ONE INSTALLER'S OPINION

THIS CHANGES EVERYTHING ... (ABOUT CALIBRATION)

By Terry Paullin – July 2010

Some may read this as a blatant commercial for SpectraCal. It is not. What follows is a short, informal treatise on the state-of-the-art of display calibration, what a calibration client should know and how it may affect you.

Here's the thing.

Readers of this magazine have long been about examining the best of audio and video ... ... if not for their own consumption, then just to better understand how various Home Theatre products get to be "the best that they can be". Regular readers of video product reviews in these pages have come to understand that NO display product can fully realize its potential until it has been calibrated in the environment in which it lives - perhaps your living room.

Clearly, not all display devices calibrate equally well. There are several factors that impact the end result, not the least of which is how good the "ingredients" are in the subject product to begin with (if the color gamut of the primaries is insufficiently large, no amount of CMS can restore correct color rendering). Even assuming proper set design, unless the calibrator can get to certain adjustments, the set may be doomed to remain mediocre when the availability of said "tweaks" could have made it great. That's why, before you buy, you should talk to someone who calibrates on a regular basis to get advise as to which of the new models are most "calibrate-able" (no, Webster hasn't cataloged that one ... yet).

Which gets us to the topic of Joe calibrator. As you might expect, it matters how much experience comes to calibrate your display. As we say in class, "Good calibration is 90% Science and 10% Art". The Art is having done 100 each of various make PDPs and LCDs and understanding the greyscale behavior of each and perhaps a "trick" or two to taming each. With today's proliferation of technologies (lamp based DLP. LED based DLP, laser based DLP, lamp based LCD, LED based LCD, block and edge lit LED based LCD, LcoS and Plasma), I'm thinkin' were moving to 80/20.

Lastly, even the best calibrator is limited by the tools in his hands - which gets me to the message of this month's column. The tools with which we ply our trade have gotten a whole lot better recently, which will eventually translate to an even better image on your screen - indeed, to cite the WSR mantra, "the best that it can be." It's a happy coincidence that things have evolved in the calibration business just about the time they are sorely needed, or maybe it's not a coincidence at all.

In the last two or three years both on-board and out-board products have been offered to enthusiasts (mostly through custom installers) claiming a suite of adjustments labeled CMS. Notable display on-boards LG and JVC and out-boards Lumigen, DVDO and most recently, A/V Foundry have paved the way.

CMS stands for Color Management System and has everything to do with "managing" the adjustments that impact display color and luminance. Specifically, these parameters go by the names Greyscale, Gamma and Gamut. To one degree or another, they all affect each other, so getting all the adjustments to work together, without the aid of some sophisticated software is a bit like playing whack-a-mole. Indeed, I know some pretty good calibrationists (still taking notes, Webster?) who, without the aforementioned compute assist, tend to get things as close as they can in the confines of a couple hours and call it good. Is the set better than when they walked up to it? You bet. Is it as good as it could be, given a better tool set? Probably not close.

Enter SpectraCal's CalMAN calibration software.

This software brings so much to our calibration party, it's hard to know where to start. Perhaps the best feature is it's inherent ubiquitous nature. It can be used with almost any collection of reasonably current calibration equipment. You essentially specify one from each food group - color analyzer, signal source and display technology. In a nutshell, what CalMAN does is coordinate the action between these boxes in a very controlled, efficient way and displays the results of an automated session in a host of ways. We have all interacted with enough "machines" through a s/w interface that we appreciate a well thought out graphic interface versus one that takes a computer science grad to figure out. CalMAN gives us a variety of graphs and charts with both absolute and variance from a pre-determined target metrics. All one has to do is observe the results of the first pass, make an appropriate adjustment to the display and initiate another pass for a complete update to see the result of his most recent "tweak".

A more important thing for anyone contemplating calibration (I assume that's the entire readership, sans those who have already stepped up) is that this level of software support can raise everyone's game, not just the power users. CalMAN provides a very structured workflow, so that those new to calibration won't "forget" a step or get them in the wrong order - something that happens more than it should and since the re-do is so painful without these tools, many calibrations are left with a rationalization that they will just have to be "good enough". With the CalMAN software one would have to work at it to be out of order. Another benefit for the "Newbies" is that whatever step you are on, there is a tutorial on the right side of the screen that explains the imaging science behind that particular measurement.

Finally, it's not just expediency, precision, structure or comprehensive reporting that CalMAN brings to the table. We now have a way to quickly measure an important parameter that we previously had to guess at with a subjective call. Specifically, Gamma. Gamma, you will recall, is a measure of a display's light output as a function of a unit of drive. You may also recall that

gamma needs to be non-linear to emulate the venerable CRT, upon which mountains of video content was recorded for. Many modern day displays give the user a choice of gamma settings in the user menu. You may even know that in order to "come out of black" at the desirable rate, we might select a gamma of 2.4 in a pitch black dedicated theatre as opposed to a 1.8 selection for the sunroom. But what if the gamma choices are labeled A, B, C, and D (seen it) instead of a numerical metric? Or even if they are conventionally labeled, is 2.2 really 2,2? ... or is it closer to 2.4 and therefore you should really select 2.0 ?? In less than 30 seconds CalMAN will make a series of measurements and give you the right answer. During set-up, is your meter positioned to take in the maximum light output off the screen? As part of the directed workflow CalMAN causes you to make this check and facilitates with a rapid on-screen light output reading while you maneuver the tripod into just the right place.

The nuances of this software are just too numerous to recount here. Just know that when equipped with it, the previously daunting job of getting everything right in less than a fortnight, especially in the new world of working CMS, has been corralled, tamed and made nearly foolproof ... oh wait, there is no warning to remove the lens cap. I'll have to write up a bug report!

The bottom line is, the state-of-the-art of display calibration has been significantly pushed forward by software provider SpectraCal. Given the current state of both display products and calibration tools, movies and prime time HDTV has never had a chance to be better. Buy products with the right "tweaks" and then hire "tweakers" with the right tools. Put them together in a room for a couple hours and you can NOW expect the viewing to be the best that it can be.