

CGATS/Idealliance TR 016-2014

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A Technical Report

Prepared by

Committee for Graphic Arts Technologies Standards (CGATS)

**Graphic technology —
Printing Tolerance and Conformity
Assessment**

**SECRETARIAT
APTech THE ASSOCIATION FOR PRINT TECHNOLOGIES**

**APPROVED JULY 22, 2014
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CGATS



TECHNICAL REPORT

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This Technical Report was developed in cooperation with Print Properties and Colorimetric Working Group of Idealliance.

Questions and comments regarding this Technical Report should be addressed to the CGATS Secretariat, APTEch The Association for Print Technologies, 1896 Preston White Drive, Reston, Virginia 20191.

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Foreword

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Process Control, in cooperation with the members of the GRACoL Working Group and the Idealliance Print Properties and Colorimetric Council. At the time of its approval, the following were the Participating Members and Observers of CGATS SC3.

CGATS Chairman: Raymond Cheydleur

CGATS Vice Chairman: Steve Smiley

Secretary: Debbie Orf

<u>Participating Member</u>	<u>Representative</u>	<u>Observing Member</u>	<u>Representative</u>
Arizona State University	Howard E Nelson	Alliance Group	Mr. Tom Cooper
CGS Publishing Technologies Intl.	Heath Luetkens	Allison Systems Corporation	Jean M Jackson
Flexographic Technical Assoc., Inc.	Joe Tuccitto	Anasys Instruments	Khoren Sahagian
	Steve Smiley	Arizona State University	Penny Ann Dolin
FUJIFILM North America Corp.	Lawrence C. Warter	Bowling Green State University	Charles Spontelli
Global Graphics Software	Kenneth Elsmann	Color Sciences, LLC	Jim Burns
Hewlett Packard Company	Charles Jia	ColorMetrix Technologies, LLC	James J. Raffel
Idealliance	Joe Fazzi	Dalton & Robinson	Tim Dalton
Individual	Walter F. Zawacki	Datacolor	Kenny Thomas
JUST Normlicht Inc.	Eric Dalton	Diageo	Kevin Chop
Konica Minolta Business Solutions	Ellen C Carter	Doppelganger L.L.C.	William B Birkett
Lexmark International, Inc.	Ann L McCarthy	EastWest Creative	John Owens
manroland AG	Andreas Lorenz	Epson America, Inc.	Roy Bohnen
NPES	David Q. McDowell	EskoArtwork	David Harris
Printing Industries of America	Mark Bohan	Flexographic Technical Assoc., Inc.	Mark Cisternino
	Greg Radencic	Flexographic Technical Assoc., Inc.	Rose K. McKernon
QuadTech, Inc.	John Seymour	Flint Group	Cindy Harbin
RGB Metrology, LLC	Lawrence C. Steele	Fundacion Gutenberg, Inst.	Ignacio N Gaglianone
RMG Consulting	Richard Goodman	Argentino de Artes G.	Marcela Rojas
RIT	Robert Chung		
RR Donnelley	Michael A. Rodriguez	Graphic Packaging Corporation	Jeff Kobin
Society for Imaging Science & Tech.	David Q. McDowell	Graphics Microsystems Inc.	Steve Headley
Sun Chemical Corporation	Danny C. Rich	Heidelberg U.S.A.	Charles Koehler
Vertis Communications	Steve Smiley	Idealliance	David J. Steinhardt
X-Rite, Incorporated	Raymond W. Cheydleur	Individual	Amrut Kulkarni
Zwang & Company	David L. Zwang	Individual	Adam Dewitz
		Individual	Bill Pope
		Individual	Dave Prouty
		Individual	David C. Albrecht
		National University of Singapore	Du Xian
		PBM Graphics	Jim Brisendine
		Quad/Graphics	Donna Biss
		QuadTech	Greg Wuenstel
		Specialty Graphic Imaging Association	Dutch Drehle
		Time, Inc.	Kin Wah Lam
	X-Rite	Kelly VandenBosch	

At the time this Technical Report was approved, the members and officers of Idealliance were as follows:

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Organization	Representative	Organization	Representative
Aldertech	Bruce Bayne	INX International Ink Co.	Javier Robles
California Polytechnic State Univ.	Xiaoying Rong	JUST Normlicht, Inc.	Eric Dalton
CGS Publishing Technologies, Intl	Heath Luetkens	Komori	Hal Stratton
ColorMetrix Technologies, LLC	James Raffel	Konica Minolta	Jeff Collins
EFI Digital Print Solutions	John Nate	Konica Minolta	Russell Doucette
Ellis Consulting	Ron Ellis	La Cross Litho Supply	Matt Fehn
Epson America	Roy Bohnen	Menasha Corporation	Scott Vanden Boom
Fineeye Color Solutions	John Sweeney	Nazdar	Tim Quinn
Flexographic Technical Assoc.	Steve Smiley	Nazdar	Bruce Ridge
Fujifilm	Don Schroeder	Nazdar	Mike Ruff
Fujifilm North America Corp.	Lawrence Warter	NPES	David McDowell
George Kondogianis Consulting	George Kondogianis	Printing Industries of America	Greg Radencic
Gotham Graphics	Nubar Nakashian	Quad Graphics	Bob Hallam
Hallmark Cards	Jeff Budd	RIT	Bob Chung
Idealliance	Joe Fazzi	RIT	Jeffrey Wang
Idealliance	David Steinhardt	RR Donnelley	Mike Rodriguez
Individual	Colleene Capola	Ryerson University	Abhay Sharma
Individual	Dick Presley	Sappi Fine Paper	David Niles
Individual	David Rapp	Sun Chemical Corporation	Danny Rich
Ink Systems, Incl.	Paula Gurnee	US Ink	Dennis Cheeseman
INK International Ink. Co.	Chuck LaFever	X-Rite, Incorporated	Raymond Cheydleur

Introduction

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color of the solids, two-color solid overprints and tone-value increase (TVI). The newer approach is to use a reference characterization data set to define the printing aims, and the aims from process control are taken from characterization data.

Traditionally, specification of allowed tolerances on these aims take a one-size-fits-all approach. None of the standards provide any method by which individual normative requirement can be combined together to provide an overall evaluation of results. This makes evaluation of the conformance of a printing operation difficult and inconsistent among the various organizations providing certification schemas and conformity assessment.

The goal of this technical report is to provide a test method that is process agnostic, including standard test targets, sampling, measurement procedures, and tolerances, to evaluate deviation, within-sheet variation, and production variation of a variety of printing processes.

The first edition of the CGATS TR016 was published in January 2012. TR016 was revised based on two years of field experiences. The test method in the TR016 (2014) emphasizes that colorimetric measurements are to be made according to ISO 13655 using the measurement condition and backing associated with the reference color characterization data. In addition, substrate correction is to be applied to process control aims for printing process control and to dataset for printing conformity assessment.

The TR016 (2012) edition specifies a 3-level tolerance (A, B, C) and justifies the varying tolerance thresholds based on limited databases. The TR016 (2014) edition, based on the acceptability criteria, simplifies the tolerance thresholds while increases the tolerance range with a 4-level tolerance.

There are many normative requirements in the deviation assessment and production variation assessment. The assessments are likely resulted in different tolerance levels among these requirements. This technical report provides a scoring method to derive a single tolerance level.

TR016 enables conformity assessment and certification activities. But, it does not specify the scope of a print production workflow nor specific conformity testing conditions for pass/fail decision. Annex A suggests a scoring method, including weighting functions and passing scores, that certification schema owners may utilize as guidelines. Organizations involved in buying and accomplishing printing can specify the appropriate tolerance schema to evaluate the conformance of a printing operation to the reference color characterization data used as the intended printing aim.

Graphic technology — Printing Tolerance and Conformity Assessment

1 Scope

This technical report defines a process that can be used in evaluating the conformance of printed material to a set of reference color characterization data, which are used as the intended printing aim. It also provides a conformance assessment procedure which includes evaluation of deviation, within-sheet variation, and production variation as well as a four-level tolerance schema for the combination of the weighted results into a single score.

2. Normative references

ISO 12642-2, *Graphic technology -- Input data for characterization of 4-colour process printing -- Part 2: Expanded data set*

ISO 13655, *Graphic technology -- Spectral measurement and colorimetric computation for graphic arts images*

3. Terms and definitions

For the purposes of this technical report the following terms and definitions apply:

3.1

color characterization

relationship between input data values, typically CMYK, and color measured on the printed sheet, typically CIEAB data

3.2

conformity assessment

demonstration that specified requirements relating to a product or process are fulfilled

3.3

deviation

measure of a system's ability to achieve specified requirements; the color difference between the calibration samples and the reference characterization data set

3.4

printing process

method by which images are transferred to a substrate such as paper, including but not limited to offset, gravure, letterpress, flexography, electrophotography, ink-jet, etc.

3.5

production variation

measure of a system's ability to maintain consistency between the same color patches printed in the same locations of the sheet over the press run; variation is the difference between "production samples" and the aims

3.6

substrate-corrected colorimetric aims (SCCA)

color characterization data that are corrected for the colorimetric difference between production and the reference substrate