INTERNATIONAL STANDARD

ISO 12653-1

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Electronic imaging — Test target for the black-and-white scanning of office documents —

Part 1: Characteristics

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

Partie 1: Caractéristiques

Reference number
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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 12653 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 12653-1 was prepared by Technical Committee ISO/TC 171, *Document imaging applications*, Subcommittee SC 1, *Quality*.

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

— *Part 1: Characteristics*

— *Part 2: Method of use*

Introduction

Simple and reliable means are required for evaluating the quality of output images of office documents that have been scanned into electronic image management systems using a black-and-white scanner. The test target specified in this part of ISO 12653 provides system users with a means of evaluating the output quality and of assessing the capability of a system to produce output of appropriate quality.

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.

Electronic imaging — Test target for the black-and-white scanning of office documents —

Part 1: Characteristics

1 Scope

This part of ISO 12653 specifies a test target for use in assessing the consistency of quality of performance over time of flat-bed and rotary black-and-white reflection scanners used in electronic image management systems. The test target is designed:

a) to allow routine checks of the system's performance;

b) to establish the performance limits of the system.

This part of ISO 12653 is applicable to assessing the output quality of black-and-white scanners used for black-and-white or colour office documents, with or without half-tone or colour.

It is not applicable to colour scanners or scanners used for the scanning of transparent or translucent documents.

NOTE Additional targets for assessing the output quality of black-and-white scanners using continuous tone and colour are referred to in ISO 12653-2.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 12653. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 12653 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 5-4:1995, *Photography — Density measurements — Part 4: Geometric conditions for reflection density*.

ISO 446:1991, *Micrographics — ISO character and ISO test chart No. 1 — Description and use*.

ISO 3334:1989, *Micrographics — ISO resolution test chart No. 2 — Description and use*.

ISO 12651:1999, *Electronic imaging — Vocabulary*.

3 Terms and definitions

For the purposes of this part of ISO 12653, the terms and definitions given in ISO 12651 and the following apply.

3.1
test element
pattern represented on a target

EXAMPLES Millimetre scale, grey scale, circle.

3.2
continuous tone
tonal variation in a document represented by areas of different density

4 Test target

4.1 General

The black-and-white test target specified in this part of ISO 12653 includes characters and graphics as test elements.

4.2 Description of the test elements

The test target shall comprise the following display elements, arranged as shown in Figures 1 and 2.

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 described below refer to the areas on the test target as indicated by the area letters shown in Figure 2.

a) Area A:

- frame 10 mm wide, subdivided into millimetre squares, which delineates the outer edge of the target. From the centrepoint of each of the sides of the target, the shorter line is extended 10 mm towards the centre of the target and graduated at 1 mm and 5 mm intervals;
- eight diamond-shaped elements, two on each side of the target, whose outward points touch the outer edges of the target.

b) Area B:

- diagonal line with two marks equidistant from the centre of the target.

c) Area C:

- three equally spaced concentric circles with centres coincident with that of the target, having horizontal and vertical diameter lines.

d) Area D:

- group of ISO characters (see ISO 446) having heights in the R20 series, 45 µm × 10 to 280 µm × 10.

e) Area E:

— selection of characters of various sizes and type styles, including at least one serif and at least one sanserif font. The smallest character size used shall be typical of the smallest character size normally scanned by the system. The character size and type style used can be indicated on the test target.

f) Area F:

— ISO No. 2 test charts (see ISO 3334) having frequencies in the R20 series 1 to 18 line pairs/mm and 1,8 to 18 line pairs/mm.

g) Area G:

— eight contiguous white rectangles having black lines of progressively changing width, separated from eight similar rectangles of opposite polarity by a scale indicating size of adjacent lines in micrometres, designated A to H.

h) Area H:

— horizontal and vertical rectangular areas of uniform visual diffuse reflection density, measured in accordance with ISO 5-4, not less than 1,2.

i) Area I:

— selection of widely spaced, small, non-alphanumeric characters.

j) Area J:

— pairs of opposing continuous tone density step wedges, of visual diffuse reflection densities measured in accordance with ISO 5-4 ranging from 0,2 to 1,5, designated a to i.

k) Area K:

— grey scale with four half-tone wedges, each wedge ranging from 10 % to 90 % in increments of 10 % for screen sizes of 25 lines/cm, 33 lines/cm, 40 lines/cm and 60 lines/cm.

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

l) Area L:

— a Pestrecov star pattern, with associated areas indicating frequency in lines per millimetre at each of the clear circles of the star. The pattern is composed of tapered black-and-white radial lines over 360° having equal angular frequency and concentric white circles at frequencies equivalent to 1,97 lines/mm, 3,94 lines/mm and 7,87 lines/mm.

m) Arrows:

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

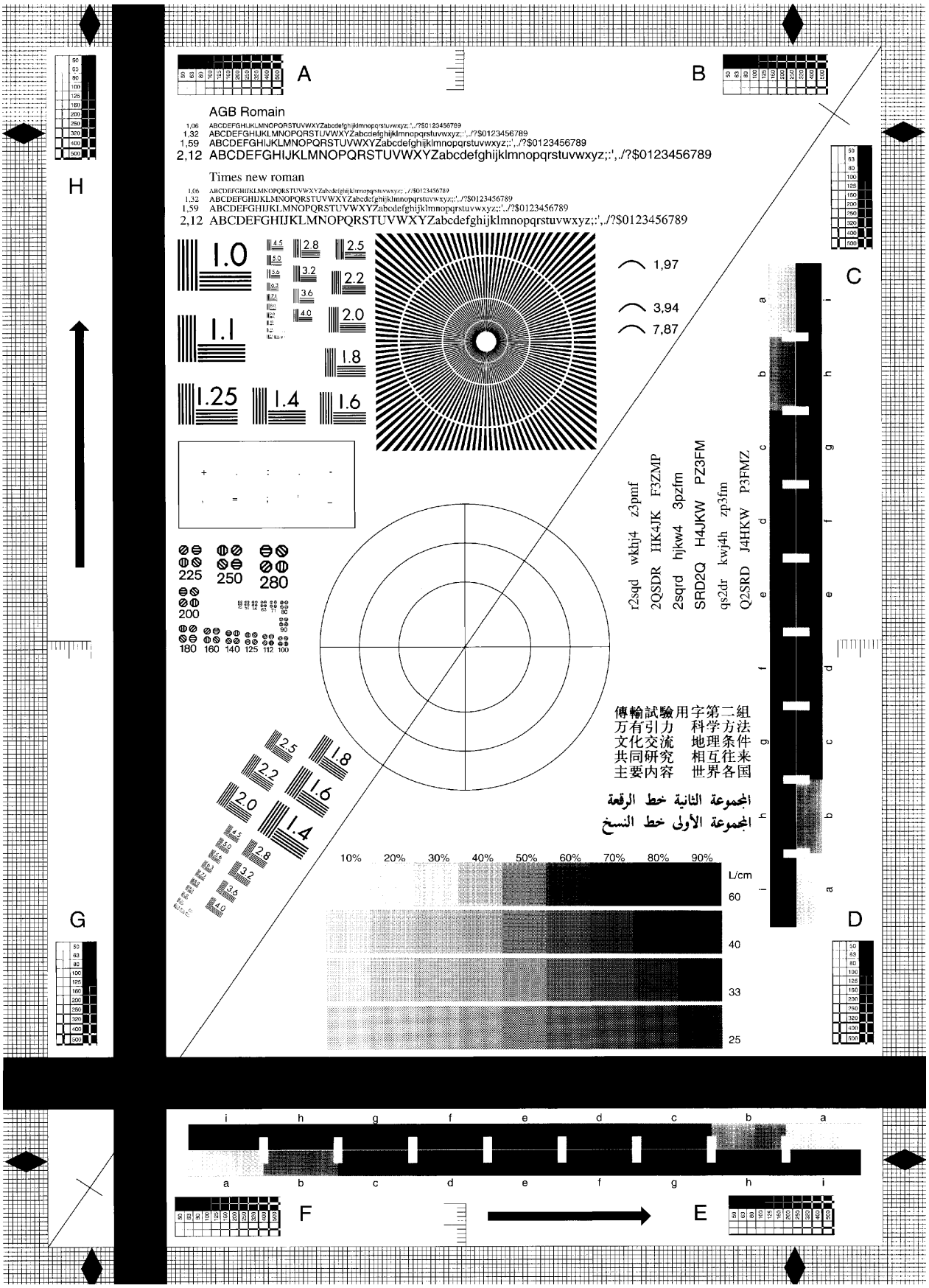

Figure 1 — Sample layout of test target

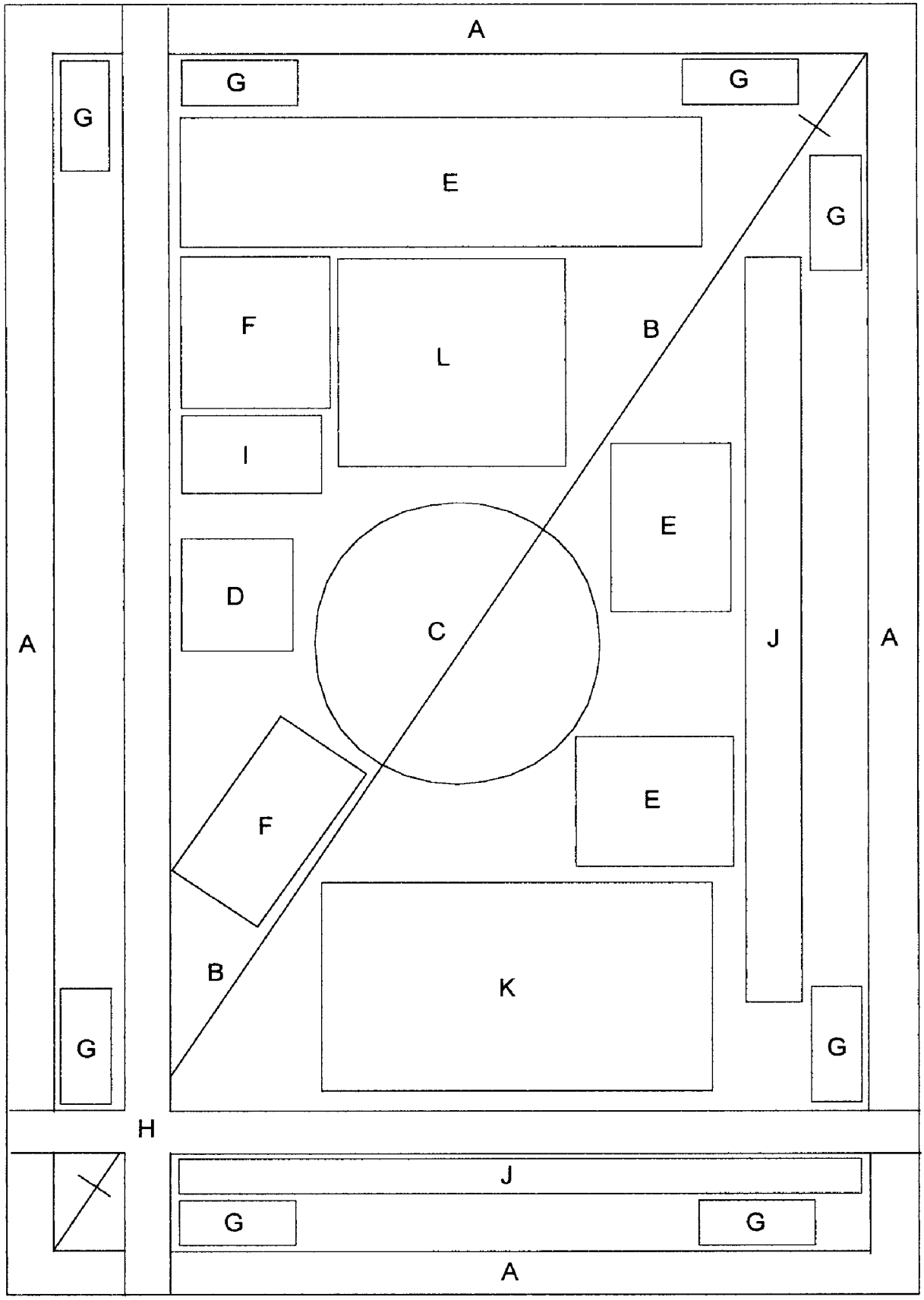

Figure 2 — Layout of target area sheet (see 4.2)

4.3 Base

The test target shall be made on a white opaque base with a glossy surface. The base size shall be that typical of documents normally scanned (for example, A4).

4.4 Test target for duplex scanners

The target described in 4.2 is for single-sided scanners only. For a duplex scanner a double-sided target, identical on both sides, is required. This can comprise of two targets as specified in 4.2 and 4.3 attached back-to-back.

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