



Hancock Technologies

5 Norbrook Rd.
Fairport, NY 14450

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John Doe
5 Main Street
Fairport, NY 14450

Dear :John

Enclosed are the calibration documents that I promised you for your Sony KDS-60A3000 set.

- Calibration Results – C.I.E. Color Coordinates
- Calibration Results – Color Temp
- Calibration Results – Luminance/Gamma
- Recommended Settings

The objective of the calibration of a television monitor is to make that monitor perform, as closely as possible, to the standards used by television and movie producers – SMPTE (Society of Motion Picture & Television Engineers) for the monitors that they use for producing and transferring video content (TV programs or DVDs of movies). There are very specific standards for this, which are usually quite different than the goals that television set manufacturers have in order to “sell” TV sets in a competitive environment.

Gray Scale: The most difficult to achieve standard is proper gray scale reproduction: achieving a neutral gray throughout the brightness range. It is important to have the proper color (or lack of color) background for the “canvas” that the colors of the picture will be applied to. The “standard” chosen is basically that of daylight (under certain conditions). As I have previously explained, any color can be represented by a point in a three dimensional space – shaped somewhat like a football. The long dimension (“Y”) represents brightness, and a cross-section (“x” and “y”) represents the color.

When calibrating gray scale reproduction (gray scale tracking) I strive to get all levels of gray to be as close to the standard CIE values ($x=.313$, $y=.329$) as I can. Ideally, this would result in a color temperature of 6485 Kelvin (often shortened to 6500 Kelvin or D65). Your set was closest to this standard in the “Warm 2” Color Temperature setting. With this setting it was still a little blue near 100IRE (white), becoming a bit green in the darkest gray, as can be seen on the pre-calibration x-y chart. This is reflected in the color temperature chart, which shows 100IRE (white) being around 7000K, and dark gray (10IRE) becoming a bit warm (5650K). After calibration, your set is much more uniform and represents one of the best gray scales available today in any technology.

Geometry & Overscan: Your set had a very slight tilt (0.7%) observable in my overscan test patterns. Correction of this requires mechanical adjustments in the rear of the set, and would likely result in an equal or greater tilt in the other direction. We decided not to adjust this. The image was otherwise centered properly and overscan was 3%, which is typical of LCoS or DLP RPTVs.

Convergence: I checked convergence on your set. It was very good and required no adjustment (though convergence adjustments are somewhat limited on this set)

Peak White Levels: Digital displays are critical regarding peak white levels; it is easy to set the “picture” too high, resulting in clipping of highlights. I checked this on your set and determined to optimum peak white level setting (labeled Picture). As is typical of Sony sets, the maximum setting does not result in clipping. I recommend a setting of 95 on cable and 92 on DVD (that results in the same light output with a 100IRE pattern on both inputs). You also had set the POWER SAVE to ON and the Advanced Iris at Auto 2. I did my calibration with POWER SAVE ON. Many of my tests were done with the Iris at Maximum to avoid false readings introduced by the Iris operation. I do recommend the Auto 2 setting but suggest Auto 1 or Maximum in situations where you want a brighter picture (such as a very sunny day with lots of light in the room).

Gamma: SMPTE standards call for the display Gamma (a measure of contrast) to be at 2.20. Your set initially had a gamma of 2.1. I changed the service menu setting for this to achieve an average gamma of 2.20 as can be seen on the attached Luminance-Gamma charts.

Software Upgrade: The Cnet review (and subsequently other reviews) of this set discovered that horizontal resolution was reduced in the Custom and Cinema modes. Sony has made software update available which I installed. The impact of that upgrade was immediately visible. During the course of calibration I also discovered that there was an artificial edge enhancement in the Standard mode for 720p signal sources. This “enhancement” was not present in Cinema or Custom modes. Because the Cinema mode makes the color temperature about 500K warmer than the calibrated setting, I am recommending that the Custom mode be used.

“Enhancement” Items: Most of the enhancement items on your set should be OFF, as shown on the Recommended Settings chart. I did find that using your Oppo DVD player that there was a slight improvement when Detail Enhancement was set to low

Color Decoder (Color Push): I checked color demodulator accuracy. Initially your set had +24% Red “push”, while Green was 0%, and Blue at +22%. By adjusting the Color control I averaged this out for Red +8% (considered good), Green -6% and Blue +4%. The actual color coordinates (x-y measurements) on your set were excellent. The Sony A3000 clearly is the most color accurate set made to date.

Recommended Settings: My Recommended Settings chart shows the settings that I determined to be optimum with standard test signals (my Accupel HDG3000 high definition signal generator and calibration DVDs in your DVD player). Unfortunately, real programs do not always absolutely conform to standards and may benefit from some adjustment. My recommended settings should be treated as a “starting point”.

I hope that you enjoy your calibrated set. Please feel free to contact me if you have any questions.

Sincerely,

David S. Hancock