



WELCOME!

Contests, everyone loves contests. Our Spectacular Summer DVD Giveaway Contest, with more than 100 winners, was a huge success. New contests are being added to our Web site all the time, so be sure and visit www.WidescreenReview.com often to see which new DVD and/or Blu-ray Disc™ title you could possibly win. We also have another contest going on that begins on August 15, 2008 and ends on December 19, 2008, and this is something you won't want to miss out on. One lucky person will be the winner of a Panasonic VIERA 46-inch 1080p TH-46PZ80 Plasma and a SC-BT100 Blu-ray Disc™ home theatre system. Enter by filling out the form in this month's Newsletter or by visiting our Web site.

With the analog cut-off date looming (February 17, 2009), this Newsletter includes the archived article "DTV Certified" by Joe Kane, which was printed in Issue 32, May/June 1999. In it, Joe explains the digital television system and predicts changes that will be made in the future. Nearly 10 years later, it is interesting to see how close Joe's predictions were.

Enjoy this month's Newsletter, and be sure and tell all your friends and family to subscribe so that they don't miss out.

Gary Reber
Editor-In-Chief, *Widescreen Review*

NOW AVAILABLE ON NEWSSTANDS

Issue 134, September 2008 of *Widescreen Review*:

- "Planar PD8150 1080p DLP™ Projector" By Greg Rogers
- "A/V RoomService metu™ Do-It-Yourself Acoustical Panels" By Danny Richelieu
- "Monster Power EP IR 3650 Empowered PowerCenter" By Doug Blackburn
- "Wolf Cinema's Jim Burns" By Gary Reber
- "Is WirelessHD A Dream Come True?" By Lancelot Braithwaite
- "Improvements In Blu-ray™ Source Components Demonstrate The Need For Speed In HDMI Cables By Demian Martin and Barb Gonzalez
- Plus "The Observer," "New Equipment," "Your Letters," "One Installer's Opinion," "Wife Assistance Forum," Blu-ray Disc and DVD picture and sound quality reviews, and more...



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By Joe Kane

Widescreen Review's **HD Holiday Contest.** **Enter to win** a Panasonic VIERA 46" 1080p plasma and Blu-ray™ home theatre system.



The Panasonic Viera 1080p TH-46PZ80 plasma boasts a 20,000:1 contrast ratio for deep black levels and high brightness, and its ability to accept the native 1080p24 signal from the SC-BT100's Blu-ray Disc™ player over any of its three HDMI inputs helps create a truly cinematic experience. In addition, the system is completely backwards-compatible with DVD.

As the first Blu-ray Disc home theater system to include wireless connections to the surround loudspeakers, the 5.1 channel SC-BT100 can be installed in any room, and the included iPod® dock and SD memory card for viewing HD video in the AVCHD format allows you to experience a broad range of entertainment options. Panasonic's Viera Link allows the entire system to be controlled using a single remote.

COMPLETE THIS FORM TO ENTER:

Name _____

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Mail to: Widescreen Review
27645 Commerce Center Drive
Temecula, CA 92590

Fax to: (951) 693-2960

Enter online:
WidescreenReview.com/sweepstakes

A winner will be drawn at random
on Monday, December 22, 2008.

The Essential Home Theatre Resource™
**Widescreen
Review**

VIERA
THE NEW VISUAL ERA

Panasonic
ideas for life

A winner will be drawn at random on December 22, 2008. Entries must be received by December 19, 2008. Only one entry per physical address. Sorry, open only to U.S. Residents 18 years of age or older. Complete rules and details available at <http://WidescreenReview.com/Sweepstakes>.

Recent News

Here are some of the recent headlines that have made it to the News section of WidescreenReview.com, which is now updated daily as our Web staff finds worthy home theatre-related stories and press releases. Visit WidescreenReview.com throughout the day to find out what's going on in the world of Home Theatre.

DIRECTV CEO Dismisses DISH Merger Talk (Capital Times)

"Blockbuster Inc. said Tuesday it has withdrawn its proposal to acquire Circuit City Inc. as market conditions have worsened since the idea was first hatched in April..."

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<http://www.madison.com/tct/business/299937>

NEC Electronics Announces The World's First Single-Chip LSI For Blu-ray Disc™ Players

"NEC Electronics announced that it had developed the world's first single-chip LSI to integrate the main functions of Blu-ray Disc™ players. Sample shipments of the new LSI, named EMMATM 3PF, will begin in September 2008..."

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http://www.widescreenreview.com/news_detail.php?id=16636

Canon wins SED case in the fifth circuit (Simplification)

"Nano-Proprietary (now, apparently APNT), previously blamed for the delays in rolling out SED televisions, has lost what seems to be an important appeal..."

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http://www.simplification.com/2008/canon_wins_sed_case_in_the_fifth_circuit

Video Server Markets To Reach Revenue Of \$1.5 Billion In 2013, According To ABI Research

"The broadcast, cable, and telco TV segments of worldwide video server markets are all growing at a healthy pace, and total revenues are expected to reach \$1.5 billion in 2013. Of the three, the telco TV market is showing the strongest growth, with a compound annual growth rate of 28 percent over 2007-2013. Cable will experience a CAGR of about 13.5 percent, while broadcast markets show the slowest growth at 8 percent..."

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http://www.widescreenreview.com/news_detail.php?id=16670

DTV Still Plagued by Hearing Problems (tvnewsday)

"You hear few complaints about the pictures delivered by the ATSC digital standard. But audio? That's another matter.

For the most part, the ATSC audio standard, based on Dolby Digital, is delivering TV sound with the promised CD quality, providing a rich, new aural dimension for consumers seeking the theatre-like experience in their homes."

Click Here To Continue Reading

<http://www.tvnewsday.com/articles/2008/08/07/daily.5/>

NASA To Broadcast Historical Highlights In High-Definition

"NASA Television will broadcast a special high-definition (HDTV) feed of two hours of highlights from America's human spaceflight history, as the agency celebrates its 50th anniversary.

The NASA HD highlights will be broadcast on Friday, August 8, Monday, August 11, and Tuesday, August 12, from 9 to 11 a.m. EDT on a special feed from NASA TV. The highlights also will be broadcast on standard definition on NASA TV's media channel.

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http://www.widescreenreview.com/news_detail.php?id=16650

Coming Soon... To A Retailer Near You

Danny Richelieu



Sony Electronics BDP-S350

Sony Electronics has announced that its BonusView-enabled, BD-Live-ready **BDP-S350**

Blu-ray Disc™ player is now available in stores. The BDP-S350 improves the boot-up time from the replaced BDP-S300, down to a few seconds. It is also 55 percent smaller than the previous model and consumes 21 percent less power. The model offers 7.1-channel Dolby® TrueHD internal decoding and provides bitstream output support for all audio codecs, including DTS-HD Master Audio™. Also including Sony's new Precision Cinema HD upscaling technology, the player is available for \$400.

Sony Electronics

877 865 SONY

www.sonymstyle.com

Jamo has introduced the **R 907**, a dipolar, three-way tower loudspeaker that employs two 12-inch air-dried-paper cone woofers, a 5.5-inch magnesium cone and basket midrange, and a 1-inch coated-textile dome tweeter to reproduce a frequency range of 35 to 30,000 Hz. The R 907 has an 89 dB per 2.82 volts per meter sensitivity, 4 ohm impedance, and a continuous power handling rating of 350 watts. The R 907 is designed to better fit smaller rooms and as a more affordable version of the previously released R 909.



Jamo R 907

Jamo

877 456 JAMO

www.jamo.com



Bell'O WAVS-341

Bell'O has released the **WAVS-341** retro A/V storage unit, which was first announced at the 2008 Consumer Electronics Show. Its uniquely open design, with curved-wood legs, was inspired by mid-century design and can accommodate four components comfortably, as well as a television up to 56 inches diagonal. Bell'O's CMS cable management system is also included, which helps conceal wires and provides improved air circulation for equipment. The WAVS-341 is available now for \$1,200.

Bell'O

732 972 1333

www.bello.com

Onkyo USA recently announced two new home theatre receivers, including the \$1,100 **TX-SR806**, which begins shipping mid-August. The THX®

Ultra2Plus-certified receiver includes Faroudja DCDi video processing, Audyssey MultEQ room correction technology, and Onkyo's Music Optimizer for improving the sound of highly compressed audio. The TX-SR806 features five HDMI 1.3a inputs and can scale all video signals internally up to 1080p resolution. It uses Cirrus Logic 192kHz/24-bit DACs on all channels and is rated to deliver up to 130 watts to each of its seven channels.

Onkyo USA

800 229 1687

www.onkyousa.com



Onkyo USA TX-SR806

NEW EQUIPMENT



Bryston BDA-1

Bryston recently unveiled their **BDA-1** two-channel digital-to-analog converter, using two 192 kHz, 24-bit Crystal CS-4398 DACs, independent dual power supplies, fully differential balanced XLR and unbalanced outputs, and transformer coupled S/PDIF (two optical and two coaxial), USB, and AES EBU digital inputs. The BDA-1 has a frequency response from 20 to 20,000 Hz ± 0.1 dB and a 140 dB unweighted signal-to-noise ratio. Total harmonic distortion plus noise is 0.002 percent, and jitter was below the measurement capability of their Audio Precision AP2700 analyzer (under 600 picoseconds).

Bryston

802 334 1201

www.bryston.ca



Sanus Systems ELM101-X1

Sanus Systems has released their Sanus Elements™ Screen Care line, which includes the **ELM101-X1**. The

package includes a Micro-Mist™ bottle of alcohol- and ammonia-free gel that gently cleans TVs without harming screens or discoloring bezels, as well as a microfiber wiping handle and antistatic dusting brush. The ELM101-X1 sells for \$30.

Sanus Systems

800 359 5520

www.sanus.com



Epson America Ensemble HD

Epson America has announced that they have begun shipping their **Ensemble HD™** Home Cinema System. Combining 1080p Epson PowerLite® 3LCD projector with a 100-inch motorized screen and 5.1 channels of frame-integrated Atlantic Technology loudspeakers, the Ensemble HD is the ultimate "home theatre in a box." The system also comes with a controller/processor with integrated DVD player, amplification for all

of the loudspeakers, and a unique wire management track system for hiding all of the included

Epson America

800 463 7766

www.epson.com



Video Mount Products PDM-C

Video Mount Products has introduced the **PDM-C** universal flat panel ceiling mount, which can hold most 37- to 63-inch displays from a telescoping mast that can be from 18 to 30 inches from the ceiling and can rotate 360 degrees. The PDM-C has a load capacity of 180 pounds and is available in black or silver powder coat finishes. The mount is available now for \$240.

Video Mount Products
410 643 6390
www.videomounts.com



Aperion Audio Intimus 4T

Aperion Audio has launched the **Intimus 4T**, a two-way tower loudspeaker featuring two 4-inch woven fiberglass-composite midrange/woofers and a 1-inch silk dome tweeter. The new tweeter features a unique venting system, which uses multiple rear vents rather than a single vent through the magnet's center, resulting in a stronger motor structure. The loudspeakers are built using 0.75-inch high-density fiberboard and have a frequency response from 55 to 20,000 Hz. The 6 ohm loudspeakers have a sensitivity rating of 86 dB per 2.82 volts per meter and can be purchased in gloss black or cherry for \$650 per pair.

Aperion Audio

888 880 8992

www.aperionaudio.com

The Studio Scoop

Rumors, Reports, & Ramblings

Stacey Pendry

Spectacular Summer DVD Giveaway

Wow! After receiving over 1,500 entries, our Spectacular Summer DVD Giveaway Contest has come to a close and the DVDs have been mailed to the lucky winners. With the overwhelming success of this contest, I am busy firming up titles for our next multi-title contest that will be included with our November and December editions of our Newsletter. This year's holiday DVD giveaway will have even more titles than our previous multi-title contests, and I can confirm that the A-list titles we have to offer are BIG, BIG, BIG summer blockbusters that are currently in theatres now.

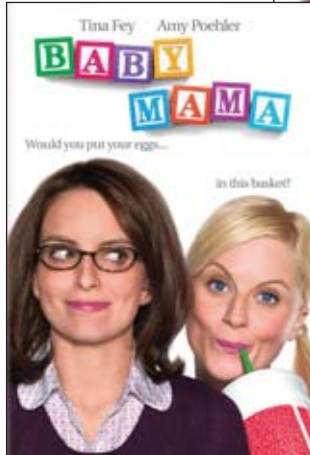
A list of the prizewinners is posted below. Congratulations to all who were lucky enough to win a DVD of their choice in our contest.

Upcoming DVD Contests

Enter to win the excellent BBC Sci-Fi series, *Torchwood Season Two*. Torchwood is an elite group of alien wranglers that patrol a rift in time and space that is located in the city center of Cardiff, Wales. Headed by Captain Jack Harkness, the team does all they can to protect the good residents of planet Earth from the flotsam and jetsam that find their way through the rift, whilst trying to understand any alien technology left behind by the unwanted visitors.

What Happens In Vegas will not stay in Vegas...that is if you enter to win this hilarious romantic comedy from 20th Century Fox. Ashton Kutcher and Cameron Diaz star as two strangers that are inadvertently given the same room in Las Vegas. While they manage to get separate rooms, the two find themselves married to one another after a drunken night on the town. This title is available to win in Blu-ray™ only.

Tina Fey and Amy Poehler star in Universal's upcoming DVD release *Baby*

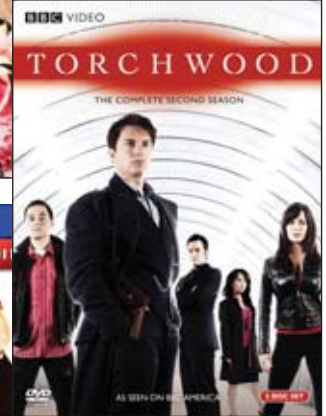


Mama. Enter to win this title by clicking on the banner ad contained in this newsletter. Tina plays a successful but infertile businesswoman who hires a working-class girl, Amy Poehler, to be a surrogate mother for her child. She soon finds out that you must be very careful of whose basket you put your eggs in.

Paramount/DreamWorks

Justin Theroux, who is best known for his acting roles in *Six Feet Under* and the mini-series *John Adams*, has been slated to write the *Iron Man* sequel due in theatres April 2010. Theroux recently penned DreamWork's hit summer film *Tropic Thunder* starring Ben Stiller, Jack Black, and Robert Downey Jr.

It's no wonder Marvel is anxious to get another installment in theatres: *Iron Man*, the first self-financed flick produced by Marvel and distributed by Paramount, has netted a whopping \$566+ million in domestic and international box office receipts. It is reported that Marvel is near to closing a deal that would bring back Director Jon Favreau and Star Robert Downey Jr. for the sequel. The studio has declined to comment until all



contracts have been signed in ink.

Steven Spielberg is interested in working on yet another project with *Juno*

writer, Diablo Cody. The Oscar-winning scribe is penning an untitled comedy for DreamWorks based on an original idea by Spielberg. Cody recently wrote and was Executive Producer for a pilot *The United States Of Tara*, a Showtime series starring Tony Collette and John Corbett, also based upon an original idea from the iconic director.

Cody first came to Spielberg's attention when Mandate Pictures was looking for a domestic distributor for *Juno*. Spielberg even entertained directing the teen pregnancy flick long before Jason Reitman became attached to the project.

DreamWorks is keeping such a tight lid on the details of the upcoming comedy collaboration that even the dealmakers involved in the project have been kept completely in the dark.

Brett Ratner has decided to move his production company, Rat Entertainment, which had been housed at New Line since 1996, to Paramount Pictures, it was announced

David Akiyama • Sonya Allstun • E. Alvares • Matt Anderson • Richard Ang • Bill Bliven • Paul Bongarten • Richard Brandt • Robert Castleton • Andrew Chan Mow • Ban-Hua Choo • Jim Christian • Brendan Crowley • Ken Dembny • Rhonda DiSanto • Edward Domagala • Richard Duffy • Joseph Ehlinger • Dana Fabain • Casie Feeny • Robert Flourney • Richard Ford • Art Garcia • Eva Geurdin • Paul Giuliani • Orlando Gonzalez Jr. • Tim Goodwin • William Greely • Gary Green • Matt Green • James Griffith • James Harris • William Holden • Michael Hurley • Wayne Hutchinson • Shigeru Iwamoto • Michael Jaworecki • H. Johnson • Kevin Jones • Robert Jones • Ron Kaledas • Adam Landry • Stacy Lehman • James Lusher • Brian MacDonald • Robert MacKinnon • Per Madsen • Walt Manning • Phil Maravante • Lloyd Marshall • Jeff McDermott • Bruce Mibus • Pat Minichello • John Misiak • Kenneth Narducy • Fred Newman • Eric Newquist • Thai Ngiuen • Dara Nix • Justin Novosel • Chris Olivetti • Aaron Osborne • Melanie Oxley • Gwen Parham • Simon Pawlowski • Kathy Pease • Linda Price • Alan Prushek • Shawn Reinhart • Jason Ressler • Ken Rodgers • Randy Roland • Konstatin Root • Richard Samuels • Kenneth Schaeffer • Rob Schindler • Grant Shipley • Daniel Simon • Zoey Smith • Rebecca Stephen • Jeffrey Strano • Alan Taylor • Bill Tilghman • Wayne Tunis • Rushabh Turkahia • Matthew Vargo • Stan Vlna • Brantley Waites • Jim Walters • Ken Ward • Joe Warren • Read Weseman • Laura Wiechert • Mike Wilson • Markus Wittlinger • Deci Worland • Roy Zander

this week. Ratner, who most recently directed *Rush Hour 3*, will be joined in his move by Rat Entertainment President Jay Stern and Development Head John Cheng.

"I thought I'd stay at New Line for the rest of my life, but when Bob Shaye and Michael Lynne left, it was time to make a change. I was also encouraged by Bob Evans to come to his home studio, and our goal is to team up on a project or two at Paramount," Ratner told *Daily Variety*. He emphasized, "Will not be pitching art films. I want to make tentpole projects."

Ratner's immediate Paramount priorities are two potential projects in which he would direct, one being *Beverly Hills Cop 4*, currently being written by *Wanted* scribes Michael Brandt and Derek Haas. For the time being, Brett's television projects remain with 20th Century Fox, where he has been executive producer on the series *Prison Break*. The deal between Ratner and Fox is up next year.

Sony/Columbia Pictures

Heath Ledger's much touted performance as the villainous Joker in *The Dark Knight* has drawn loads of attention and big box office dollars, prompting Sony to move forward with *Venom*, a possible spin-off based on the goopy nemesis that appeared in *Spider-Man 3*.

Getting a spin-off from a franchise is tricky business—first you have to find a scriptwriter able to grip the audience's attention when the protagonist is a bad guy, and second, you have to cast the bad guy—which is a formidable feat in itself.

The studio commissioned Jacob Estes from specialty firm Mean Creek to write a draft of the script several years ago, but the studio has decided it wants to go in a different direction than the Estes script, leaving them to look for a replacement writer.

Topher Grace originally played the villain Venom in *Spider-Man 3*, but Sony is not yet convinced the actor can carry a tentpole picture and are seeking other options to fill the role.

Producers Mark Johnson and Jimmy Miller are searching for a director to work on their new potential project entitled *Two Face*, now that Will Ferrell has finally decided to give the comedy serious consideration, after three years of toying with the script.

The Vince Gilligan-scripted comedy is about a racist who, after a prank gone bad, develops a split personality. Gilligan has collaborated with Johnson before on the movie *Home Fries*, but most recently received attention for scripting the Sony hit *Hancock*.

Johnson and Miller are hoping to get *Two Face* in the works by early next year—before Ferrell begins filming the Ethan Cohen comedy based upon Sherlock Holmes and Dr. Watson, along with co-star Sacha Baron

Cohen (*Borat*). Miller and Judd Apatow are producing the crime-duo comedy for Columbia Pictures.

Don Payne, who scripted *The Fantastic Four: Rise Of The Silver Surfer* and *My Super Ex-Girlfriend*, has been slated to pen the script for Columbia Pictures' new acquisition, *Maximum Ride*.

Based on the bestselling young adult novel series by James Patterson, the story centers on six children who have been genetically altered to be 98 percent human and 2 percent bird. The children, who are bred to fly, escape their lab-rat existence only to be pursued by a pack of part-human part-wolf creatures known as Erasers, who have been sent by the scientist/captors to hunt them down.

Seaside Entertainment's Avi and Ari Arad are set to produce along with Steven Paul. Patterson will executive produce.

Avi Arad has had much success at producing such Marvel fare as *Spider-Man*, *The X-Men*, and *The Fantastic Four* films, as well as *Iron Man* and *The Incredible Hulk*. He hopes that the movie's elements of alienation and angst will resonate with the cape-wearing superheroes and catapult the project into a franchise that can be built from the ground up.

It seems that *Edwin A. Salt*, a spy-thriller set to star Tom Cruise, has visited the Philippines and come back a different sex altogether. Perhaps the project should now be titled *Edwina Salt*, as Angelina Jolie has been slated to replace Cruise as the possible topline.

Actually, the film will be renamed if everything falls into place, with Jolie taking the role as a return vehicle after giving birth to twins last month. Jolie took a liking to the role, prompting Screenwriter Kurt Wimmer to redraft the script to suit a female lead.

Phillip Noyce remains attached as the director, with Lorenzo di Bonaventura and Sunil Perkash set to produce the film.

The film's plot revolves around a CIA officer who has been accused of being a Russian sleeper spy by a Soviet defector and must allude capture long enough to clear her name.

Jolie, who remains one of the few women able to pull off an action film's leading role, was last seen in Universal's *Wanted*, which netted \$132 million domestically. She has also received nods of approval for her role in Clint Eastwood's *Changeling* that premiered at Cannes and is due in theatres this October.

Warner Bros.

It looks like Harold and Kumar are ready to burn a third one down. Jon Hurwitz and Hayden Schlossberg, writers for both *Harold & Kumar Go To White Castle* and *Harold & Kumar Escape*

From *Guantanamo Bay*, will return to write a third installment for Mandate Pictures.

The first film earned \$18 million domestically and \$30 million in DVD sales, but what it lacked in high box office sales, it made up for in a fan base that follows the two stoners with cult-like devotion. *Guantanamo Bay*, which cost \$12 million to produce, netted a respectable \$15 million in box office sales in its opening weekend before finally bowing with \$38 million in domestic earnings.

It is believed the film's stars, John Cho and Kal Penn, will reprise their roles and the ganja-smoking-duo in the third installment, as Mandate has an option already in place with the two actors.

New Line, which folded into Warner Bros. earlier this year, distributed the first two films, with Warner Bros. expected to distribute the third *Harold & Kumar*.

The storyline is being kept under wraps, for the time being.

Even though New Line has been stripped nearly to its bare bones, budget-wise, it has made a deal with *Hairspray* creator John Waters to pen a sequel to the 2007 hit musical. A screenwriter will not be chosen until Waters has completed the final framework for the storyline.

Returning to the franchise is Director/Choreographer Adam Shankman, Producers Craig Zadan and Neil Meron, and Tony-winning Songwriters Marc Shaiman and Scott Wittman, who will create the soundtrack for the sequel.

No cast has been signed, but Warner hopes to reunite the original cast, even though none of the original stars have sequel options in place. The original film starred a large A-list cast that consisted of John Travolta, Christopher Walken, Nikki Blonsky, Zac Efron, Queen Latifah, Michelle Pfeiffer, and James Marsden. It may be difficult to re-engage the entire original roster.

Warner plans to release the musical sequel mid-July 2010.

Warner Home Video has launched aggressive pricing structures for Blu-ray catalogue titles, aimed at filling the living rooms of America with the high-definition format winner by this holiday season.

Retailers could see their cost as low as \$11 on catalog titles, which equates to you, the consumer, shelling out a paltry \$13 to \$15 for Blu-ray titles. Warner plans to also offer special pricing on newer releases such as *300* and *I Am Legend*, but the discounts aren't as deep—costing the consumer somewhere in the \$17 to \$20 range.

Retailers warn that consumers may get into the mind-set that every title should be deeply discounted, even when the promotion eventually ends, which may prove to be a slippery-slope for the studios. **WSR**

DTV Certified

JOE KANE

What Is The Real DTV System?

The official start date for terrestrial DTV broadcasting was November 1, 1998. While some of the horses were out of the gate a few days early broadcasting the launch of the space shuttle, we are actually still building the track. The construction is so close to where the horses are running that we may temporarily be losing sight of our direction. Selling DTV to the consumer is a case in point.

Check out what's being sold at retail as "DTV certified" or "DTV compatible" or "DTV ready." Knowing a bit about the real DTV system, you might find yourself wondering how some of these sets could possibly be connected with DTV when they are nothing more than ordinary TVs. Does an S-video input and 1.33:1 (4:3) aspect ratio somehow qualify a set for a DTV nod from retailers?

One could argue that they aren't far off. After all, many DTV set-top boxes will provide a down converted S-video or even a composite video output. If current TV sets are good enough to be considered DTV compatible, what added value is there to DTV that could justify the broadcast and program production community's additional investment to make it happen? Should we try to create the kind of difference in digital versus analog that existed between color and black and white? If DTV is to have added value, should we encourage displays of it to be dramatically better?

There is a need to define what constitutes a DTV display in a way that the added value of the system can be clearly demonstrated. The Consumer Electronics Manufacturers Association (CEMA) and the Advanced Television Standards Committee (ATSC) are already headed in this direction with a basic DTV certification program. The problem, as we see it, is that since DTV exists on so many levels that one level of certification really doesn't tell the consumer enough for them to make an intelligent purchase. CEMA and the ATSC have a laudable goal and that's to encourage the consumer to buy into this new system. We'd like to see a certification system that not only encourages them to buy into the system, but gets them into it at a level that will support the expanded



capabilities that can be delivered.

DTV isn't easy to define. Some in the industry believe it's a replacement for our analog transmission system. That's only the beginning. One of its purposes is conservation of bandwidth. More information can fit into a given space in the digital domain. We may choose to waive that space by upconverting conventional resolution pictures to higher rates, requiring all of the digital space allocated to the new system, or we could broadcast sources at their native rate and use the rest of the space for something else. On the other side, we've just seriously expanded the canvas with which the artist can convey a message. How much do we want to short-change that expanded message in a receiver with limited capability?

The ATSC has defined 18 to 36 scan rates and two aspect ratios, depending on who's counting, so that the broadcaster can pick the right rate and shape for the program being transmitted. The FCC has wisely chosen not to limit the system to so few scan rates or aspect ratios. After all, in many minds, the ATSC left out at least 540p (progressive) and 600p, let alone a common version of 480i (interlace). As the quality of MPEG compression improves, we might be adding 768p to the list.

For those asking about 1080p programming, we certainly don't expect it to be a viable format for distribution in the consumer world. The cost of a display device that can take advantage of this format is and will be out of the range of most high-end consumers for a long time to come.

The original ATSC system called for two aspect ratios, 1.33:1 and 1.78:1 (16:9). Maybe 0.77:1 is correct for program information that is in the shape of a piece of paper. You'll find many people in the motion picture industry that will argue for all sorts of other aspect ratios. Among them, 1.37:1, 1.66:1, 1.85:1, 2.0:1, 2.2:1, and 2.35:1 (2:40:1).

Have I left any out? Probably.

Considering all of this, is it probable to come up with one specification for DTV certification that would cover all of this, or even the more confined scope of the ATSC rates and aspect ratios? What's really needed is a division of certification specifications. In figuring out what those should be, we might do well to go back to the 1980's proposed analog transition from standard definition TV to HDTV. You may remember that was back when our high definition system was going to be analog and maybe even compatible with the current NTSC system.

Following the analog lead, the new certification system would start at a Standard Definition (SDTV) level. It would include the 480i system we now use for the majority of our analog transmission. The interlaced PAL system might also be included, something around 580i. The next step up would be Improved Definition (IDTV). We'd put 480p into that category. It would be followed by Extended Definition (EDTV). We'd include a range from 540p, to say 720p, encompassing a progressive version of PAL and 1080i. Near the top quality category would be High Definition (HDTV). It would include 1080i, 720p, 768p and maybe even higher scan rates. Since we see 1080p being out of reach for all but a handful of consumers in the next five or more years, that rate would belong to some future specification.

Is this all we need to know when defining the quality of a display device? Could we build a certification system for TV sets based just on their scan capability? No, not really. Other factors, such as horizontal resolution, proper decoding of the component video signals, gray scale tracking, the aspect ratio of the display itself and correct colors of red, green, and blue are equally important. Here's where things get a little more difficult. Let's take displayed picture resolution in particular. Horizontal resolution is probably

the same for 480i and 480p, just as it could be equal for 1080i or 1080p. Does the “p” versus “i” look enough better to place the “p” in a higher category? Absolutely! The vertical resolution in the “p” version is enough better than the “i” signal to bump the “p” up to the higher category.

How important is horizontal resolution in any of these categories? There are a number of considerations to be taken into account when answering that question, but horizontal resolution isn't as important as it is credited in most circles. When it comes to direct view sets, light output capability is inversely proportional to horizontal resolution. As resolution goes up, light output goes down. It will go down to the point where, if we were to attempt to clearly reproduce 1920 lines across the width of a 32-inch wide screen, the set won't produce enough useable light output to be considered for any certification.

The same light output versus resolution consideration isn't necessarily true for CRT-based projectors. Often times higher line rate capabilities in the source signal will produce better performance in the CRT. Yet there are significant limitations here as well. As the CRT size gets larger and the focus capability gets better, the performance increase is in picture detail, not more light output as manufacturers would have you believe. You'll have to keep the screen size down, even on 9-inch CRT-type projectors, in order to obtain the performance capability of the tube. While we're on the subject of picture performance from a projector, the screen material plays an equally important role in picture quality. That must also be part of any real DTV certification specification. Any of the fresnel, lenticular screens we've encountered would not fit into the ED or HD categories.

You might think that we'd have to consider a separate category for CRT-based projectors in either a front or rear screen configuration. In reality, direct view sets wouldn't qualify for the HD category, so projectors have that to themselves by default.

While still on the subject of picture resolution, there are additional factors to consider in a direct view display device. The distance of the viewer from the picture is important. Anything more than one or two picture heights away from a 30-inch wide set and you'll be hard-pressed to see half of the 1920 lines no matter what the capability of the set. The conclusion here is that while horizontal resolution capability can't be ignored, it's not critical that it even approaches the capability of the high definition source signals for most of the categories.

As for the matrix decoding, gray scale tracking and the primary colors of the display factors become more significant as you get beyond SDTV. They belong near the top of the list for consideration in the advanced

categories. Since the matrix is important to color quality, we should also cover the other two important parameters of color fidelity: the primary colors of red, green and blue; and gray scale tracking.

There is a set of primary colors defined for the higher resolution capability of the DTV system. It is slightly different from that defined for standard definition, a color set that really hasn't been widely available in the consumer market. Certainly at an ED or HD level, the color of red, green, and blue should closely conform to the Society of Motion Picture and Television Engineers' (SMPTE) definitions for the 1080i and 720p systems; they are both the same.

As for gray scale tracking, it's as critical as the correct colors of red, green and blue, and must be easily calibrated. What does that mean? Access to the controls should be easy for the person trained in properly setting a gray scale. The resolution of the controls should be good enough to make accurate calibration easy. Once the set is calibrated at the high and low points of the gray scale, it should also track gray within a certain specification. The number commonly used in the broadcast world is 6 CIELUV. That's three times the minimum perceptible difference in color. We would assign specifications to DTV categories according to their position on the quality scale.

What about the shape of the set? SDTV and IDTV could both be 1.33:1, with the IDTV set having the capability of displaying a 1.78:1 image somewhere in the 1.33:1 area of the display. Display devices in the EDTV or HDTV categories should be widescreen, a 1.78:1 aspect ratio if we stick to the ATSC criteria.

There are several more important points that should be spelled out prior to certification. The display device can easily be limited by its input(s) and signal processing. Where an external tuner is required, we might only be capable of declaring a display device as DTV-ready. If a DTV tuner is part of the package, its capabilities will also have to be considered. Then there's audio. Part of high-end certification for display devices with a built-in DTV tuner might include a serial digital audio output for external processing of the audio. In any event, a high-end display device should not be part of the acoustic reproduction capability.

Looking at the video input, it is our experience that a Y, Pb, Pr connection is critical to obtaining good picture quality, plus having an advantage in setup. A black-and-white signal is needed to help assure proper calibration of black-and-white levels, gray scale and convergence. That's easy to obtain if you can disconnect Pb and Pr. If the input to the set is serial digital, an internal capability of shutting off the Pb and Pr must be provided. If the display device only provides

for an RGB input, as is the case with most high-end video projectors, a Y, Pb, Pr to RGB converter must be part of the specification for high-end DTV certification.

We've already alluded to the fact that the DTV system is dynamic. Specifications set today will most likely have to be changed in the near future. As an example, the standards for data transmission have yet to be set so we can't specify how a current generation set is to handle that part of DTV. We might even have to date the specifications, calling them SDTV '99 or HDTV '01. There is another reason for wanting these specifications dated. It is our firm belief that in the future, all display devices will run at their own rate, and at just one rate—totally independent of incoming signals. We feel that the cost of high quality translation from any incoming format to the ideal rate for the individual display will be far less than building a multi-sync display device. This approach is required for fixed array displays that are currently on the market and will be beneficial if used on variable rate-capable display devices.

The DTV tuner specifications are obviously important to the resulting picture quality displayed on any of these sets. A separate certification process will have to be set up for them.

Application

Enough of the background. Let's see what happens if we apply what we've discussed. At this point we're providing a first draft, something designed to stimulate discussion. We fully recognize that getting to some of the specifications found in the EDTV and HDTV parameters isn't going to happen in current stand-alone equipment. We do feel that combinations of equipment could be assembled that would meet these specifications. Readers' comments are always welcome.

SDTV — Standard Definition Television

Since these are “DTV Certified” specifications for SDTV, the criteria is going to be more stringent than might be found for a regular TV set, yet not much beyond the current capability of good sets that are already available.

Scan rate capability need only cover our current analog interlaced TV system of 525 lines at 59.94 Hz, otherwise known as 480i in the DTV system. All color decoder and sync specifications should be able to handle VHS in standard play as well as fast forward and rewind. Should the PAL rate of 625/50 be considered? That might depend on the market, but probably not.

A display aspect ratio of 1.33:1 would be acceptable, but not limited to that shape. An

aspect ratio of 1.78:1 would also qualify. What about other aspect ratios? How much unnecessary confusion do you want to add to DTV? At the moment we would only accept 1.33:1 or 1.78:1.

This set would not be required to have multiple aspect ratio capability in the first generation, relying on the DTV set-top receiver to do the aspect ratio conversion.

In a few years, the SDTV category might be upgraded, requiring a 1.78:1 aspect ratio display. A 1.33:1 screen shape might not be acceptable for any category of DTV certification in the future.

Analog Y, Pb, Pr input(s). A flat Y frequency response out to 6.5 MHz \pm 0.5 dB. A Pb and Pr response out to 3.0 MHz \pm 0.5 dB.

Accurate translation (decoding) from Y, Pb, Pr to RGB using the NTSC matrix.

The RGB path response inside the set should be flat out to 10 MHz \pm 0.5 dB.

For compatibility with conventional analog signals the set must contain a composite and S-video input with an accurate color decode capability. An adaptive comb filter would be required in this application.

Any SVM circuits that might be included in the set have to have an easy way of shutting them off when in the DTV display mode.

Easily calibrated gray scale, capability of tracking D65 (6500° Kelvin) to at least 12 CIELUV. The resolution of the calibration controls should be good enough that the calibration points can be set within 1 CIELUV of the target color of gray.

Display light output capability of 25 foot-Lamberts without blooming.

The choice of colors for red, green, and blue will most likely be left to the manufacturer for the first generation of these sets. We would suggest something close to SMPTE C colors and insist upon it for the second generation of SDTV specifications.

Displayed horizontal resolution of 530 lines across the full width of the screen. This translates to about 400 horizontal lines per picture height for a 1.33:1 picture; the analog TV specification for horizontal resolution. We are using a full picture width in our specification because it is independent of aspect ratio. Inexpensive TV sets can now do from 380 to about 420 lines/picture height, yet we find only a few expensive sets reaching as high as 450 lines (this despite claims of 700, 800, or even 900 lines of resolution on the part of some manufacturers).

Separate setup for brightness, contrast, and gray scale for the composite or S-video inputs versus the component inputs.

IDTV — Improved Definition Television

Display scan rate capability starts at 480p. While the set will be able to accept lower

rates, they must be upconverted for display. This set may or may not include a PAL progressive capability. It would not be required to go any higher than either of these two rates.

A minimum displayed horizontal resolution of 560 lines across the full width of the screen.

An aspect ratio of 1.33:1 would be acceptable, but not limited to that shape. An aspect ratio of 1.78:1 would be encouraged in the first generation of this specification and mandatory in the second generation of the specification.

Capability of displaying a 1.78:1 image inside the 1.33:1 picture area if the set is a 1.33:1 aspect ratio. If the set is a 1.78:1 aspect ratio we would require the capability of a 1.33:1 image in the center of the 1.78:1 image area. In addition, there would have to be a capability of displaying a letterboxed 1.78:1 image out to the full width of the screen. Individual brightness and contrast memories would be necessary for each aspect ratio displayed.

Y, Pb, Pr input. RGB or VGA is optional on the first generation. The Y, Pb, Pr decode matrix would be NTSC. A flat Y frequency response out to 6.5 MHz \pm 0.5 dB and a Pb and Pr response out to 3.0 MHz \pm 0.5 dB for the 480i input would be required. If the component input could also accept a progressive signal, the frequency response specification would have to be doubled. The RGB or VGA input response would be flat in each channel to 20 MHz \pm 0.5 dB all the way to the imaging device.

For compatibility with conventional analog signals the set would contain a composite and S-video input. Accurate color decoding of composite and S-video would be necessary. A high quality adaptive comb filter would be required for going between composite and S-video. The set would contain an internal processor to convert the 480i signals to 480p. This same processor could be used to convert any DTV 480i source to 480p. That means the processor would require a component as well as an S-video and composite input capability. The component path would conform to the bandwidth requirements stated in the SDTV specifications. We would encourage the manufacturer to include two-thirds pull-down recognition in this video processor in the first generation, with it being required in the second generation.

Matrix decode capability for 480i and 480p only. (They are the same thing.) Conversion from higher rates, including the change in matrix, is to take place outside this set.

Capability of turning any SVM circuits off in any display of DTV signals.

Easily calibrated gray scale, capability of tracking D65 (6500° Kelvin) to no greater than a 10 CIELUV variation from 0.5 foot-Lamberts to full brightness. Resolution of the controls at the calibration points should be less than 1 CIELUV. A minimum of a second

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choice of color temperature must be made available. It needs to have a range that could easily reach 5400° Kelvin. The color temperature memory would be selectable from the front panel. It needs to be assigned to individual input memories so that when the user selects a particular input, the correct color temperature will also be selected. We will encourage at least four memories for color temperature, any of which can be assigned to a particular input in the first generation, requiring it in the second generation.

Light output capability of 25 foot-Lamberts without blooming.

Separate setup for brightness, contrast, geometry, blanking and gray scale controls for each displayed aspect ratio. Minimum of two choices for gray scale, each of which could be individually calibrated and assigned to particular memories. What would be included in geometry? Certainly height and width plus any other controls needed to insure reasonable geometry at each aspect ratio. In a direct view set, it is our experience that separate vertical linearity memory would be necessary for the two display aspect ratios.

Colors for red, green and blue to approach SMPTE C colors.

EDTV — Extended Definition Television

In the initial stages of specifying this set, we would call for a multi-scan capability in CRT-based display devices. It would start at 480p and run up to 768p. That range would include 1080i, which is just above 480p. Careful attention would have to be paid to the ringing in the picture caused by the short retrace time of the 1080i signal.

It is our feeling that, down the road, ID and ED sets will only scan at a single progressive rate. Second or third generation of specifications for these categories would include an internal scaler that would convert incoming signals to the specific rate required by the display.

Fixed array display devices entering this qualification would now have to have processors that would convert the incoming signal to the display configuration of the device. Processor quality specifications would have to be included.

Input connections would include a composite 75 ohm BNC for NTSC and PAL, an S-video connector, a component input on three 75 ohm BNCs, and RGB plus Hand V sync on five 75ohm BNCs, plus a VGA-type connection. We would encourage at least two component and two RGB connections. The two RGB input connections could be divided into one for the BNC connectors and a second at the VGA connection.

The set would contain an internal signal processor for 480i source signals. Conversion

could be to any rate between 480p and 768p. The converter would be required to recognize two-third pull-down in film original material. The NTSC and S-video decoder would have to be color accurate. We would require at least a high quality 2D adaptive comb filter and would encourage a 3D adaptive comb filter.

The set would have to contain a matrix decode capability for both 480 interlace and progressive signals and the higher rates as specified by SMPTE. We would encourage automatic detection of the input rate for the proper selection of the decode matrix.

An ability to shut Pb and Pr off for component video calibration. An ability to display blue only for NTSC decoder calibration.

Luminance bandwidth of the entire component and RGB path would have to be flat out to 40 MHz, ± 0.5 dB. Pb and Pr response would be flat to 20 MHz ± 0.5 dB. If a frequency detection method is used to differentiate between the 480 interlace and progressive rates from the higher rates, the 480i signal path into the processor could be band limited to 7.0 MHz for luminance and 3.5 MHz for the two color channels. The 480p signal would not be band limited, as is optional for the 480i input, but sent to the proper decode matrix. The circuits might be kept simple if the line processor, converting 480i to a progressive signal, were done in the component domain. The output could then be fed to the 480p matrix decoder.

The red, green, and blue colors of the display would closely conform to SMPTE specifications for 720p. (That same specification also applies to 1080i and 1080p.)

The shape of the picture would be 1.78:1

The set would contain full multiple aspect ratio capability. We would insist on four, but encourage a minimum of six options of memory for aspect ratios. We would require good geometry setup for a 1.33:1 picture in the center of the 1.78:1 display, an overscanned 1.33:1 image, a linear 1.66:1 aspect ratio; letterboxed, a linear 1.78:1 image; letterboxed and a 1.78:1 image edge-to-edge of the raster, sometimes known as the anamorphic format. It's this 1.78:1 edge to edge position that would most likely be used for the 1080i and 720p rates. Memories for each would have to contain individual information for brightness, contrast, color temperature, and picture shape and geometry.

Separate memories would have to be provided for each input rate. As much as there would be multiple aspect ratio capability, it would exist individually for each rate. It would also exist individually for each input connection on the back of the set.

Monitors that are 32-inches wide or smaller would provide 25 foot-Lamberts of light output prior to any noticeable blooming in the picture. Flat field uniformity would be within 12 CIELUV for color and no more than

45 percent fall-off from center to edge in luminance. These measurements would be checked over a 60° angle from the center of the picture, both horizontally and vertically.

Light output could drop to as low as 10 foot-Lamberts as the screen width approached 72 inches. The 12 CIELUV and 45 percent fall-off specification would still apply to the larger screens. Measurements would be made over a 60° angle from the center of the picture.

Gray scale tracking would have to be within 10 CIELUV, with a resolution of less than 1 CIELUV at the calibration points.

Horizontal resolution across the width of the screen would have to be at least 800 lines for a 27-inch wide screen size set and approach 1200 lines in a 72-inch wide image.

We don't yet know the numbers for quality of geometry and convergence, but need to convey that they would be tight.

HDTV — High Definition Television

Input and processing requirements of EDTV. We would extend the higher scan rate input bandwidth flat out to 50 MHz, encouraging and internal RGB bandwidth to be flat out to at least 80 MHz.

Scan rate capability would include 1080p although we would not expect the display device to fully resolve the horizontal bandwidth of 1920 lines across the full width of the screen.

Horizontal resolution would be specified in the order of 1500 lines.

Light output capability would be placed at 10 foot-Lamberts for a 72-inch wide screen with no visible blooming in the image.

Display quality for color uniformity would parallel the EDTV set. Luminance uniformity would be within 30 percent.

If you thought the specifications for geometry and convergence were tight for the EDTV category, just wait until you see what we come up with for this category.

HDTV Plus:

We mentioned this in the article. We don't now have many display devices that can truly show off the capability of a 1080p signal, let alone the 2K by 2K or 4K by 3K images that are now being created in the graphics industry. It is our feeling that a 12-inch electro-magnetically focused CRT projector would be required for this task. While we've seen such projectors, none of them that we've played with were designed for high-resolution video display. A requirement for this type of display is here now because the signals are being generated all of the time. ■

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