

**Information technology - Automatic
identification and data capture techniques -
Bar code verifier conformance specification
- Part 2: Two-dimensional symbols**

Information technology - Automatic identification and
data capture techniques - Bar code verifier
conformance specification - Part 2: Two-dimensional
symbols

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO/IEC 15426-2:2006 sisaldab Euroopa standardi EN ISO/IEC 15426-2:2006 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 28.04.2006 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO/IEC 15426-2:2006 consists of the English text of the European standard EN ISO/IEC 15426-2:2006.</p> <p>This document is endorsed on 28.04.2006 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This part of ISO/IEC 15426 defines test methods and minimum accuracy criteria applicable to verifiers using the methodologies of ISO/IEC 15415 for multi-row bar code symbols and two-dimensional matrix symbologies, and specifies reference calibration standards against which these should be tested. This part of ISO/IEC 15426 provides for testing of representative samples of the equipment.</p>	<p>Scope:</p> <p>This part of ISO/IEC 15426 defines test methods and minimum accuracy criteria applicable to verifiers using the methodologies of ISO/IEC 15415 for multi-row bar code symbols and two-dimensional matrix symbologies, and specifies reference calibration standards against which these should be tested. This part of ISO/IEC 15426 provides for testing of representative samples of the equipment.</p>
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Võtmesõnad:

ICS 35.040

English Version

Information technology - Automatic identification and data
capture techniques - Bar code verifier conformance specification
- Part 2: Two-dimensional symbols (ISO/IEC 15426-2:2005)

Technologies de l'information - Techniques d'identification
automatique et de capture de données - Spécifications de
conformité des vérificateurs de codes à barres - Partie 2:
Symboles bidimensionnels (ISO/IEC 15426-2:2005)

Informationstechnik - Automatische Identifikation und
Datenerfassungsverfahren - Prüfanforderungen für
Strichcodiergeräte - Teil 2: Prüfgeräte für
zweidimensionale Codes (ISO/IEC 15426-2:2005)

This European Standard was approved by CEN on 16 February 2006.

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Foreword

The text of ISO/IEC 15426-2:2005 has been prepared by Technical Committee ISO/IEC/JTC 1 "Information technology" of the International Organization for Standardization (ISO) and has been taken over as EN ISO/IEC 15426-2:2006 by Technical Committee CEN/TC 225 "AIDC technologies", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2006, and conflicting national standards shall be withdrawn at the latest by September 2006.

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Endorsement notice

The text of ISO/IEC 15426-2:2005 has been approved by CEN as EN ISO/IEC 15426-2:2006 without any modifications.

**Information technology — Automatic
identification and data capture
techniques — Bar code verifier
conformance specification —**

**Part 2:
Two-dimensional symbols**

*Technologies de l'information — Techniques d'identification
automatique et de capture de données — Spécifications de conformité
des vérificateurs de codes à barres —*

Partie 2: Symboles bidimensionnels

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Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Conformance	1
3 Normative references	2
4 Terms and definitions	2
5 Symbols	2
6 Functional requirements	2
6.1 General requirements	2
6.2 Reflectance calibration	3
6.3 Mandatory functions	3
6.3.1 Verifiers for multi-row bar code symbols	3
6.3.2 Verifiers for two-dimensional matrix symbols	3
6.4 Optional functions	4
7 General constructional and operational requirements	4
7.1 Installation, operation and maintenance	4
7.2 Power supply	4
7.3 Temperature	4
7.3.1 Operating temperature range	4
7.3.2 Storage temperature range	4
7.4 Humidity	4
7.5 Ambient light immunity	5
8 Test requirements	5
8.1 Test methods	5
8.1.1 Selection of equipment for testing	5
8.1.2 Scanning parameters	5
8.1.3 Test measurements	5
8.2 Test environment	5
8.3 Primary reference test symbols	5
8.4 Test report	6
9 Certification and labelling	7
10 Equipment specification	7
Annex A (normative) Primary reference test symbols	8
Annex B (normative) Verification requirements for primary reference test symbols	13

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.

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 15426-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

ISO/IEC 15426 consists of the following parts, under the general title *Information technology — Automatic identification and data capture techniques — Bar code verifier conformance specification*:

- *Part 1: Linear symbols*
- *Part 2: Two-dimensional symbols*

Introduction

The technology of bar coding is based on the recognition of patterns encoded, in bars and spaces or in a matrix of modules of defined dimensions, according to rules defining the translation of characters into such patterns, known as the symbology specification. Symbology specifications may be categorised into linear symbols, on the one hand, and two-dimensional symbols on the other; the latter may in turn be sub-divided into «multi-row bar codes» sometimes referred to as «stacked bar codes», and «two-dimensional matrix codes».

Multi-row bar codes are constructed graphically as a series of rows of symbol characters, representing data and overhead components, placed in a defined vertical arrangement to form a (normally) rectangular symbol, which contains a single data message. Each row of the symbol has the characteristics of a linear bar code symbol and may be read by linear symbol scanning techniques.

Two-dimensional matrix symbols are usually rectangular arrangements of modules placed at the intersections of a grid of two (sometimes more) axes; the coordinates of each module need to be known in order to determine its significance, and the symbol must therefore be analysed two-dimensionally before it can be decoded.

Unless the context requires otherwise, the term «symbol» in this part of ISO/IEC 15426 may refer to either type of symbology.

The symbol, as a machine-readable data carrier, must be produced in such a way as to be reliably decoded at the point of use, if it is to fulfil its basic objective. Standard methodologies have been developed for measuring and assessing the quality of symbols for process control and quality assurance purposes during symbol production as well as afterwards.

Manufacturers of bar code equipment, the producers of bar code symbols and the users of bar code technology require publicly available standard conformance specifications for measuring equipment applying these methodologies, to ensure the accuracy and consistency of performance of this equipment.

This part of ISO/IEC 15426 is intended to be similar in technical content (*mutatis mutandis*) to the linear bar code verifier conformance standard, ISO/IEC 15426-1, on which it has been based. It should be read in conjunction with the symbology specification applicable to the bar code symbol being tested, which provides symbology-specific detail necessary for its application.

Information technology — Automatic identification and data capture techniques — Bar code verifier conformance specification —

Part 2: Two-dimensional symbols

1 Scope

This part of ISO/IEC 15426 defines test methods and minimum accuracy criteria applicable to verifiers using the methodologies of ISO/IEC 15415 for multi-row bar code symbols and two-dimensional matrix symbologies, and specifies reference calibration standards against which these should be tested. This part of ISO/IEC 15426 provides for testing of representative samples of the equipment.

NOTE ISO/IEC 15426-1 applies to verifiers for linear bar code symbols.

2 Conformance

The instrument shall be considered to conform with this part of ISO/IEC 15426 if it performs the functions defined in 6.3 and if the results of measurements of primary reference test symbols carried out in accordance with Clause 8 demonstrate that the arithmetic means of the ten measurements (for multi-row bar code symbols) or five measurements (for two-dimensional matrix symbols) of individual reported parameters are within the tolerances shown in Table 1 below.

Table 1 — Tolerances for measured parameter values

Parameter	Symbology type	Tolerance
R_{\max} and/or R_s	Both	$\pm 5\%$ reflectance
R_{\min} and/or R_b	Both	$\pm 3\%$ reflectance
UEC	Both	$\pm 0,0$
Decodability	Multi-row	$\pm 0,08$
Defects	Multi-row	$\pm 0,08$
Codeword Yield	Multi-row	$\pm 0,08$
Grid Nonuniformity	Matrix	$\pm 0,06$
Modulation	Matrix	$\pm 0,08$ of the value measured for the reduced dark widow on a calibrated test symbol card
Fixed Pattern Damage	Matrix	Within calibrated grade boundaries

NOTE The tolerances in Table 1 are additional to any tolerances stated by the supplier of the primary reference test symbols.

3 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.

ISO 2859-1:1999, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 9001:2000, *Quality management systems — Requirements*

ISO/IEC 15415, *Information technology — Automatic identification and data capture techniques — Bar code print quality test specification — Two-dimensional symbols*

ISO/IEC 15416, *Information technology — Automatic identification and data capture techniques — Bar code print quality test specification — Linear symbols*

ISO/IEC 15438, *Information technology — Automatic identification and data capture techniques — Bar code symbology specifications — PDF417*

ISO/IEC 16022, *Information technology — International symbology specification — Data Matrix*

ISO/IEC 19762 (all parts), *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary*

ISO/IEC 18004, *Information technology — Automatic identification and data capture techniques — Bar code symbology — QR Code*

4 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 15415, ISO/IEC 19762 (all parts) and the following apply.

4.1

primary reference test symbol

bar code symbol intended for the testing of the accuracy of bar code verifiers and manufactured to close tolerances, of at least ten times the precision listed in Table 1, by methods traceable to national standards

5 Symbols

R_b	Bar Reflectance, as defined in ISO/IEC 15416
R_{max}	Maximum reflectance, as defined in ISO/IEC 15416
R_{min}	Minimum reflectance, as defined in ISO/IEC 15416
R_s	Space Reflectance, as defined in ISO/IEC 15416

6 Functional requirements

6.1 General requirements

The general requirement of a two-dimensional symbol verifier is that it shall provide assessments of the quality of a bar code symbol which are accurate and consistent, both in relation to measurements of a specific