CEDIA 2006 Report

By David J. Weinberg

The buzz was 1080p, but I heard only noise, because while the pixel count is up, few of the manufacturers seem to be addressing the many less obviously visible factors that significantly affect image quality. Even the 1920 × 1080 pixel count is immaterial in most instances, because the viewer generally sits too far away to benefit from the increased resolution. In *The BAS Speaker* (publication of the Boston Audio Society, www.BostonAudioSociety.org) I have written, synopsized, and reprinted numerous articles addressing this issue, so I won't belabor it here.

PROJECTION BOOTHS

Joe Kane again exhibited his Samsung front projector, further explaining the characteristics that make it special, and still providing the best overall image at the show. The SP-H710AE is now only $4000 srp, while the SP-H800BK is down to $6000 srp (www.VideoEssentials.com/noteworthy_displaydevices.php). He recommends the Stewart GreyHawk Reference Standard (RS) screen for images up to about 7′ wide, and the Stewart StudioTek 130 for wider images. Stewart has improved these screen materials with smoother (finer-grain) surfaces, because the older versions' graininess was coarse enough that for certain smaller images from 1920 × 1080 projectors, the pixel size would interact with the screen grain structure to compromise image quality. That is no longer the case. Another benefit of these screens over many others, including certain other Stewart materials, is that the color balance doesn't shift with viewing angle.

Sony showed the newest version of its SXRD 1920 × 1080 projector series, which has now dropped from $30,000 to $10,000 to $5000. Some of the cost-reduction measures (beyond the probability that by now it has amortized most of its development costs) include using a less expensive lower-voltage lamp (whose lowest coordinated reference white color capability is D6500 versus D5500 with the previous lamp), and mounting all circuitry on one circuit card, instead of having daughterboards. This model supports HDMI v1.2, and cannot be upgraded. I do not know whether Sony has compromised the projector's lens quality (an image-quality factor that is more important than pixel count). I hope a reviewer will comprehensively test on-screen image quality so we can find out about that and so many other parameters that affect image quality.

Sony entered into an agreement with Stewart Filmscreen to exhibit this projector with the Stewart FireHawk screen (not the GreyHawk RS or StudioTek 130).

A projector and screen constitutes a system. You might be able to adjust a projector to give a better image on one screen, but not on a different screen material, due to screen color (all whites are not equal), gain, color shift with angle, and so on.

Stewart Filmscreen (www.StewartFilmScreen.com) gave out a Brawn Consulting white paper, "Defining the Difference in Perforated Screens" (www.StewartFilmScreen.com/MicroperfWP.pdf) that includes a section on microperf versus woven screens, showing why microperf yields a better picture of higher brightness and effective detail, other factors being equal. It also addresses contrast, ambient light, video dynamic range, audio transparency, and the moiré effect from the interaction of regular perforation spacing with the rectangular structure of pixelated projectors. Stewart has found that for different image sizes and pixelated resolutions the perfect angle ranges from 8°–26°, the best compromise is to angle the perf pattern at 17° from vertical, almost perfectly eliminating the moiré effect at all home-theater-image sizes and pixelated resolutions; this is not a visible factor with CRT projectors.

Goo Systems (www.GooSystemsUSA.com) makes a paint-on projection screen, a "specially formatted, highly reflective acrylic paint [that] allows one to transform any smooth paintable surface into a high-performance projection screen" (from the press release). It comes in three base colors—

CRT White, Digital Grey Lite, and Digital Grey—which are painted over with one of five top coats—the same three as the base coats, plus Ultra Grey and Ultra Silver 3D. The company even has a version that you can use on glass to produce a rear projection screen. There was no data that guaranteed a D6500 screen color.

Just Lamps (Williamsville, NY; www.JustLamps.US.com) sells OEM projector lamps (no third-party items) for video projectors (not for film projectors).

PROCESSING IMAGES

Silicon Optix (SO; www.SiliconOptix.com, www.HQV.com) held a press event in the Denver Center for the Performing Arts' Seawell Ballroom, where they displayed a number of manufacturers' products that incorporate SO's HQV processor chips. They clearly chose the setup and source material to look exciting, not accurate, and to ensure that it was impossible to make a fair evaluation of their processors' performance. SO's HQV Benchmark DVD is well worth using to evaluate DVD players and displays, and is available on the HQV website.

HD DVD versus Blu-ray is still a hot topic, and there is data that hasn't been readily available to the public that could affect perceptions. HD DVD titles are encoded using Windows Media Video 9 (WMV9, the basis for SMPTE's VC-1 video encoding standard). Until now, Sony's Blu-ray releases have been encoded with MPEG2. Warner is releasing three Blu-ray titles using WMV9, which is also allowed by the Blu-ray specifications.

The MPEG2-encoded video, even at more than twice the average bitrate used to encode the same video in WMV9, will not look as good. It is not

possible to fairly judge the quality of HD DVD versus Blu-ray until the same material has been encoded for both discs using the same encoding at the same bitrate. Sony seems to be stalling in its willingness to use WMV9 on its Blu-ray titles, possibly because the much higher data compression available by using WMV9 versus MPEG2 will result in at least the same picture quality yet require much less data storage space, thus all but eliminating one of Sony's primary arguments for not merging Blu-ray with HD DVD into a single format: that the HD video files need so much more storage space that they won't fit on HD DVDs without compromising image quality.

Texas Instruments treated us to a digital cinema viewing of "Superman Returns" at the local Regal/United Artists theater. The image was generally nice enough. However, there was serious twitter on the opening and closing credits. The black level was too high—possibly from too bright a lamp setting in order to make the white areas jump off the screen. My impression was that 2K was not high enough resolution for this film on this large a screen to hide digital cinema artifacts. On the sound side, the bass balance was off; orchestral music did not have the John Williams (and John Ottman) lushness, and the sound was a bit shrill.

Logitech showed its Harmony 880 ($250 srp) and 890 ($400) Advanced Universal Remotes (www.HarmonyRemotes.com), which can be programmed via IR learning from an existing remote, or over the Internet using the company's WebWizard on your PC. The 890 includes RF wireless to facilitate control of Z-Wave devices in a cabinet or another room.

Lexicon's (www.Lexicon.com) new MC-12HD ($10,000-14,000 depending on configuration) is a great digital

surround processor (I enjoy using its predecessor, the MC-12) that has HDMI v1.2 switched inputs and outputs, which cannot be upgraded to fully comply with the recently issued HDMI v1.3 specification (it is highly unlikely that there would be any benefit from doing so in the near future). It also includes a "broadcast-quality analog video switcher [that] accepts high-quality NTSC, PAL, and SECAM video signals, with up-conversion to component video" (from the press release). Lexicon's new ZX-7 (300W per channel; $8000), RX-7 (200W per channel; $6000), and GX-7 (125W per channel; $3000) seven-channel power amps are made by ATI.

CoolIt Systems (www.CoolItSystems.com) makes MTEC refrigeration-technology add-ons to cool PC processors quietly and effectively, without noisy high-speed cooling fans or large radiators. Manufacturers should seriously consider this technology for use in surround processors, panel displays and amplifiers, because these devices generate a lot of heat that needs removal, quietly.

AUDIO NOTES

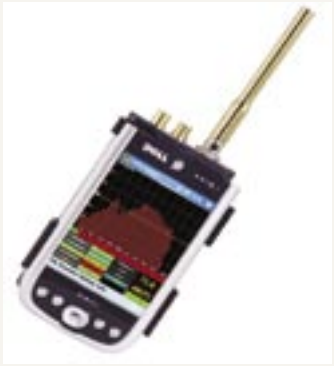
Smyth Research (www.Smyth-Research.com—site still under construction; Camarillo, CA) demonstrated a system to enable you to hear, over your own earphones, the same sound field (two-channel or 5.1-channel) you hear in your prime seating location in front of your speakers. The design is now in a product: the Yamaha Surround Virtualizer, which has analog inputs for up to 5.0 channels, and a SmartCard slot so each user can have his/her own custom optimized settings.

Quiet Solution (www.QuietSolution.com) makes a variety of sound controlling construction products such as QuietGlue construction adhesives and QuietRock drywall, plus QuietWood, QuietHome windows, QuietFoam, QuietTile, and so on.

Sound Sense (www.SoundSense.com) is an acoustical consultancy whose founder Bonnie Schnitta (PhD in DSP) started a second company—NoiseOut Essentials (www.NoiseOutEssentials.com)—to provide simplified acoustical consultancy by phone along with standardized products, aimed at improving room acoustics without substantially altering the architecture or aesthetics, while not guaranteeing perfect solutions. The customer, or custom installer, receives (from the press release) "a free consultation with trained acoustic engineers" in the US. The engineer collects relevant information from the caller about intended room use, size, shape, and characteristics; and then suggests a specific amount and group of their standardized products—"acoustic pillows, wallpaper, artwork, lampshades, moldings, baseboards, door frames, and other standard design elements that can be combined to help eliminate acoustic distortion and unwanted reverberation, thus restoring and preserving tranquility" (also from the press release).

The basis for their ability to use this approach is Dr. Schnitta's analysis software, and the quantification of each product's performance by a single number of NoiseOut Essentials Units (see their website or talk with their engineers for more details). This is an interesting approach that doesn't suggest perfection as the goal, but seeks to help those with limited resources to improve the acoustics in their listening space. They will be opening a demonstration loft in Manhattan, and I plan to investigate further.

Ivie (www.Ivie.com) has a new version of its sound analyzer—the IE-35. The former IE-33 was based on the Compaq iPAQ, which HP summarily discontinued. Ivie chose to work with Dell, and uses its Axim X51V (the top of this model's three versions, with



maximum memory and the fastest processor). The Axim has an SD card slot for data storage (a 4GB SD card is available from third-party sources for under $80). You can use the SD card with a PC for more sophisticated post-processing and analysis of the collected data.

Be advised that to directly connect the Ivie Axim (which runs Windows Mobile 2005) to a PC, the ActiveSync software requires the PC to be running Windows 2000 or WindowsXP. As with the IE-33, a shell into which the Axim slips has the mike preamps and audio connectors, including mike and line inputs. One difference is that this shell is powered from the PDA, so the larger-capacity 2200mAh battery is needed, and supplied if you buy the Axim and IE-35 as a system from Ivie.

The 640 × 480-pixel Axim screen is much clearer than that of the iPAQ, so is easier to read. The IE-35 includes all the normally expected functions, including optional RT-60 versus frequency, continuous averaging, seat-to-seat variation, NC measurements, signal output-to-input polarity, and even a 16-bit/4401ksps record capability (mono through the mike, stereo via the line inputs). Operation is surprisingly straightforward, but I will need to practice before it becomes easy. For those who want to use the Axim as a PDA, bluetooth and 802.11b wireless connectivity is built in.

IN THE CLASSROOM

With that in mind, in his excellent course "Learn to Listen," Fred Ampel made his point that objective sound system adjustment is not the whole answer to sound system calibration. You need to use your ears. Ampel rightly pointed out that the microphone(s) of an automated EQ/calibration system hears the direct and room sound without adequate differentiation, unlike humans. If the room is even reasonably live—plus speaker radiation and/or room reflections/reverberation aren't uniform versus frequency—the measurement and resultant adjustment will be wrong. He noted that many systems try to fill in frequency response dips, which requires a lot of power and speaker output (although some systems limit the amount of boost). Remember that a mere 6dB boost requires four times the power, so it is generally impossible for this effort to be successful. He subjectively judges a system's Reality Creation Quotient (RCQ), which is his sense of how much the listener becomes lost in the sound and *believes* the sound field created. He uses film soundtrack excerpts with before-and-after adjustments of speaker time correlation and EQ to effectively and simply demonstrate his thesis. All CEDIA attendees should take this course, which addresses a key point of why we buy and use sound systems for music and movies.

As always, the courses are the greatest values gained from attending CEDIA. "Digital and HD Video Distribution," this year presented by Extron's (www.Extron.com) Steve Somers, provides a wealth of information about bandwidth requirements and cable characteristics needed to prevent deterioration of image quality. Bill Whitlock (www.Jensen-Transformers.com) gave an updated "Understanding, Finding and Eliminating Ground Loops." Anthony Grimani (www.PMILtd.com) presented several courses related to home theater architecture, acoustic treatment, and sound system design and calibration. Don Stewart, of Stewart Filmscreens, talked about film screen technology. Michael Heiss brought us up to date on the industry and technology in his entertaining "HDTV Improv." Joel Silver, Imaging Science Foundation (www.ImagingScience.com), gave two courses on video calibration—current and future (ISF is working on some advanced calibration technologies)—and informed us of the "Pitfalls of Digital Video." Floyd Toole (www.Harman.com) guided us through his research findings about "Theater Loudspeakers" and on the interaction of "The Room and the Loudspeaker," which included advice on the benefits and placement of multiple subwoofers.

CLOSING THOUGHTS

The other consumer electronics industry direction made clearer by the exhibits and courses was interactive TV, as well as Internet connectivity through PC-centric home entertainment and whole-house control systems that go far beyond entertainment to include lighting, security, HVAC, and so on.

The prize exhibit of this concept was the Lifestyles house, across the street from the convention center. We were told of the millions of homes with some integrated networking, and the presenter extrapolated from that to high demand for the concept. I question how many of those early-adopter homeowners use most of the capabilities already installed, or want them. The talks made far too much of the ability to create what we in computers call subroutines or macros (and what they call scene control); from experience I can tell you it's not that complicated, if the programming language is designed right. The house used Exceptional Innovation's LifeWare software for system integration and control.

Bang and Olufsen was highlighting their media server, which includes automatic software adjustment of brightness and contrast frame-by-frame, as well as based on ambient light level, resulting in dynamic compression (obviously distorting the image, but making it more viewable for the average non-critical consumer).

Clarity Visual Systems (www.ClarityVisual.com), now owned by Planar, showed a very nice video wall that used its server and processing to improve the uniformity across a single screen and across a wall of screens.

The Denver convention site was easier to navigate than Indianapolis' center, but there seemed to be just as much trouble connecting to my cell service. There are more hotel rooms

closer to the convention center than in Indianapolis, making access easier for more attendees. As always, the CEDIA Expo support staff was exceptionally helpful, making this yet another good convention experience.

The best industry improvement would be if the buzzing stopped, and was replaced by a symphony of information that would let us clearly see the whole picture. **M³**

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