazon.com/HDTV-Buying-Guide-Bruce-Berkoff/dp/0965197530>

*"After an easy 2-hour read, I was off again to the electronics store to compare the seemingly endless choices of HDTV's. This time I knew the proper size and features of the LCD I wanted to buy for my living room and had a list of meaningful questions to ask the salesperson regarding price guarantee, warranty, and extras (cables and external speakers). The money saved on cables alone offset the cost of the book many times over. I especially found the "myth busting" boxes and "what to look for" paragraphs informative. The title of the book says it all...HDTV Buying Guide".*

-- P. Molisani



### HDTV Buying Guide

If you're ready to buy an HDTV, this book is all you need to understand the various choices and choose the right one.

*This book covers all the bases, but is so easy to understand that I'd give it to anyone in my family who wants to buy an HDTV. It will make holiday gift buying easy.*

Alfred Poor, HDTV Almanac

*Bruce Berkoff knows just how to explain HDTV so you can put your new understanding to work right away. I think my Mom can benefit from this book, too.*

Ross Young, Founder, DisplaySearch

Print edition ISBN 978-0-9651975-3-3: \$14.95  
E-book edition ISBN 978-0-9651975-4-0: \$7.95

*Sometimes you think you may know something but then someone explains it in terms you can understand you all of a sudden say, "oh, I get it now." This is the case with Bruce Berkoff's book about HDTV. Bruce obviously has a command of the subject matter and a talent for explaining it. He tells you what's important and what not to bother with like manufacturers' specs on contrast ratios which are measured under so many different conditions they become a meaningless comparison. I enjoyed this book and learned a few things about HDTV, I'd recommend it to anyone shopping for HDTV or just wanting to enhance their knowledge of this subject.*

-- Andrew Eisner

# Retrevo's 2008 Year-End Consumer Electronics Report

by Vipin Jain

As Retrevo's founder and fearless leader, Vipin is responsible for setting the company's direction and guiding it to success. Before Retrevo, as Vice President & General Manager, Vipin conceived, started, launched and ramped up Extreme Networks Wi-Fi business, which he grew to contribute more than 5% to company's revenue within six months of launching the product, shipping and ramping up sales of two generations of unified access products in less than two years. Prior to Extreme Networks, Vipin was a co-founder of Telseon, a pioneer in IP-based Metro Service Delivery where as the Vice President of Systems Engineering, he managed all aspects of pre- and post-sales engineering support, OSS/BSS development and architecture, deploying fiber-based Ethernet networks in more than 20 metropolitan areas in the U.S. in less than one year. The company was later sold to OnFiber which was sold to Qwest. Earlier in his career he was a member of the CTOs office at 3Com Corporation. Vipin is the inventor of IEEE 802.1X, the security protocol in wireless and wireline Ethernet, and has been awarded 13 patents. He has a graduate degree in Physics and undergraduate degree in Electrical Engineering from BITS, Pilani, India. In his free time he enjoys spending time with his family and using Retrevo to get the most out of his home theatre system.



Retrevo (<http://www.retrevo.com>) is the first matchmaker for people and electronics that makes finding, buying and using electronics products simple and fun. Retrevo is the first to use artificial intelligence technology to analyze, classify and summarize all relevant information on electronics products from both industry and social media sources including publishers, manufacturers, retailers, social networks, blogs, user reviews and even inside Adobe PDF manuals. Consumers are presented with objective product evaluations and answers in visually simple and actionable forms that give them the confidence and control throughout their entire electronics products relationship lifecycle.

## CE product categories hit by financial crisis, recession outlook for more CE bargains for consumers in 2009

This report outlines key consumer electronics (CE) trends for 2008 and predictions for 2009 utilizing data from The Retrevo Pulse, which consists of the CE Price Index, CE Demand Index and a real-time product buzz ticker. What's unique about the Retrevo Pulse and this report is that it is based on actual observed behaviors from millions of users. Unlike supplier based forecasts or consumer surveys from a small sample of users, the Retrevo Pulse report gives insight into what consumers are actually doing, not just what they say they will do.

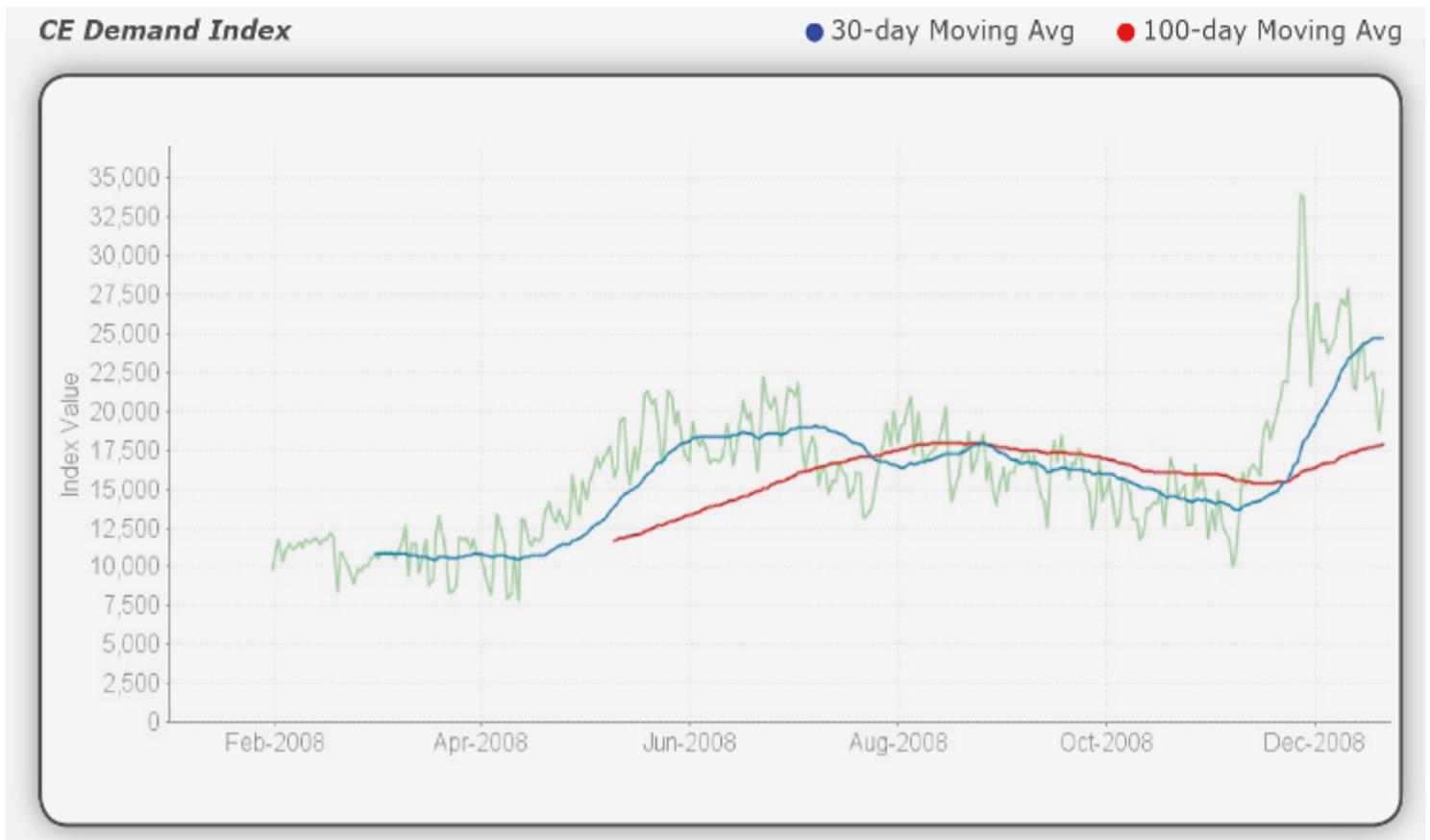
**2008 an up-and-down year for CE:** People love their electronic gadgets. For many of us, consumer electronics are no longer considered luxuries, but necessities. But even CE can't completely escape being impacted by the meltdown of our financial system. The year started off with strong consumer demand for electronics products across major categories such as HDTVs, laptops, digital cameras, camcorders, GPS receivers and DVD players. Even though the US had already (unofficially) entered into a recession and gas prices were soaring, consumers continued to fulfill their desire for gadgets into the summer, while cutting back in other areas. In fact, industry observers predicted that CE segment would grow by as much as 4% this holiday season, while predicting that retail overall would see negative growth.

**A sense of invulnerability:** Several factors were expected to help buoy CE sales in the second half of the year:

- TV manufacturers rolled out new 1080p progressive scan high definition models earlier in the year, with even sharper pictures and more features.

- The looming FCC-mandated analog-to-digital TV switchover scheduled for February 17, 2009, was also expected to prompt people to upgrade their TVs.
- Smartphone wars escalated in 2008: Apple rolled out its 3G iPhone; T-Mobile not far behind with G1 based on Google Android; and BlackBerry rolled out the Storm and Bold to challenge the iPhone.
- The triumph of Blu-ray over HD DVD meant consumers no longer had to place a bet on which format would win out in the end, providing more incentive to upgrade to the only standard standing – Blu-ray.
- As fuel prices soared, GPS receivers became more attractive investments for consumers who wanted the most efficient way to get from point A to point B.
- People looked to upgrade their computers and laptops with affordable netbooks or sleek, feature-rich laptops such as the MacBook and MacBook Pro.

**Fear motivates people to change behaviors:** The financial crisis that began to publicly unfold in September, however, caused widespread fear, destroying consumer confidence. This, according to Retrevo data, also caused demand for CE products to deteriorate starting in the fall and continuing into the early part of the critical holiday shopping period.



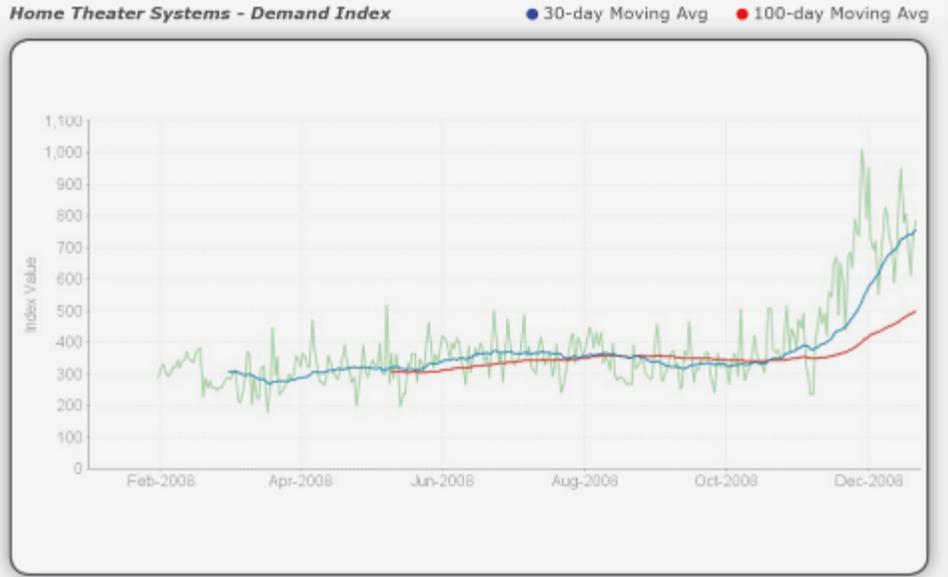
**Holiday deals drive demand:** However, in the last few days leading up to Black Friday and Cyber Monday, Retrevo indexes recorded a late, but sharp rebound in demand as people looked to take advantage of super-aggressive deals on electronics being offered by retailers and manufacturers. While nearly every part of the economy, including CE, was being hit by the financial crisis, there were some bright spots, particularly TVs, digital cameras and laptops. Retrevo anticipates that, while industry-wide Q4 holiday sales in terms of dollar amounts for CE products will be down due to aggressive discounting, unit volume for certain categories will still see double-digit percent growth rates.

### Category analysis and outlook

**Home theater systems:** Home theater systems (HTS or “home theater in a box”) saw strong demand throughout the holiday shopping season, while prices remained relatively stable. One can now buy a good Sony, Yamaha or Onkyo HTS that includes a receiver, five-speaker system and a subwoofer with ample power for under \$400. Expect to see more integration of hi-def (720p/1080p) into these affordable systems for mass-market consumers at CES and into 2009.

**Cell phones:** Demand for cell phones ramped up significantly between May and late July. Periods of heightened consumer interest centered on major new product launches, including the iPhone, Google’s G1 phone, the Blackberry Bold and Blackberry Storm. However, this category will have a challenging time ahead. Retrevo indexes show prices and demand declined in the later half of 2008. Expect a 10% or more decline in cell phone sales in 2009. The U.S. market has reached saturation and there is nothing revolutionary on the horizon that will entice people to want to upgrade. Yes, we will see bug fixes and incremental innovation (more navigation software, Wi-Fi, touch screen phones, etc). Nonetheless, 2009 will be a challenging year for cell phones.

**Laptops:** Laptops saw a strong demand through most of 2008, with no significant downward price pressure. This bodes well for companies like Apple, Lenovo, and HP. The netbook sub-category seems to be picking up momentum. You can get a good netbook for under \$400. Asus is a clear favorite in this sub-category. Expect slimmer, better and cheaper netbook computers from second tier brands at CES and through 2009 that will put pressure on traditional laptop



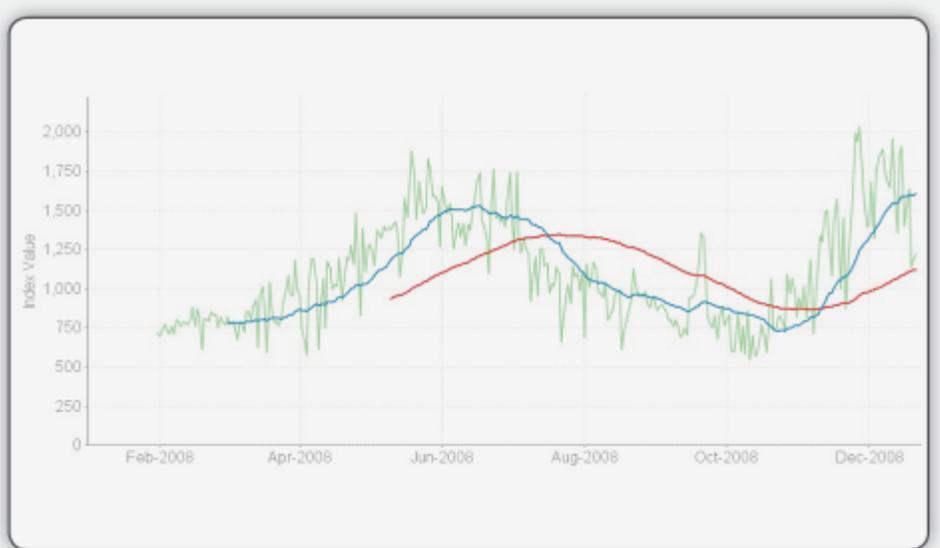
brands to compete. Consumers will benefit from more functional, portable, energy efficient, lighter and cheaper computers.

**Camcorders:** Prices for camcorders have been dropping since late November, which has been a key driver for high demand in November / December. 2009 will be a good year for camcorders as more 1080p capable, lighter, slimmer and cheaper camcorders make their way to market at CES and into 2009 (from Sony, Canon among other brands). Expect a good hi-def camcorder for under \$700 in 2009 (from ~\$1,000 now). The longer-term outlook for camcorders is still uncertain since this category may get more competition from higher end digital cameras.

**Digital cameras:** Digital camera demand was very weak from summer until mid-November when it picked up significantly. Point-and-shoot cameras are doing well in unit volume, while DSLR cameras are keeping up in dollar value. Expect to see lots of DSLR and some point-and-shoot cameras at CES that will record 24/30 frames per second videos. More video recording capability, Wi-Fi (and automatic transfer of pictures from your camera to computer or online services) and downward migration of DSLR features will keep a strong interest in this category in 2009.

**HDTVs:** HDTV demand (both unit volume and dollar value) was strong in 2008, while average selling prices for the category dropped by 35% this year alone. 2009 will be a year of thinner (less than 1-inch), better (120 Hz refresh rate on LCD HDTVs) and cheaper HDTVs (50-inch HDTV for less than \$800). Expect a 36-inch or even 40-inch OLED TV on display at CES from Sony or Samsung (although a production model will still be a few years out).

Camcorders - Demand Index



Digital Cameras - Demand Index



HDTVs - Demand Index



**DVD players:** Demand for DVD players rebounded in the November/December timeframe after four months of relentless decline. The rebound was spurred by multimillion dollar consumer awareness campaigns from the Digital Entertainment Group (DEG) and top brands like Sony, coupled with deep discounts on Blu-ray players. 2009 will be the year of Blu-ray DVD players with mass market adoption effected by price points hitting the consumer sweet spot of < \$200.

**GPS:** 2008 marked the peak for GPS. After a lackluster performance between summer and early November, demand for GPS picked up significantly during the holiday season. Simpler user interfaces and low prices drove masses to buy GPS products. Consumers flocked to good bargains and deals at Sears, Walmart, Best Buy and Circuit City. Many GPS from Magellan and TomTom were available for \$100-\$150 this holiday season. However, 2009 is likely to experience a significant decline in GPS sales (in dollar terms) as GPS becomes just a feature available on most smartphones and other portable devices. Magellan selling its consumer GPS business to Mio, and Panasonic and Harman Kardon exiting the portable GPS business altogether are clear signs of commoditization of GPS systems.

**MP3 players:** MP3 players as we know them have reached maturity and saturation. Demand for MP3 players declined significantly in second half of 2008. This weakness is likely to continue in 2009. 2008 holiday season saw plenty of sub \$100 cell phones (with service plans) with integrated music playback and this trend is likely to accelerate in 2009 impacting sales of MP3 players significantly.



**Desktops:** 2008 was a weak year for desktops at best. 2009 is not likely to fare any better. Consumers' penchant for laptops and netbooks in second half of 2008 is only likely to accelerate in 2009 impacting the sales of desktops in both unit volume and dollar terms in 2009. This is despite all the effort put in by Lenovo, HP and Dell in the industrial design to make desktops slimmer and more trendy (borrowing a chapter from Apple's book). Apple appeared to have done fairly well in second half of 2008 with iMac but jury is still out for 2009.



**INFORM** the public on the many benefits of LCD technology (vs. CRT and projection, PDP and the coming set of laser RPTV players). The LCD TV Association will debate the claims of competing technologies, as well as sponsor, post and distribute white papers on industry research and relevant topics - as determined by LCD TV Association Advisory Board.

**PROMOTE** the industry and technology via speeches, debates, interviews, PR and publicly available white papers on topics that promote these goals. The founder's history with the industry ensures many lively and engaging interviews on the industry's strategies and will put a human face on this huge and influential industry. The press is constantly seeking validation from neutral, yet knowledgeable industry experts such as those at the LCD TV Association.

**IMPROVE** the products and functions of LCD TV products by inventing and promoting new specifications that benefit the whole industry, such as an industry-wide 'Green TV' program. There are many activities that will benefit our members from early compliance and the associated PR. The emphasis is on perceived value for little or no cost, and use this to promote the industry via positive reviews and branding. The founder's experience ensures that these programs will not add cost, but rather help to relieve the relentless pressures on margin for the manufacturer.

**CONNECT** the industry supply chain with face-to-face meetings and regular communications, via white papers, presentations, quarterly newsletters for members. The Advisory Board members has quarterly meetings – telecon or in person – to facilitate win/win relationships for the industry partners. With better communication we can speed time to market with better features and functions, particularly for members and their customers, with the ultimate goal of creating more value for the TV vendors and their suppliers, while making TVs more attractive to consumers.

# Preparing for the DTV transition...

by Alfred Poor

Alfred Poor is the editor and publisher of “HDTV Almanac”, a free daily service of news and commentary on the HDTV, digital television, and home entertainment electronics markets: <http://hdtvprofessor.com/HDTVAlmanac>. This article comprises three recent entries about current events in the HDTV industry.



## DTV conversion heats up

Okay, we’ve got six weeks to go until the end of (most) analog TV broadcasts in the United States. And Nielsen reported a couple of weeks ago that at least 7 million homes still aren’t ready for the conversion. And that’s just among homes that only get TV over the air; it does not include the millions more that have secondary sets that are not connected to the cable or satellite service used with the main TV in the house. The government program to provide discount coupons for converter boxes has handed out 44 million coupons so far. Only 18 million of those have been redeemed, however, and it’s not clear how many of the remainder have expired due to their 90-day limitation. And now it appears that Americans are waking up to the situation, and taking action. Coupon requests are up 30% over just a week ago, at which point the delivery time was running at about four weeks. As the demand increases, the wait time can only stretch out further. The NTIA is recommending that you make your request by today in order to get your coupon in time for the transition.

And then there’s the question of whether or not you’ll be able to redeem the coupon five weeks from now. The experience with Wilmington, NC and other communities that converted early indicates that chances are good that stores will be sold out of converters as you get close to the transition date. The problem can only get worse now that we’re staring down the barrel of the national conversion. It will be a challenge – to say the least – of making sure that the inventory distribution matches demand. And this problem is made more difficult by the fact that demand for the boxes is going to drop to something near zero by the end of February; everyone who needs a converter box will probably have one by then. And retailers sure don’t want a big stack of boxes that they’re never going to sell sitting in the warehouse.

And another reason to act now is to find out any surprises before your analog signal goes dark. Will you be among the 2% of households that won’t be able to receive the digital signal with the antenna that works now for your analog signal? Digital signals do not travel as well as analog, because a weak analog signal will produce a snowy picture, but a weak digital signal results in a blank screen. If you need to upgrade your antenna, the time to find that out is before you lose the analog signal.

So if you need a converter box coupon, order it today. You can request one or two coupons for your household at <https://www.dtv2009.gov/> or call 1-888-DTV-2009.

## Preparing for the DTV transition

It appears that others share my concern that the transition to digital-only television broadcasts, scheduled for February 17, 2009, may not go off as smoothly as the federal government would like to predict. The Leadership Conference on Civil Rights Education Fund (LCCREF) announced yesterday that it was opening DTV Assistance Centers in seven U.S. cities that they have determined to be “at risk”. According to the LCCREF, “Families on fixed incomes, seniors, people with disabilities, people of color, and those who speak languages other than English are most likely to be affected by the transition.” The group is working with local organizations to help meet the needs of these people.

The seven cities targeted by this program are Atlanta, GA; Detroit, MI; Minneapolis-St. Paul, MN; Portland, OR; San Antonio, TX; San Francisco- San Jose-Oakland CA; and Seattle-Tacoma, WA. The LCCREF is working with



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What is the potential impact of increasingly negative macroeconomic trends?

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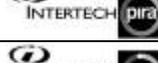
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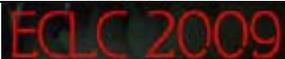


# Display Industry Calendar of Events

A detailed calendar with active URLs is maintained by Veritas et Visus. Please notify [mark@veritasetvisus.com](mailto:mark@veritasetvisus.com) to have your future events included in the listing. [http://www.veritasetvisus.com/industry\\_calendar\\_2009.htm](http://www.veritasetvisus.com/industry_calendar_2009.htm).

<i>January 2009</i>			
January 3-5	Integrated Systems Europe 09	Amsterdam, Netherlands	
January 5-9	MacWorld Expo	San Francisco, California	
January 6-7	Storage Visions Conference	Las Vegas, Nevada	
January 7-10	Digital Hollywood at CES	Las Vegas, Nevada	
January 8-12	2009 International CES	Las Vegas, Nevada	
January 9	TFT and Materials	Shenzhen, China	
January 13-14	Metalization	Stansted, England	
January 16	3D Technology Update for Display Professionals	Costa Mesa, California	
January 18-22	Electronic Imaging 2009	San Jose, California	
January 19-21	Stereoscopic Displays and Applications	San Jose, California	
January 20-22	Semicon Korea	Seoul, Korea	
January 24-29	Photonics West 2009	San Jose, California	
January 27-29	ATEI 2009	London, England	
January 28-29	Japan Forum	Tokyo, Japan	
<i>February 2009</i>			
February 2-5	Flexible Electronics and Displays Conference	Phoenix, Arizona	
February 4-5	It's Not Easy Being Green	San Jose, California	
February 7-12	Medical Imaging	Orlando, Florida	
February 17-20	Displays for Industrial, Household, and Auto Applications	Pforzheim, Germany	
February 20-22	Sound & Vision 2009	Bristol, England	
February 22-25	Focus on Imaging	Birmingham, England	
February 24-25	Transistors on Plastics	Cambridge, England	

February 24-27	Display Metrology Short Course	Boulder, Colorado	
February 25-27	PV Expo 2009	Tokyo, Japan	
February 27	Green Gadgets	New York, New York	
February 27 - March 1	Symposium on Interactive 3D Graphics and Games	Boston, Massachusetts	
February 28 - March 3	LED China 2009	Guangzhou, China	
<i>March 2009</i>			
March 2-4	US FPD Conference	San Diego, California	
March 3-8	CeBIT 2009	Hanover, Germany	
March 4-5	Electronic Displays Conference 2009	Nuremberg, Germany	
March 4-5	HD Expo	Beverly Hills, California	
March 5-6	ITC'09 / SID Mid Europe Spring Conference	Paris, France	
March 9-12	DVB World 2009	Berlin, Germany	
March 9-12	O'Reilly Emerging Technology Conference	San Diego, California	
March 10-11	TV of Tomorrow Show	San Francisco, California	
March 10-12	Smart Fabrics 2009	Rome, Italy	
March 11-13	FPD China	Shanghai, China	
March 11-14	EHX Spring	Orlando, Florida	
March 14-15	Symposium on 3D User Interfaces	Lafayette, Louisiana	
March 14-19	Virtual Reality 2009	Lafayette, Louisiana	
March 17-19	Air Traffic Control	Amsterdam, Netherlands	
March 17-19	Semicon China	Shanghai, China	
March 17-19	electronica & ProductronicaChina 2009	Shanghai, China	
March 17-21	Emissive and Organic Emissive Displays	Nottingham, England	
March 18-20	Symposium on Haptic Interfaces and Virtual Environments	Salt Lake City, Utah	
March 23-27	2009 Measurement Science Conference	Anaheim, California	
March 24-26	Image Sensors Europe 2009	London, England	
March 24-26	Phosphor Global Summit 2009	Miami, Florida	

March 25-26	Future of Television	Los Angeles, California	
March 30 - April 2	Showwest 2009	Las Vegas, Nevada	
March 30 - April 3	MIPTV	Cannes, France	
March 31 - April 2	LEDs Asia	Hong Kong, China	
March 31 - April 2	Display 2009	Paris, France	
March 31 - April 3	Active Matrix Displays	Dundee, Scotland	
<i>April 2009</i>			
April 4-9	CHI 2009	Boston, Massachusetts	
April 6-9	Miniature and Near-to-Eye Displays	Edinburgh, Scotland	
April 7-8	Printed Electronics Europe	Dresden, Germany	
April 7-8	Screen Expo Europe	London, England	
April 9-10	2009 Taiwan FPD Conference	Taipei, Taiwan	
April 15-17	FineTech Japan & Display 2009	Tokyo, Japan	
April 15-17	LED/OLED Lighting Technology Expo	Tokyo, Japan	
April 15-18	International Sign Expo	Las Vegas, Nevada	
April 18-23	NAB 2009	Las Vegas, Nevada	
April 19-24	European Conference on Liquid Crystals	Colmar, France	
April 22-23	Interactive Displays 2009	San Jose, California	
April 26-30	Digital Holography and Three Dimensional Imaging	Vancouver, British Columbia	
April 27-29	Organic Photovoltaics	Philadelphia, Pennsylvania	
April 27-30	IDMC/3DSA/Asia Display 2009	Taipei, Taiwan	
April 28-30	Sign UK/Digital Signage Showcase	Birmingham, England	
April 30	Emerging Display Technology	Cambridge, England	
<i>May 2009</i>			
May 4-9	3DTV-CON 2009	Potsdam, Germany	
May 5-7	Digital Signage Expo 2009	Essen, Germany	

May 5-8	International Conference on Animation, Effects, Games, and Digital Media	Stuttgart, Germany	
May 6-7	Digital Signage Show 2009	Las Vegas, Nevada	
May 12-13	HDTV Conference China	Shenzhen, China	
May 12-15	Orbit-iEX	Zurich, Switzerland	
May 20-22	SEMICON Singapore	Singapore	
May 20-23	International FPD Korea	Seoul, Korea	
May 31 - Jun 5	SID International Symposium	San Antonio, Texas	
<i>June 2009</i>			
June 1-2	SID Business Conference 2009	San Antonio, Texas	
June 2-4	SEMICON Russia 2009	Moscow, Russia	
June 2-4	Dimension3 Expo	Seine-Saint-Denis, France	
June 2-4	Digital Living Room Conference	Santa Clara, California	
June 2-6	Computex 2009	Taipei, Taiwan	
June 3-4	HD Expo	Chicago, Illinois	
June 4-9	SIIM 2009	Charlotte, North Carolina	
June 11-13	Photonics Festival: OPTO Taiwan , SOLAR, LED Lighting, Optics	Taipei, Taiwan	
June 9-10	RFID Smart Labels	San Francisco, California	
June 9-11	Plastic Electronics Asia	Taipei, Taiwan	
June 15-16	Projection Summit	Orlando, Florida	
June 16-17	Photovoltaics USA	Denver, Colorado	
June 16-18	National Electronics Week	London, England	
June 17-19	InfoComm '08	Orlando, Florida	
June 22-25	Cinema Expo	Amsterdam, Netherlands	
June 22-25	CEDIA Expo Europe	London, England	
June 23-25	LOPE-C -- Large Area, Organic and Printed Electronics Convention	Frankfurt, Germany	
June 25-26	Korea Display Conference 2008	Seoul, Korea	

<i>July 2009</i>			
July 8-10	China International Flat Panel Display Exhibition	Shanghai, China	
July 10-13	SINOCES	Qingdao, China	
July 13-17	International Symposium on Display Holography	Shenzhen, China	
July 15-16	Semicon West 2009	San Francisco, California	
July 15-17	E3 Media and Business Summit	Los Angeles, California	
July 16	2009 Small-Medium Display Forum	Taipei, Taiwan	
July 19-24	International Conference on Human-Computer Interaction	San Diego, California	
July 29-30	Japan Forum	Tokyo, Japan	
<i>August 2009</i>			
August 2-7	Chemistry for Electro-optic Displays Symposium	Glasgow, Scotland	
August 3-7	SIGGRAPH 2009	New Orleans, Louisiana	
<i>September 2009</i>			
September 1	Digital Signage 2009	San Jose, California	
September 2	TV Conference 2009	San Jose, California	
September 3	Touch Conference 2009/Emerging Technology Showcase 2009	San Jose, California	
September 3-4	China FPD	Shanghai, China	
September 4-9	IFA 2009	Berlin, Germany	
September 9-13	CEDIA Expo 2009	Atlanta, Georgia	
September 11-15	IBC 2009	Amsterdam, Netherlands	
September 13-16	PLASA '09	London, England	
September 14-17	Eurodisplay	Rome, Italy	
September 15-16	Photovoltaics US	Denver, Colorado	
September 29 - October 4	CEATEC Japan 2009	Tokyo, Japan	
September 30 - October 2	Semicon Taiwan 2009	Taipei, Taiwan	



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