LG

IDEAlliance **Off-Press Proof Application Data Sheet**

LG Electronics Monitor Proofing System with LG W2420R Display and Adobe Acrobat 8 Professional for GRACoL Coated #1

The IDEAlliance Print Properties Working Group has established a certification process for off-press proofs as input material to publications. In accordance with this process: "The appearance of a hard copy or monitor proof used in this application must have the ability to closely match specific CGATS or other documented characterization data sets within outlined tolerances." See further explanations and recommendations outlined on www.swop.org or www.gracol.org.

NOTE: It is important for the industry to understand that performing certification on any one display with any one monitor proofing system does not necessarily guarantee the same result on a different display of the same model of monitor. IDEAlliance notes that each monitor of a particular brand and model is unique. That is, for any given brand of monitor, while our experience in certification shows that while most displays pass the ISO criteria, an individual monitor may fail the ISO criteria due to manufacturing issues or may fail at some point in the future as a result of use. IDEAlliance therefore recommends that in addition to calibrating each monitor routinely, users should also verify the uniformity of the display over time as well. The monitor proofing systems vendors have agreed to provide a monitor uniformity test with their system and over the next 12 months will implement software to automate that process for users.

The following information is intended to assist producers and consumers in the use of vendor specified proofing materials in an off-press proof application:

I. Manufacturer

LG Electronics Inc.

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Gumi, Gyungbuk, 730-727, Korea
Tel: +82-54-470-5835

Certified on 05/29/2009

II. Product

LG Electronics Monitor Proofing System with LG W2420R Display and Adobe Acrobat 8 Professional for GRACoL 2006 Coated #1 Printing.

III. Introduction

LG's new Professional LCD monitor, W2420R, is designed for professionals who need to manage their colors accurately. Its 24-inch RGB LED backlight wide screen supports more than 1 billion colors. It provides a vivid and uniform display, wide color gamut that is 135% wider than NTSC specification, and more than 90% in uniformity. It also covers the wide color gamut desired by customers, reproducing soft and rich colors in 30-bits, supporting S-IPS panel, and 12-bit LUT

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gamma correction.

The features listed above and LG's own Hardware Calibration Software, True Color Finder(TCF), provide a good proofing performance for actual printing color using Adobe Acrobat 8 Professional.

IV. Control Guide

IDEAlliance specifies a control guide such as an ISO 12647-7 Digital Control Strip 2007 be supplied on every off-press proof. As a minimum, the guide used for proofing applications should contain solids for the primary process colors (YMCK), two-color overprints (RGB) and a three-color overprint (YMC), as well as 25%, 50%, and 75% tints in stated line screen resolution of each of the primary process colors and 3-color gray patches. All control guides should be checked for accuracy of the original values. Use and interpretation of a control guide is the responsibility of the creator.

V. System Components

The components listed below are used for LG Monitor Proofing System.

Software:
- LG True Color Finder V1.0.0 or later.
- Adobe Acrobat 8 Professional.

Hardware:
- LG W2420R LCD Monitor.
- Windows PC: Windows 2000, XP or Vista is installed.
- Mac: OS X Version 10 or later is installed.

Measurement Device:
- X-Rite Eye-One Pro for monitor Calibration and Proofing Verification of the W2420R.

VI. Finishing Procedures

1. Setup the Display.
   - Turn on LG W2420R monitor and start the computer. It is recommended to warm-up the monitor for more than 30 minutes.
   - Start LG True Color Finder 1.0.0 or later. Check and confirm that X-Rite Eye-One Pro is selected as the measurement device.
   - Click the Calibration icon and set the color target with 160cd/m2 for luminance, 5000K for white point, gamma 2.2, and native black point.
   - Click 'Start' button to initiate monitor calibration. It takes about 6 minutes or more.
   - After the calibration is completed, click 'Save' button to apply the current color setting.

2. Start Adobe Acrobat 8 Professional.
   - Install Adobe Acrobat 8 professional in the operatiing system.
   - Download the GRACoL Coated #1 icc profile from the link below and extract to a temporary folder.
     http://idealliance.com/industry_resources/branding_media_and_color/swop/resource/swop_downloads
   - Copy the "GRACoL2006_Coated1v2.icc" profile from the temporary folder to the folder shown below.
     For Windows PC → "C:\Program Files\Common Files\Adobe\Color\Profiles\Recommended".
     For Apple Mac PC → "/Library/ColorSync/Profiles"

3. GRACoL Coated 1 Simulation
   - Open the document file in Acrobat 8 Professional on the calibrated monitor.
   - Select the menu as "Advanced" → "Print Production" → "Output Preview…". Enable the Checkbox of the "Simulate Paper Color". Do not close the "Output Preview" dialog.
   - Then the document will be simulated to the GRACol Coated #1 Proofing condition.

VII. Finished Proof Characteristics

A proof with the color characteristics referenced in Appendix 1 is to be expected when measured from theIDEAlliance ISO 12647-7 Digital Control Strip 2007 having been properly made to all the listed system components and procedures.

Note: Three-color grays are comprised of Cyan, Magenta, Yellow: 75, 66, 66; 50, 40, 40; and 25, 19, 19 values.

An EyeOne Pro spectrophotometer was used to perform the measurements.

True Color Finder (TCF), LG's own Color Management Software for Hardware Calibration, support the simple verification procedure for color proofing state for GRACoL-2006 Coated #1 standard. User can find the verification menu by selecting 'Tools' → ' GRACoL -Test' in TCF as like 1st picture of below. This menu does automatic measurement procedure. If user presses the 'Start' button, TCF shows the 54 color patches of IDEAlliance Control Strip CMYK and measures the color with proofing state. After measurement is completed, user can make the report by pressing the 'Save…' button. Then TCF shows the deltaE values with compared with the reference data of Appendix 1 and is shown in Picture 2 by pdf format. It is expected that all of the results are 'OK' on all criteria. If any one failed, user needs to repeat from Step 1 in 'VI. Finishing Procedure' and restart the verification procedure.

We suggest that user makes the environmental luminance be under the 32 lux for monitor calibration and verification for proofing state.

<Picture 1. GRACoL Test menu in True Color Finder>
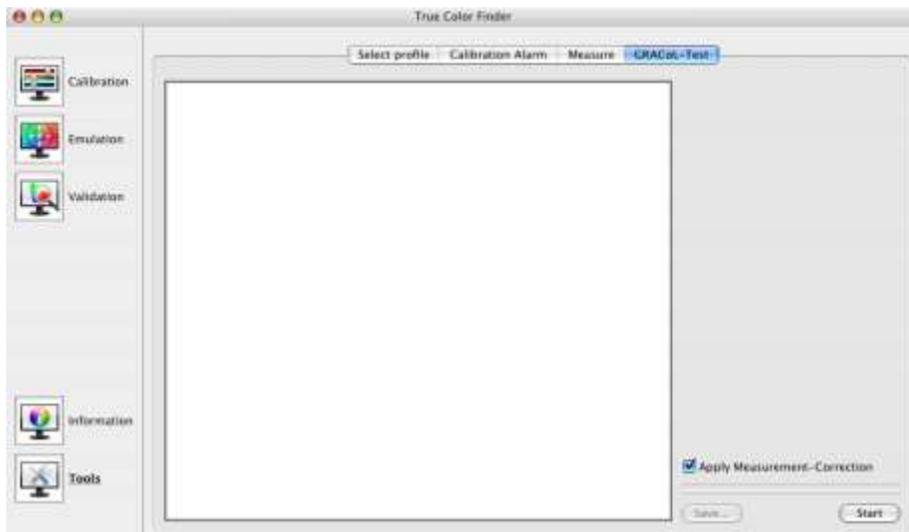
TrueColorFinder GRACoL-Test Report

Date: 2009-7-1 15:09:03
Profile: /Library/ColorSync/Profiles/01.07.09-5000K-22-160cd.icc
Reference: GRACoL2006_Coated1v2.icc

Result:

Test	Result	Tolerance	
Average	1.0 dE00	2.0 dE00	ok
Solid/Overprint	2.3 dE00	7.0 dE00	ok
Paper White	0.1 dE00	3.0 dE00	ok
50/40/40 Gray	0.6 dE00	3.0 dE00	ok
95th percentile	100 %	6.0 dE00	ok

<Picture 2. The Verfication Result compared with the Reference Data>

VIII. Sample Proofs

LG Electronics Inc. has made this Application Data Sheet and the corresponding monitor proofing system available to the IDEAlliance certifying contractor to perform independent, corroborating measurements in the course of certification.

Appendix 1

Characterization Data CIELab Values

IDEAlliance ISO 12647-7 Digital Control Strip 2007 for GRACoL 2006 Coated #1

Patch ID	CIELab Data			Maximum	Patch ID	CIELab Data			Maximum
	L*	a*	b*	∆E -2000		L*	a*	b*	∆E -2000
A1	30.05	-22.65	-28.82	-	B1	15.18	8.84	-24.61	-
A2	54.96	-37.12	-50.00	7	B2	24.13	17.20	-46.14	7
A3	66.60	-25.13	-37.01	-	B3	40.84	17.09	-35.77	-
A4	82.64	-9.99	-17.85	-	B4	69.57	8.37	-19.26	-
A5	26.45	41.59	-1.73	-	B5	26.22	35.38	24.54	-
A6	47.93	74.11	-3.01	7	B6	47.37	68.25	48.79	7
A7	60.35	51.93	-5.67	-	B7	59.09	47.55	39.25	-
A8	80.03	20.38	-5.35	-	B8	78.62	17.92	18.20	-
A9	48.53	-5.30	49.19	-	B9	28.47	-39.38	12.04	-
A10	88.94	-5.02	93.17	7	B10	50.12	-68.43	25.00	7
A11	90.56	-4.57	63.58	-	B11	62.69	-41.44	20.96	-
A12	92.84	-2.51	24.77	-	B12	80.64	-14.75	8.25	-
A13	52.53	-53.19	-19.34	-	B13	42.57	-16.27	-48.19	-
A14	37.89	52.56	-22.07	-	B14	48.28	70.95	17.76	-
A15	70.88	22.91	72.40	-	B15	72.70	-25.21	65.09	-
A16	50.86	15.13	33.06	-	B16	70.23	19.71	18.63	-
A17	42.17	33.42	13.25	-	B17	53.40	36.61	28.63	-
A18	34.60	23.09	-17.15	-	B18	41.61	32.01	26.83	-
A19	52.45	-18.04	26.12	-	B19	45.40	-26.20	-3.82	-
A20	36.56	-1.43	-26.62	-	B20	95.00	-0.02	-1.96	3
A21	92.88	-0.08	-1.96	-	B21	92.43	0.19	-2.06	-
A22	87.93	-0.20	-1.98	-	B22	86.74	0.31	-2.04	-
A23	77.43	-0.40	-1.93	-	B23	75.52	0.07	-1.50	-
A24	59.77	-0.53	-1.61	-	B24	57.54	-0.12	-1.44	3
A25	39.75	-0.57	-1.02	-	B25	39.39	-0.30	-0.55	-
A26	25.57	-0.21	-0.53	-	B26	23.00	0.17	-0.25	-
A27	14.95	0.19	-0.14	7	B27	8.46	0.34	0.44	-

Note: Color is measured with a calibrated Eye-One Pro spectrophotometer.