SLOVENSKI STANDARD
SIST EN ISO/IEC 15415:2006/AC:2014

01-marec-2014

Informacijska tehnologija - Tehnike za samodejno razpoznavanje in zajem podatkov - Specifikacija za preskušanje kakovosti tiska črtnih kod - Dvodimenzionalni simboli - Tehnični popravek 1 (ISO/IEC 15415:2004/Cor 1:2008)

Information technology - Automatic identification and data capture techniques - Bar code print quality test specification - Two-dimensional symbols - Technical Corrigendum 1 (ISO/IEC 15415:2004/Cor 1:2008)

Informationstechnik - Automatische Identifikation und Datenerfassungsverfahren - Testspezifikation für Strichcode-Druckqualität - 2D-Symbole (ISO/IEC 15415:2004/Cor 1:2008)

Technologies de l'information - Techniques automatiques d'identification et de capture des données - Spécification de test de qualité d'impression des symboles de code à barres - Symboles bidimensionnels - Rectificatif technique 1 (ISO/IEC 15415:2004/Cor 1:2008)

Ta slovenski standard je istoveten z: **EN ISO/IEC 15415:2005/AC:2011**

ICS:

35.040	Nabori znakov in kodiranje informacij	Character sets and information coding

SIST EN ISO/IEC 15415:2006/AC:2014 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO/IEC 15415:2005/AC

April 2011
Avril 2011
April 2011

ICS 35.040

English version
Version Française
Deutsche Fassung

Information technology - Automatic identification and data capture techniques - Bar code print quality test specification - Two-dimensional symbols - Technical Corrigendum 1 (ISO/IEC 15415:2004/Cor 1:2008)

Technologies de l'information - Techniques automatiques d'identification et de capture des données - Spécification de test de qualité d'impression des symboles de code à barres - Symboles bidimensionnels - Rectificatif technique 1 (ISO/IEC 15415:2004/Cor 1:2008)

Informationstechnik - Automatische Identifikation und Datenerfassungsverfahren - Testspezifikation für Strichcode-Druckqualität - 2D-Symbole (ISO/IEC 15415:2004/Cor 1:2008)

This corrigendum becomes effective on 20 April 2011 for incorporation in the three official language versions of the EN.

Ce corrigendum prendra effet le 20 avril 2011 pour incorporation dans les trois versions linguistiques officielles de la EN.

Die Berichtigung tritt am 20.April 2011 zur Einarbeitung in die drei offiziellen Sprachfassungen der EN in Kraft.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword

This document (EN ISO/IEC 15415:2005/AC:2011) has been prepared by Technical Committee JTC 1 "Information technology" in collaboration with Technical Committee CEN/TC 225 “AIDC technologies” the secretariat of which is held by NEN.

Endorsement notice

The text of ISO/IEC 15415:2004/Cor 1:2008 has been approved by CEN as a EN ISO/IEC 15415:2005/AC:2011 without any modification.

INTERNATIONAL STANDARD ISO/IEC 15415:2004

TECHNICAL CORRIGENDUM 1

Published 2008-10-01

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION
INTERNATIONAL ELECTROTECHNICAL COMMISSION • МЕЖДУНАРОДНАЯ ЭЛЕКТРОТЕХНИЧЕСКАЯ КОМИССИЯ • COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

Information technology — Automatic identification and data capture techniques — Bar code print quality test specification — Two-dimensional symbols

TECHNICAL CORRIGENDUM 1

Technologies de l'information — Techniques automatiques d'identification et de capture des données — Spécification de test de qualité d'impression des symboles de code à barres — Symboles bi-dimensionnels

RECTIFICATIF TECHNIQUE 1

Technical Corrigendum 1 to ISO/IEC 15415:2004 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

ICS 35.040 **Ref. No. ISO/IEC 15415:2004/Cor.1:2008(E)**

Published in Switzerland

Page 17

Replace 7.8.4 with the following:

7.8.4 Modulation and related measurements

7.8.4.1 Modulation

Modulation is a measure of the uniformity of reflectance of the dark and light modules respectively. Factors such as print growth (or loss), misplacement of a module relative to the grid intersection, the optical characteristics of the substrate and uneven printing may reduce the difference between the reflectance of a module and the Global Threshold. A low Modulation may increase the probability of a module being incorrectly identified as dark or light.

The reflectance value of each module in the symbol shall be measured by superimposing on the reference grey-scale image the grid determined by applying the symbology reference decode algorithm to the binarised image. Calculate MOD, the Modulation value of each module as follows:

$$MOD = 2 * (\text{abs}\ (R - GT)) / SC$$

where MOD = modulation
R is the reflectance of the module
GT is the Global Threshold
SC is the Symbol Contrast

Assign the grade level for each module according to Table 6. For each codeword, select the minimum modulation grade of all modules in the codeword. As suggested by the absolute value in the function for MOD, whether a codeword is decoded correctly has no bearing on the grade level that is assigned. In this way, Modulation differs from Reflectance Margin, see 7.8.4.3.

Table 6 — Module grading for Modulation and Reflectance Margin

MOD or MARGIN	**Module Grade**
≥ 0,50	4
≥ 0,40	3
≥ 0,30	2
≥ 0,20	1
< 0,20	0

The cumulative number of codewords achieving each grade shall be counted and compared with the error correction capacity of the symbol as follows:

For each grade level, assuming that all codewords not achieving that grade or a higher grade are errors, derive a notional Unused Error Correction grade as described in 7.8.8. Take the lower of the grade level and the notional UEC grade.

NOTE This notional grade is not related to, and does not affect, the *UEC* grade for the symbol as calculated according to 7.8.8, but is a means of compensating for the extent to which error correction can mask imperfections in a symbol. If one symbol has higher error correction capacity than another symbol, then the former symbol can tolerate a greater number of codewords with low modulation than the latter. See Annex F for a fuller description of the approach.

Then the Modulation grade for the symbol shall be the highest of the resulting values for all grade levels. When the symbol consists of more than one (e.g. interleaved) error correction block, each block shall be assessed independently and the lowest grade for any block shall be taken as the Modulation grade of the symbol.

Table 7 shows an example of grading Modulation in a symbol containing 120 codewords, 60 of which are error correction codewords with a capacity to correct up to 30 errors in a single error correction block. Modulation grade of the symbol in the example would be 2 (the highest value in the right-hand column).

Table 7 — Example of Modulation grading in a two-dimensional matrix symbol

MOD codeword grade level (**a**)	No. of codewords at level **a**	Cumulative no. of codewords at level **a** or higher (**b**)	Remaining codewords (treated as errors) (120 - **b**) (**c**)	Notional unused error correction capacity (30 – **c**)	Notional *UEC* (%)	Notional *UEC* grade (**d**)	Lower of **a** or **d** (**e**)
4	25	25	95	(exceeded)	<0	0	0
3	75	100	20	10	33,3%	1	1
2	15	115	5	25	83,3%	4	**2**
1	3	118	2	28	93,3%	4	1
0	2	120	0	30	100%	4	0
					Modulation grade (Highest value of **e**):		2

In this example, some codewords may contain errors but that does not affect the calculation.

7.8.4.2 Contrast Uniformity

Contrast Uniformity is an optional parameter that can be a useful process control tool for measuring localized contrast variations. Contrast Uniformity does not affect the overall grade.