

IPA Proofing Round UP 2009

Procedures and protocol

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IPA Proofing RoundUP 2009 – Procedures and protocol V3

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1. Introduction

The IPA Proofing RoundUP has been part of the IPA Technical Conference since 2001, excluding the 2008 conference. The procedure of the Proofing RoundUP has been refined over the years and went from visual tweaking by knowledgeable operators to proofing by the numbers as was demonstrated at the 2006 technical conference.

The 2006 results were ground breaking in that it demonstrated, for the first time, vendors were able to produce proofs within industry tolerances for visual match using just color management numerical techniques. In 2007 Proofing RoundUP vendors and users again submitted proofs of the digital test file prior to the conference. The vendors had no difficulties in achieving a very close match to the reference file by having an average ΔE of 1.01 from the target values, while the users had a surprising low average ΔE of only 2.21 from the target values. Since this appeared to confirm that the industry was fully capable of properly using proofing systems, the Proofing RoundUP was eliminated in 2008. But, anecdotal reports from users at the conference indicated that actual practice was still far from these potential results, and the RoundUP has been re-instituted for 2009.

Since the suppliers and users are still able to match the reference printing conditions it is necessary to focus on the actual state of proofing in terms of match to the reference printing conditions that is used in everyday business. As suppliers are able to routinely match characterization data, it is now of interest to explore other issues relating to color proofing, such as the ease of use of the ADS, the ability of users to achieve the same results as the experts, and the status of proofs being supplied by commercial proof providers, etc.

At the 2007 IPA Technical Conference a test was also done in regards to the ability of proofing systems to convey Pantone® spot colors. The proofs were compared to Pantone® color chips. While there was only a visual comparison, results seemed to support user reports that the proofing systems had the ability to match spot colors. There are however conflicting reports that, while initial spot color proofing meets user expectations, repurposing of those colors gives generally poor results. This will be investigated as part of the upcoming RoundUP.

Finally, through the advances of display technology it is now possible to have viable soft proofing solutions. The question is whether they can be held to the same tight tolerances as hard copy proofs. Obviously the controlling software can hold these tolerances, but the LCD display technology, which is the enabler of soft proofing solutions, introduces its own set of challenges. In this iteration of the soft Proofing RoundUP the conference participants will be able to see which colors pose



challenges to soft proofing and also that the type of LCD display being used can contribute to possible color challenges.

2. Procedure(s)

Here is a summary list of the proposed tests for the 2009 Proofing RoundUP;

Hard & Soft proofing – ADS Study

- Matching SWOP/GRACoL
- Grey Balance
- Step wedge
- Remote proofing
- Optical brighteners
- Multicolor proofing
- Spot colours (Pantone/Pantone GOE™)
- Marketplace survey of commercial proof providers
- End-User validation

3. Test descriptions

3.1 Hard & Soft proofing test procedures

3.1.1 Application Data Sheet clarity

An on-site live evaluation of the SWOP/GRACoL ADS. Can a trained user follow the ADS instructions and “pull” a proof that meets specifications? Is the ADS correct? Is the ADS and the software “in sync”? IPA team members will conduct the evaluation on-site with supplier guidance. Outcome: A better understanding of ADS usage and implementation and improvements in the ADS description and instructions. This test should address cases where incomplete or incoherent ADS documents are available.

3.1.2. Matching SWOP/GRACoL

A well established test that checks for a match to a reference printing condition. Suppliers provide a proof containing an IT8.7/4 target that should match GRACoL #1 or SWOP #3, etc. Justification: This is a “sanity-check” to ensure that commercial products are working as intended and that commercial products can still produce



proofs that form the basis of certification. The sheet should contain the IT8.7/4 and also standard images. These images should include saturated cyan colors so that in the soft proofing systems we can explore the advantages of extended-gamut displays. Possible issues in regards to the proofing piece will be documented only. Other control elements on the form besides the IT8.7/4 target will be the P2P target and the IDEAlliance control strip. For this test a test form, similar to that used in the 2007 RoundUP will be made available for download from the website associated with the proofing RoundUp. Suppliers/vendors will be asked to submit their proofs four weeks before the conference so the data analysis can take place and proper measurement procedures be established that will also be used for the user validation part of this RoundUP.

3.1.3. Grey Balance

In this test suppliers submit a proofing sheet that contains the P2P target. From this target we measure and determine compliance with G7. We ask the question if the proof meets GRACoL, but does it also meet G7? This is a very useful and relevant question to ask. It also highlights the difference conceptually between GRACoL and G7. The G7 process can be analyzed using the IDEALink Curve software analysis tool. The whole test will begin to determine tolerances for the G7 process, at the moment there is nothing that says “this proof meets G7”. The issue of gray balance is the underlying parameter, so this will be indicated by also using ISO 12647-7 tolerances for ΔH , hue difference between CMY and K. The P2P target is part of the testform described in 3.1.2, but only the proofs generated to match GRACoL #1 printing conditions will be evaluated. Since this test is part of the test in 3.1.2 the same time line for vendor/supplier submissions applies here as well.

3.1.4. Step-wedge

The use of the new IDEAlliance ISO 12647-7 2007 Color Control Strip will be evaluated. Does measurement of this strip ensure GRACoL compliance? Are RIPs able to interpret the decimal values in this file? If you pass the control strip test, do you also pass the full 1617 patch test? How useful is the control strip in verifying a compliant proof? The IDEAlliance ISO 12647-7 2007 Colour Control Strip is part of the testform described in 3.1.2. therefore the same timeline applies here as well.

3.1.5 Remote proofing

Proofing is also done at different sites. The proofing of the same test file but with different devices is part of this test. This test also looks at consistency across different locations. This relates to the situation of a printer and also the customer both having the same proofing solutions and being able to “pull proofs”. If the suppliers agree, this test can be made more challenging by matching their proofs with different devices, e.g. the suppliers can use an Epson 4800 and a HP designjet. This test is also viable to compare wide-gamut displays (i.e Eizo) and other high quality LCD-displays. For this test the testform described in 3.1.2 will also be used.



Vendors can ask customers with various sites across the continent or across the world to proof the testform and submit it a week before the conference to the IPA. The evaluation will take place during the conference since the measurement procedures have been established.

3.1.6 Optical brighteners

This test evaluates a proofing system's ability to match a press sheet with optical brightening agents (OBA). All commercial press sheets contain OBAs, in color management we create a false situation by removing UV light and the effect of OBAs. This is not realistic. Suppliers are asked to match a presssheet that contains OBA's. A standard press sheet will be printed at Ryerson University on a coated paper with high OBA. Proofing suppliers will be asked to use any technology/solutions at their disposal to create a match to this press sheet and document the tools/techniques used to achieve a good result. Suppliers are asked to submit a proof generated without UV compensation and with UV compensation. Since the testform contains the IT8.7/4 target a profile both profiles will be compared to the profile from the press sheet. A lower average ΔE value between press sheet and proof will indicate a better match. Measurements will be made with UV included.

The proof will be visually compared to the sheet under standard D50 lighting conditions. Conference attendees can evaluate the influence of OBAs using the JUST Normlicht LED light booth which enable to add or subtract UV light from the viewing light source. The vendors partaking in this test need to document:

- the OBA content in the inkjet media
- the tools used to correct measurements
- any filter settings used in the measurements.

The brightness of the papers (press and proof) will be evaluated using the TAPPI 452 method that measures the brightness at 457 nm and CIE Lab measurements with and without UV included.

Outcomes: a very interesting practical test that helps explain to the community the challenges of OBAs in proofing and printing paper. This test is applicable to both hardcopy and softcopy systems.

For this test the testform described in 3.1.2. will be printed on the Printmaster PM74 press at the School of Graphic Communications management. Vendors/suppliers who wish to participate have to state their intent by [DATE]. The press sheets will be sent to them via FedEx or UPS. They vendors/suppliers have [AMOUNT] weeks time to return the proofs to the School of Graphic Communications Management for evaluation.



3.1.7 Multicolor proofing

Use of multicolor (CMYK + 2 or 3 special colors, or extended ink gamut set), for packaging applications. The special colors in inkjet printers makes this a relevant investigation since inkjet proofing systems can use up to eight colors. It is possible to examine those systems that may be using spectral mixing methods or some other form of mathematical mixing between the 100% solid and the tone scales. Some systems are based on spectral data, while others have a system that is based on mathematical modeling. It is useful to test/evaluate multicolor printing system for hardcopy and softcopy systems.

For this test a test form will be devised with the consultation of industry experts. It is also necessary to specify a set a in gamut special colors through Pantone or Pantone GOE™. The testform will also be made available from the website related to this RoundUP. This test is geared towards vendors/suppliers and their solutions. If users would like to participate as well they shall be allowed to do so. The proofs will be send to the IPA for collection and will be measured at the conference. A visual evaluation of the proofs should also be part of the test.

3.1.8. Spot colours (Pantone/Pantone GOE™)

The new Pantone system is available. Does the RIP handle this new system? Does the proofing system identify and process the GOE™ colors correctly? This test is available for hardcopy and softcopy. The GOE™ library is available for Adobe CS3/CS4 and available for download or on CDROM.

For this test a set of 10 Pantone and/or Pantone GOE™ colors will be selected. Suppliers/vendors have to indicate their participation in this test by [DATE]. This is necessary determine the amount of Pantone swatch books that are needed for this test. The color chips with the test colours will then be sent to the suppliers/vendors that which to participate in this test. A template will be generated for placement of the color chips and the proofed samples. The results of this evaluation will only show the numerical deviation from the standard. The minimum and maximum deviation will be recorded, but no proofing system will be identified.

3.2 “Normal” marketplace results and user validation

For the hard proofing tests, proofs will be solicited by print buyers from their print service providers. The proof will be made from a file that looks like a real job, but consists of lesser know SCID images also containing the IDEAlliance proofing target Proofs will be made to match any of the following printing conditions: GRACoL, SWOP3, SWOP5 and SNAP. Three groups of print buyers will be approached: 1. Agency and brand managers from the publishing industry will be asked to supply SWOP proofs; 2. Designers identified through organizations like Print Buyers Online



will be asked to supply GRACoL proofs; 3. Agency and brand managers from the newspaper markets will be identified through NAA to supply SNAP proofs. The print buyers from all three groups will be asked to requests proofs made using the above targets from their current print service providers. They will request the proof be made per the appropriate SNAP, GRACoL or SWOP specifications.

The measurement data gathered from the IDEAlliance target on these proofs will be compared against the chosen reference characterization data for those patches. Since this is obviously not a test of the individual systems, the results will only be published as aggregate results by market place and in total. Variation by type of systems will be published if there is a definite trend, but the user identification will not be published.

The benefit to the print buyer will be an assessment of the accuracy of their proof supplier by comparison to industry average as well as to the ideal conditions identified in 2007. To make it worthwhile to the proof suppliers, they will be offered a discount on the Technical Conference registration fees after they have submitted their proofs. Also, if their proofs have met industry tolerances, they will receive a certificate to the effect that they have demonstrated that they meet SNAP/GRACoL/SWOP tolerance in a blind test under production conditions.

An initial trial with limited print buyers, to test the process will be set up.

The marketplace survey will also include real world proofs that contain identified Pantone® colors (within gamut) and will be solicited from printers and publishers across the industry. The proof will not be shown publicly, only the proofed Pantone® color patches, the numeric matching results, the marketplaces and a generic product description will be released. For the submission of the proof two questions need to be answered:

- Was a Pantone® color chip provided with the proof?
- Was the proof and the resultant print deemed acceptable by the proof buyer?

To facilitate the visual and measurement aspects of the test, Pantone® will be asked to supply five good swatch books for this test. Measurements of the Pantone colors from these five books will be averaged and used as the color standard for the Pantone® color(s) present on the proof (statistical variation will be noted). The paper white of the proofing paper will also be measured and compared against the paper white of the Pantone® books to determine the base induced ΔE and whether this has much bearing on any variation.

Leading up to the conference, users will have the opportunity to submit their own proofs. For this purpose the test file described in 3.1.2. which includes the IT8.7/4 test target will be made available for download from the conference website. The submitted proofs will be judged by the full IT8.7/4, and the data for the IDEAlliance



proofing target will be extracted from the IT8.7/4 target to see if those target patches track the full IT8.7/4 target in a representative way. Each user who has submitted a proof will receive a certificate that will compare the proof against ISO 12647-7 tolerances (less restrictive than SWOP). Participants will receive an incentive to attend the conference.

3.2.1 Full gamut and optimized proofs

Vendors and also conference attendees will have the opportunity to submit proofs of an IT8.7/4 target with the system set without any color management to show the full gamut of the proofing device. A second proof that is considered to be an optimized proof constrained for a reference characterization data set can also be submitted for systems where spots proofs are limited to the gamut as defined by the process color solids. Each proof will then be used to measure how many Pantone® colors can be reproduced within the effective gamut of that proof using the Graeme Gill's Argyll color management system (Gill). Participants will get a certificate that will state the amount (percent) of Pantone colors their proofing system can show.

Bibliography

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ISO 12642-2: 2005, Graphic technology — Input data for characterization of 4-color process printing (ANSI/IT8.7/4-2005 is equivalent)

ISO 3664:2008, Viewing conditions for graphic arts and photography

13655:2008, Graphic technology — Spectral measurement and colorimetric computation for graphic arts images