

solid state

NTSC Video Fulfilled: POOGE Works For TVs Too

By Darcy Staggs

In past issues of *audioXpress*^{1,2,3} I chronicled the changes made in an NTSC TV and consumer-grade DVD player, claiming that this work resulted in “fully realized” NTSC imagery. Here I offer photographic examples to illustrate this application of video circuit enhancement through Progressive Optimization of Generic Electronics⁴ (POOGE).

The images presented come with the kind permission of Joe Kane, producer of the DVD from which they are reproduced, *Video Essentials*⁵, which I recommend to anyone interested in accurate video reproduction. It has helped me with every phase of monitor convergence and proper adjustment.

The DVD player is connected to the 27" Zenith TV set auxiliary input with a coax cable carrying a composite signal, meaning all video must pass through the TV's comb filter to be separated into chroma and luminance. I have disabled the set's discrete 3.58MHz color sub-carrier filter and turned on the equivalent filter built into the video processor with noticeable improvement. Newer TV sets offer

component and/or S-video (separate chroma, luminance) inputs which bypass the comb filter, resulting in improved sharpness.

GRAPHIC EXAMPLES

Photos 1 and 2 are presented as examples of color rendering. The processes of film photography, scanning into a computer, and printing the image in a magazine have affected color accuracy. From my couch, however, colors are pure and brilliant enough to elicit a strong emotional reaction from me and my guests.

Photos 3 and 4 indicate the kind of sharpness now present. However, all photos were made from moving subjects containing dithered video, so viewed sharpness appears better than shown here.

PURPLE PROSE

Improvements in image quality can be summarized in text, although words can't really convey the sensation of a brilliant picture on a CRT screen. Notwithstanding, I offer the following:

Sharpness – easy to follow during

the modification process. Removal of halos as well as the arrival of natural edges appear as sharpness. Truly fast capacitors and the elimination of noisy electrolytics are the main contributors.

3-D Shading – the tonal gradation of light and shadow across a 3-D object has replaced a “cookie cutter” quality the image once had. Cinematographers excel at their trade, and generally expose each scene with only the tiniest areas bleached white, only a small part of the subject totally black, exploiting the entire contrast ratio of the film, screen, CRT, and so on.

Color – it always struck me that it shouldn't be impossible to combine three primary colors in a CRT and come up with some really good ones. It's happening now. The best colors are from nature, where flowers, sky, people, and other familiar objects are rendered. Live TV broadcasts can be stunning; for example, field reports from a doughnut shop, where the close-ups of fresh goodies look irresistible, sprinkles and all, and from awards nights and sports broadcasts, which also offer accurate live color.

It took a while before certain colors “came online,” particularly yellow and orange, which began as very anemic and washed out, finally bursting forth.

PHOTO 1: ENHANCED COLOR SAMPLE (1).



PHOTO 2: ENHANCED COLOR SAMPLE (2).



PHOTO 3: ENHANCED SHARPNESS SAMPLE (1).



The precise summation of primaries does the trick.

Transparency – between objects in an image is clear air devoid of fog or subtle, grainy noise. This contributes to the realism of an image. Live broadcasts look truly amazing with this quality, with DVDs a very close second.

Snap – you could argue that turning up the contrast would yield this improvement in transient response, but this isn't the case—it's only the peaks that needed help. The line cord and improved power supply and signal caps make nighttime scenes look very realistic. Neon signs, street lighting, and so on look very sharp and brilliant, with a searing, pinpoint light and precise, vibrant colors.

Tonal Gradation – subtle variations in color and its intensity add just as much

PHOTO 4: ENHANCED SHARPNESS SAMPLE (2).



detail to a scene as detail of physical size. Architectural photography, clothing, automobiles, and so on look much more interesting with this improvement.

CONCLUSION

Here you've seen a small taste of the video facet of electronic upgrades. Except for working with surface-mount devices, this effort was no more difficult than past audio efforts, and certainly yields enduring pleasure. I have applied nothing more than the audio POOGIE principles appearing more or less continuously in this magazine, and meanwhile have learned many interesting things about TV⁷ and DVD technology. **aX**

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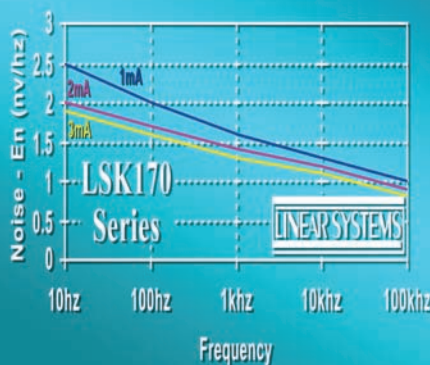
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1. "A DVD Rescue," *audioXpress*, July 2002, p. 24–27.
2. Guest Editorial, "Detrashing Television," *audioXpress*, June 2003, p. 4.
3. Xpress Mail, "Capacitor Violence for the Unintimidated," *audioXpress*, July 2003, p. 67–68.
4. The POOGIE series was published in *The Audio Amateur*, 1/81, 4/81, 4/85, 1/88, 2/88, 2/92, 3, 92, by Walt Jung, Chuck Hollander, Dick Marsh, Gary Galo, and Hampton Childress.
5. *Video Essentials, Optimizing Your Audio/Video System* (DVD), Joe Kane Productions. This is the NTSC version, highly recommended, but out of print. A new version is available, entitled *Digital Video Essentials*, <http://www.videoessentials.com/>.
6. Photos were made in a darkened room on 120-size Kodak Porta 160 NC color negative film with a Rolleicord V equipped with a 75mm F3.5 Schneider-Kreuznach Xenar lens. The light meter is a Weston Master 6. Prints were made by Technics Photo Service Inc., Orange, Calif., on 6" x 7" Kodak printing paper.
7. Useful TV reference data is found at: <http://www.ntsctv.com/ntsc-index-01.htm> (an authoritative source of the NTSC broadcast television signal format standards), <http://www.arcadecontrols.com/files/Miscellaneous/crtfaq.htm> (informative CRT technology discussion), <http://www.cybertheater.com/> (rich source of introductory-to-intermediate level NTSC video technology), and <http://www.smpte.org/> (official site of the Society of Motion Picture and Television Engineers).

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