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**Electronic imaging — Test target for  
scanning of office documents —**

**Part 3:  
Test target for use in lower resolution  
applications**

*Imagerie électronique — Cible d'essai pour le scanning en noir et  
blanc des documents de bureau —*

*Partie 3: Applications à plus faible résolution*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 171, *Document management applications*, Subcommittee SC 1, *Quality*.

ISO 12653 consists of the following parts, under the general title *Electronic imaging — Test target for scanning of office documents*:

- *Part 1: Characteristics*
- *Part 2: Method of use*
- *Part 3: Test target for use in lower resolution applications*

## Introduction

This part of ISO 12653 describes procedures for evaluating the quality of output from office document scanning systems that are set to scan documents up to 300 dpi. The systems can be used to scan in black and white, in greyscale, or in colour.

Test charts and targets already exist for micrographics and facsimile transmission but they are specific to these said fields and do not meet the needs of the users of document scanning systems.

ISO 12653-1 specifies a test target for use in general scanning systems, to enable their performance to be evaluated and to establish performance limits of the systems. Its method of use is specified in ISO 12653-2.

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# Electronic imaging — Test target for scanning of office documents —

## Part 3: Test target for use in lower resolution applications

### 1 Scope

This part of ISO 12653 specifies a test target for assessing the consistency of the output quality over time from lower resolution reflection scanning systems.

It is applicable to assessing the output quality of black-and-white and colour scanners used for black-and-white or colour office documents, with or without half tone.

It does not apply to scanners used for the scanning of transparent or translucent documents.

### 2 Normative references

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

ISO 5-4:2009, *Photography and graphic technology — Density measurements — Part 4: Geometric conditions for reflection density*.

ISO 446:2004, *Micrographics — ISO character and ISO test chart No. 1 — Description and use*.

ISO 3334:2006, *Micrographics — ISO resolution test chart No. 2 — Description and use*.

ISO 12653-1:2000, *Electronic imaging — Test target for the black-and-white scanning of office documents — Part 1: Characteristics*.

ISO 12653-2:2000, *Electronic imaging — Test target for the black-and-white scanning of office documents — Part 2: Method of use*.

ISO 12653-2:2000 / Cor:1:2002

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12651 and the following apply.

#### 3.1

##### **test element**

pattern represented on a target

EXAMPLE Millimetre scale, grey scale, circle.

#### 3.2

##### **continuous tone**

tonal variation in a document represented by areas of different density

#### 3.3

##### **lower resolution application**

scanning system that is configured to scan up to 300 dpi

## 4 Uses of this part of ISO 12653

### 4.1 General

The method described in [Clause 8](#) of this part of ISO 12653 for assessing the output quality of office document scanners (both black-and-white and colour) can be used in the following:

- to initially set up the system to yield satisfactory images;
- to check for consistent quality;
- to check that equivalent performance is being obtained from another system.

If the whole system is checked, from input to output, the results obtained can vary depending on the different items of equipment used. For example, one visual display unit screen can be poorly set up, giving worse quality than a well set up screen. It is thus important to establish the parts of the system on which to perform the tests. If tests of other parts of the system are required, then the tests should be repeated as appropriate.

The regular use of these procedures should enable a given level of quality to be maintained. The method is intended

- to enable the operator to check that the scanner is correctly set up,
- to inform the operator of the capabilities and limits of the scanner,
- to enable the user to monitor image quality over a period of time, and
- to enable the user to draw up quality assessment procedures.

### 4.2 Factors affecting quality

Factors which affect the quality achieved by a document scanning system are

- physical scanning irregularities,
- uniformity of exposure,
- chromatic sensitivity of the photosensing unit,
- contrast,
- threshold setting,
- reproduction of half-tones,
- resolution, and
- scale.

## 5 Test target

### 5.1 General

The black and white and colour test targets specified in this part of ISO 12653 include characters and graphics as test elements.

### 5.2 Description of the test elements

The test target shall comprise of the following display elements, arranged as shown in [Figures 1](#) and [2](#).



The test target shall include the words “FOR USE AT UP TO 300 dpi ONLY”.

The test elements on the targets should be of such quality that scanners being assessed reach a point of failure. Determination of this point will enable the user to ascertain the characteristics of documents that are unlikely to produce an acceptable image.

NOTE The sample layout of the test target shown in [Figure 1](#) is a reduced reproduction. The test target would normally fill a whole A4 size page.

The test elements as described below refer to the areas on the test target as indicated by the area letters shown in [Figure 2](#).

a) Area A:

- 10-mm-wide frame subdivided into 2 mm parallel lines which delineate the outer edge of the target;
- 12 arrow-shaped elements, three on each side of the target, whose outward points touch the outer edges of the target.

b) Area B:

- diagonal line with two marks 300 mm apart designating the ends of the diagonal line and end marks are equidistant from the centre of the target. (The line is blanked out where it crosses elements K and N.)

c) Area C:

- three equally spaced concentric circles with a cross indicating their centre point;
- a Pestrecov star pattern, with associated areas indicating frequency in lines per millimetre at each of the clear circles of the star, is composed of tapered black and white radial lines over 360° having equal angular frequency and concentric white circles at frequencies equivalent to 1,8 lines per millimetre, 2,5 lines per millimetre, and 3,6 lines per millimetre.

d) Area D:

- group of international standard characters (see ISO 446) having heights in the R20 series, 56 µm x 10 to 280 µm x 10.

e) Area E:

- selection of characters of various sizes and type styles, including at least one serif and at least one sanserif font, with the smallest character size used smaller than the smallest character size normally scanned by the system. The character size and type style used can be indicated on the test target. Characters used can be Latin type and/or non-Latin type depending upon end-user requirements. White characters on a black background can be added if appropriate.

f) Area F:

- two ISO No 2 test charts (see ISO 3334) having frequencies in the R20 series 2,0 to 7,1 line pairs/mm. One test chart shall be aligned at 45° to the line of scanning.

g) Area G:

- two contiguous rectangles each divided into 10 zones; one rectangle shall have a white background and the other shall have a black background. Each rectangle shall have lines of opposite polarity progressively changing zone-by-zone in width from 0 to 0.5 mm. Where these lines cross zone boundaries, they shall be of opposite polarity to the line. Line widths shall be indicated. One test chart shall be aligned at 90° to the line of scanning, a second test chart shall be aligned to the direction of scanning.

h) Area H:

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— horizontal and vertical rectangular areas of uniform visual diffuse reflection density, measured in accordance with ISO 5-4, minimum density 1,2.

i) Area I:

— selection of widely spaced small non-alphanumeric characters.

j) Area J:

— area of background (white) colour at least 30 mm x 30 mm, delineated by a black border of at least 1mm width.

k) Area K:

— four scales of half-tone wedges, each wedge ranging from 10 % to 100 % in increments of 10 %, one each in cyan, magenta, yellow and black at screen size 6,9 lines/mm.

NOTE The grey scale range represents the percentage of black to white in the half-tone.

l) Area L:

— four areas of uniform continuous density, ranging in steps from 0,3 to 1,2 density.

m) Area M:

— two scales of half-tone grey wedges at different screen sizes, each wedge ranging from 0 % to 90 % in increments of 10 % at screen sizes 3,3 and 6,9 lines/mm.

n) Area N:

— six ladder patterns, three in each direction. Ladder patterns shall be at 1,8, 2,5 and 3,6 lines/mm.

o) Area O:

— colour image with areas of varying colours.

p) Area P:

— arrows to indicate in which direction the target shall be placed in the scanner.