

First edition  
2012-07-15

---

---

**Information technology — Office  
equipment — Test method of colour  
gamut mapping algorithm for office  
colour softcopy and hardcopy**

*Technologies de l'information — Équipement de bureau — Méthode  
d'essai des algorithmes de mappage des gammes de couleurs pour  
images à l'écran et copies papier*

---

---

Reference number  
ISO/IEC TR 29186:2012(E)





**COPYRIGHT PROTECTED DOCUMENT**

© ISO/IEC 2012

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

## Contents

Page

Foreword .....	4
Introduction.....	5
1 Scope .....	1
2 Normative references.....	1
3 Terms and definitions .....	1
4 Requirements.....	2
4.1 General .....	2
4.2 Reference viewing environments for softcopy and hardcopy.....	2
4.3 Test chart Image processing.....	4
4.4 Format of test charts.....	5
4.5 Experiments .....	5
5 Indicating the Use of Test Method of Colour Gamut Mapping Algorithm for Office Colour Printer .....	5
5.1 General .....	5
5.2 Preparation of samples.....	5
5.3 Presentation of the result .....	6
Annex A (informative) Test Chart — Weather .....	8
Annex B (informative) Test Chart — OFFICE GAMUT MAPPING.....	9
Annex C (informative) Test Chart — False contour chart.....	10
Annex D (normative) Test chart Image Processing Workflow .....	11
Bibliography.....	12

## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

In exceptional circumstances, when the joint technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide to publish a Technical Report. A Technical Report is entirely informative in nature and shall be subject to review every five years in the same manner as an International Standard.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC TR 29186 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 28, *Office equipment*.

## Introduction

Gamut mapping is a mapping of the colour-space coordinates of the elements of a source image to the colour-space coordinates of the elements of a reproduction to compensate for differences in the source and reproduction medium colour gamut capability. A test guideline for evaluating cross-device and cross-media colour image reproduction gamut mapping algorithms (GMAs), desirable for colour scientists and colour equipment manufacturers, has already been published as CIE 156:2004. CIE 156:2004 has been applied and evaluated in various fields. This Technical Report is intended as a supplement to CIE 156:2004 for use with office colour softcopy and hardcopy equipment.

Members of the colour management study group in JBMIA applied CIE 156:2004 to office colour printers and found it necessary to specify additional information to ensure consistency in colour gamut mapping algorithm evaluation. The information required for use with office colour equipment, in addition to CIE 156:2004, pertains to the output medium, viewing environments, test charts, test chart image processing parameters and workflow, etc. This experience led to the development of this Technical Report.

CIE 156:2004 specifies general principles to be applied when evaluating colour gamut mapping algorithms of various colour imaging equipment. In addition to these general principles, equipment-specific detailed descriptions and exceptions are essential. CIE 156:2004 also specifies colour imaging equipment colour gamut mapping algorithm evaluation methods pertinent to photography and graphic arts. Specification of details pertinent to office colour equipment colour gamut mapping algorithm evaluation is desirable.

Without additional information for the office colour equipment application, users of CIE 156:2004 would have to choose details of the evaluation test method by trial and error and would be unlikely to achieve the same result as one another. With the use of this Technical Report, users not only save time and effort, but also obtain test data that is useful for comparison across different test instances. Consistent test methods will facilitate technological improvements in the area of colour gamut mapping algorithms.

# Information technology — Office equipment — Test method of colour gamut mapping algorithm for office colour softcopy and hardcopy

**IMPORTANT** — The electronic file of this document contains colours which are considered to be useful for the correct understanding of the document. Users should therefore consider printing this document using a colour printer.

## 1 Scope

This Technical Report is a supplement to CIE 156:2004, applicable for use in evaluating the colour gamut mapping algorithms of office colour softcopy and hardcopy equipment. This Technical Report defines test charts, test chart image processing workflow, media, viewing conditions, measurements, colour spaces and experimental methods, suitable for use with office equipment, which either do not exist in CIE 156:2004 or are different from CIE 156:2004. Colour softcopy may be displayed on monitors, incorporating display technologies such as CRT and LCD. Colour hardcopy may be produced by non-impact colour printers, including technologies such as ink jet and electro photography.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CIE 156:2004, *Guidelines for the Evaluation of Gamut Mapping Algorithms*

ISO 3664:2009, *Graphic technology and photography — Viewing conditions*