



NSAI
Standards

Irish Standard
I.S. EN ISO 9241-307:2008 (APR '09)

Ergonomics of human-system interaction - Part 307: Analysis and compliance test methods for electronic visual displays (ISO 9241-307:2008)

I.S. EN ISO 9241-307:2008 (Apr '09)

Incorporating amendments/corrigenda issued since publication:

<i>This document replaces:</i>	<i>This document is based on:</i> EN ISO 9241-307:2008	<i>Published:</i>	
This document was published under the authority of the NSAI and comes into effect on: 28 August, 2009		ICS number: 13.180 35.180	
NSAI 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie W NSAI.ie	Sales: T +353 1 857 6730 F +353 1 857 6729 W standards.ie	Price Code:
Údarás um Chaighdeáin Náisiúnta na hÉireann			

English Version

**Ergonomics of human-system interaction - Part 307: Analysis
and compliance test methods for electronic visual displays (ISO
9241-307:2008)**

Ergonomie de l'interaction homme-système - Partie 307:
Méthodes d'essais d'analyse et de conformité pour écrans
de visualisation électroniques (ISO 9241-307:2008)

Ergonomie der Mensch-System-Interaktion - Teil 307:
Analyse- und Konformitätsverfahren für elektronische
optische Anzeigen (ISO 9241-307:2008)

This European Standard was approved by CEN on 21 March 2008.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....3

Foreword

This document (EN ISO 9241-307:2008) has been prepared by Technical Committee ISO/TC 159 "Ergonomics" in collaboration with Technical Committee CEN/TC 122 "Ergonomics", the secretariat of which is held by DIN.

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 May 2009, and conflicting national standards shall be withdrawn at the latest by May 2009.

This document supersedes EN 29241-3:1993, EN ISO 13406-2:2001, EN ISO 9241-7:1998.

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 9241-307:2008 has been approved by CEN as a EN ISO 9241-307:2008 without any modification.

This page is intentionally left BLANK.

I.S. EN ISO 9241-307:2008
**INTERNATIONAL
STANDARD**

**ISO
9241-307**

First edition
2008-11-15

**Ergonomics of human-system
interaction —**

Part 307:
**Analysis and compliance test methods
for electronic visual displays**

Ergonomie de l'interaction homme-système —

*Partie 307: Méthodes d'essais d'analyse et de conformité pour écrans
de visualisation électroniques*



Reference number
ISO 9241-307:2008(E)

© ISO 2008

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2008

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
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	x
Introduction	xii
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	1
4 Guiding principles	2
5 Compliance routes.....	2
5.1 CRT displays for indoor use — Display laboratory method	2
5.1.1 Intended context of use.....	2
Table 1 — Intended context of use — CRT displays.....	3
5.1.2 Information about the technology.....	6
Table 2 — Basic physical attributes of CRT visual displays.....	6
5.1.3 Compliance assessment method.....	6
Table 3 — Viewing conditions	7
Table 4 — Assessment and reporting for design viewing direction	8
Table 5 — Viewing conditions	9
Table 6 — Display luminance	10
Table 7 — Assessment and reporting for display luminance — Artificial information	10
Table 8 — Assessment and reporting for display luminance — Reality information.....	10
Table 9 — Luminance	11
Table 10 — Assessment and reporting for luminance and contrast adjustment.....	13
Table 11 — Special physical environments	13
Table 12 — Visual artefacts	14
Table 13 — Assessment and reporting for luminance non-uniformity	15
Table 14 — Visual artefacts	15
Table 15 — Assessment and reporting for colour non-uniformity.....	16
Table 16 — Visual artefacts	16
Table 17 — Visual artefacts	17
Table 18 — Assessment and reporting for unwanted reflections — Artificial information	19
Table 19 — Assessment and reporting for unwanted reflections — Reality information.....	19
Table 20 — Visual artefacts	20
Table 21 — Legibility and readability.....	20
Table 22 — Assessment and reporting for luminance contrast — Artificial information	21
Table 23 — Assessment and reporting for luminance contrast — Reality information.....	22
Table 24 — Legibility and readability.....	22

Table 25 — Legibility of information coding	26
Table 26 — Assessment and reporting for luminance coding — Artificial information	26
Table 27 — Legibility of information coding	27
Table 28 — Assessment and reporting for colour coding — Artificial information	27
Table 29 — Legibility of information coding	28
Table 30 — Legibility of graphics	28
Table 31 — Fidelity	30
Table 32 — Assessment and reporting for colour gamut and reference white — Artificial information	32
Table 33 — Assessment and reporting for colour gamut and reference white — Reality information	33
Table 34 — Fidelity	34
Table 35 — Assessment and reporting for electro-optical transfer functions and grey scale — Artificial information	35
Table 36 — Assessment and reporting for electro-optical transfer functions and grey scale — Reality information	35
Table 37 — Fidelity	36
5.2 Emissive flat-panel LCD for indoor use — Display laboratory method	38
5.2.1 Intended context of use	38
Table 38 — Intended context of use — Emissive flat-panel LCD	39
Table 39 — Design viewing direction range	41
5.2.2 Information about the technology	46
Table 40 — Basic physical attributes of emissive flat-panel LCD	46
5.2.3 Compliance assessment	46
Table 41 — Viewing conditions	47
Table 42 — Assessment and reporting for design viewing direction	48
Table 43 — Viewing conditions	52
Table 44 — Luminance	52
Table 45 — Assessment and reporting for display luminance — Artificial information and isotropic visual displays	53
Table 46 — Assessment and reporting for display luminance — Artificial information and anisotropic visual displays	53
Table 47 — Assessment and reporting for display luminance — Reality information and isotropic visual displays	53
Table 48 — Assessment and reporting for display luminance — Reality information and anisotropic visual displays	54
Table 49 — Luminance	54
Table 50 — Assessment and reporting for luminance and contrast adjustment	55
Table 51 — Special physical environments	56
Table 52 — Visual artefacts	57
Table 53 — Assessment and reporting for luminance non-uniformity — Artificial information — Isotropic visual displays	58

Table 54 — Assessment and reporting for luminance non-uniformity — Artificial information — Anisotropic visual displays	58
Table 55 — Assessment and reporting for luminance non-uniformity — Reality information — Isotropic visual displays	59
Table 56 — Assessment and reporting for luminance non-uniformity — Reality information — Anisotropic visual displays	59
Table 57 — Visual artefacts	60
Table 58 — Assessment and reporting for colour non-uniformity — Artificial information — Isotropic visual displays	60
Table 59 — Assessment and reporting for colour non-uniformity — Artificial information — Anisotropic visual displays	61
Table 60 — Assessment and reporting for colour non-uniformity — Reality information — Isotropic visual displays	62
Table 61 — Assessment and reporting for colour non-uniformity — Reality information — Anisotropic visual displays	62
Table 62 — Visual artefacts	63
Table 63 — Pixel fault classification	64
Table 64 — Visual artefacts	65
Table 65 — Assessment and reporting for unwanted reflections — Artificial information — Isotropic visual displays	67
Table 66 — Assessment and reporting for unwanted reflections — Artificial information — Anisotropic visual displays	67
Table 67 — Assessment and reporting for unwanted reflections — Reality information— Isotropic visual displays	68
Table 68 — Assessment and reporting for unwanted reflections — Reality information — Anisotropic visual displays	68
Table 69 — Visual artefacts	69
Table 70 — Legibility and readability.....	70
Table 71 — Assessment and reporting for luminance contrast — Artificial information — Isotropic visual displays	71
Table 72 — Assessment and reporting for luminance contrast — Artificial information — Anisotropic visual displays	71
Table 73 — Assessment and reporting for luminance contrast — Reality information — Isotropic visual displays	72
Table 74 — Assessment and reporting for luminance contrast — Reality information — Anisotropic visual displays	72
Table 75 — Legibility and readability.....	73
Table 76 — Legibility of information coding.....	75
Table 77 — Assessment and reporting for luminance coding — Artificial information — Isotropic visual displays	76
Table 78 — Assessment and reporting for luminance coding — Artificial information — Anisotropic visual displays	76
Table 79 — Legibility of information coding.....	77
Table 80 — Assessment and reporting for colour coding — Artificial information	77
Table 81 — Legibility of information coding.....	78

Table 82 — Legibility of graphics	78
Table 83 — Fidelity.....	80
Table 84 — Assessment and reporting for colour gamut and reference white — Artificial information.....	82
Table 85 — Assessment and reporting for colour gamut and reference white — Reality information.....	83
Table 86 — Fidelity.....	84
Table 87 — Assessment and reporting for electro-optical transfer functions and grey scale — Artificial information — Isotropic visual displays	85
Table 88 — Assessment and reporting for electro-optical transfer functions and grey scale — Artificial information — Anisotropic visual displays	86
Table 89 — Assessment and reporting for electro-optical transfer functions and grey scale — Reality information — Isotropic visual displays	86
Table 90 — Assessment and reporting for electro-optical transfer functions and grey scale — Reality information — Anisotropic visual displays	87
Table 91 — Fidelity.....	87
5.3 PDP for indoor use — Display laboratory method	89
5.3.1 Intended context of use.....	89
Table 92 — Intended context of use — PDP.....	90
5.3.2 Information about the technology.....	92
Table 93 — Basic physical attributes of PDP	92
5.3.3 Compliance assessment method	93
Table 94 — Viewing conditions	93
Table 95 — Assessment and reporting for design viewing direction.....	94
Table 96 — Viewing conditions	94
Table 97 — Luminance	95
Table 98 — Assessment and reporting for display luminance — Artificial information	95
Table 99 — Assessment and reporting for display luminance — Reality information	96
Table 100 — Luminance	96
Table 101 — Assessment and reporting for luminance and contrast adjustment.....	98
Table 102 — Special physical environments	99
Table 103 — Visual artefacts.....	99
Table 104 — Assessment and reporting for luminance non-uniformity	100
Table 105 — Visual artefacts.....	101
Table 106 — Assessment and reporting for colour non-uniformity	101
Table 107 — Visual artefacts.....	102
Table 108 — Pixel fault classification	103
Table 109 — Visual artefacts.....	104
Table 110 — Assessment and reporting for unwanted reflections — Artificial information.....	106
Table 111 — Assessment and reporting for unwanted reflections — Reality information	106
Table 112 — Visual artefacts.....	107
Table 113 — Legibility and readability	108

Table 114 — Assessment and reporting for luminance contrast — Artificial information	109
Table 115 — Assessment and reporting for luminance contrast — Reality information	109
Table 116 — Legibility and readability	110
Table 117 — Legibility of information coding	112
Table 118 — Assessment and reporting for luminance coding — Artificial information	113
Table 119 — Legibility of information coding	113
Table 120 — Assessment and reporting for colour coding — Artificial information	114
Table 121 — Legibility of information coding	114
Table 122 — Legibility of graphics	115
Table 123 — Fidelity	117
Table 124 — Assessment and reporting for colour gamut and reference white — Artificial information	119
Table 125 — Assessment and reporting for colour gamut and reference white — Reality information	120
Table 126 — Fidelity	121
Table 127 — Assessment and reporting for electro-optical transfer functions and grey scale — Artificial information	122
Table 128 — Assessment and reporting for electro-optical transfer functions and grey scale — Reality information	123
Table 129 — Fidelity	123
5.4 Front-screen projection visual displays with fixed resolution for indoor use — Display laboratory method	125
5.4.1 Intended context of use	125
Table 130 — Intended context of use — Front-screen projection visual displays with fixed resolution	126
5.4.2 Information about the technology	129
Table 131 — Basic physical attributes of front-screen projection visual displays with fixed resolution	129
5.4.3 Compliance assessment	129
Table 132 — Viewing conditions	130
Table 133 — Assessment and reporting for design viewing direction	130
Table 134 — Viewing conditions	131
Table 135 — Luminance	131
Table 136 — Assessment and reporting for display luminance — Artificial information	131
Table 137 — Assessment and reporting for display luminance — Reality information	132
Table 138 — Luminance	132
Table 139 — Assessment and reporting for luminance and contrast adjustment	134
Table 140 — Special physical environments	135
Table 141 — Visual artefacts	135
Table 142 — Assessment and reporting for luminance non-uniformity	136
Table 143 — Visual artefacts	136
Table 144 — Assessment and reporting for colour non-uniformity	137
Table 145 — Visual artefacts	138

Table 146 — Pixel fault classification	139
Table 147 — Visual artefacts.....	140
Table 148 — Assessment and reporting for unwanted reflections — Artificial information.....	142
Table 149 — Assessment and reporting for unwanted reflections — Reality information	143
Table 150 — Visual artefacts.....	143
Table 151 — Legibility and readability.....	144
Table 152 — Assessment and reporting for luminance contrast.....	145
Table 153 — Legibility and readability	145
Table 154 — Legibility of information coding	149
Table 155 — Assessment and reporting for luminance coding — Artificial information	149
Table 156 — Legibility of information coding	150
Table 157 — Assessment and reporting for colour coding — Artificial information.....	150
Table 158 — Legibility of information coding	151
Table 159 — Legibility of graphics	151
Table 160 — Fidelity.....	153
Table 161 — Assessment and reporting for colour gamut and reference white — Artificial information.....	155
Table 162 — Assessment and reporting for colour gamut and reference white — Reality information.....	156
Table 163 — Fidelity.....	157
Table 164 — Assessment and reporting for electro-optical transfer functions and grey scale — Artificial information	158
Table 165 — Assessment and reporting for electro-optical transfer functions and grey scale — Reality information.....	159
Table 166 — Fidelity.....	159
5.5 Emissive, reflective or transfective LCD for handheld devices for indoor use — Display laboratory method.....	161
5.5.1 Intended context of use.....	161
Table 167 — Intended context of use — Emissive, reflective or transfective LCD for handheld devices	162
5.5.2 Information about the technology	166
Table 168 — Basic physical attributes of emissive, reflective or transfective handheld device LCD	166
5.5.3 Compliance assessment	166
Table 169 — Sample compliance overview table.....	167
Table 170 — Viewing conditions	168
Table 171 — Assessment and reporting for design viewing direction.....	169
Table 172 — Viewing conditions	171
Table 173 — Luminance	171
Table 174 — Assessment and reporting for display luminance	173
Table 175 — Luminance	174
Table 176 — Special physical environments	175
Table 177 — Visual artefacts.....	176

Table 178 — Assessment and reporting for luminance non-uniformity	177
Table 179 — Visual artefacts	177
Table 180 — Assessment and reporting for colour non-uniformity	178
Table 181 — Visual artefacts	179
Table 182 — Pixel fault classification	180
Table 183 — Visual artefacts	181
Table 184 — Legibility and readability.....	183
Table 185 — Assessment and reporting for luminance contrast	184
Table 186 — Legibility and readability.....	184
Table 187 — Legibility of information coding.....	189
Table 188 — Assessment and reporting for luminance coding.....	189
Table 189 — Legibility of information coding.....	190
Table 190 — Assessment and reporting for colour coding — Artificial information	190
Table 191 — Legibility of information coding.....	191
Table 192 — Legibility of graphics.....	191
Table 193 — Fidelity	193
Table 194 — Assessment and reporting for colour gamut and reference white.....	195
Table 195 — Fidelity	196
Table 196 — Assessment and reporting for electro-optical transfer functions and grey scale.....	198
Table 197 — Fidelity	199
6 Conformance.....	202
Annex A (informative) Overview of the ISO 9241 series.....	203
Annex B (normative) Boundaries for reproduction of natural colours	207
Annex C (normative) Compliance routes.....	211
Bibliography	215

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 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 9241-307 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*.

This first edition of ISO 9241-307, together with ISO 9241-302, ISO 9241-303 and ISO 9241-305, cancels and replaces ISO 9241-7:1998 and ISO 13406-2:2001. Together with ISO 9241-302, ISO 9241-303 and ISO 9241-305, it partially replaces ISO 9241-3:1992. It constitutes a technical revision.

ISO 9241 consists of the following parts, under the general title *Ergonomic requirements for office work with visual display terminals (VDTs)*:

- *Part 1: General introduction*
- *Part 2: Guidance on task requirements*
- *Part 4: Keyboard requirements*
- *Part 5: Workstation layout and postural requirements*
- *Part 6: Guidance on the work environment*
- *Part 9: Requirements for non-keyboard input devices*
- *Part 11: Guidance on usability*
- *Part 12: Presentation of information*
- *Part 13: User guidance*
- *Part 14: Menu dialogues*
- *Part 15: Command dialogues*
- *Part 16: Direct manipulation dialogues*
- *Part 17: Form filling dialogues*

ISO 9241 also consists of the following parts, under the general title *Ergonomics of human-system interaction*:

- *Part 20: Accessibility guidelines for information/communication technology (ICT) equipment and services*
- *Part 110: Dialogue principles*
- *Part 151: Guidance on World Wide Web user interfaces*
- *Part 171: Guidance on software accessibility*
- *Part 300: Introduction to electronic visual display requirements*
- *Part 302: Terminology for electronic visual displays*
- *Part 303: Requirements for electronic visual displays*
- *Part 304: User performance test methods for electronic visual displays*
- *Part 305: Optical laboratory test methods for electronic visual displays*
- *Part 306: Field assessment methods for electronic visual displays*
- *Part 307: Analysis and compliance test methods for electronic visual displays*
- *Part 308: Surface-conduction electron-emitter displays (SED) [Technical Report]*
- *Part 309: Organic light emitting diode (OLED) displays [Technical Report]*
- *Part 400: Principles and requirements for physical input devices*
- *Part 410: Design criteria for physical input devices*
- *Part 920: Guidance on tactile and haptic interactions*

For the other parts under preparation, see Annex A.

Introduction

This part of ISO 9241 addresses different technologies for a wide range of visual display tasks and environments. Its modular structure will allow it to be readily amended, as ongoing technological development enables new forms of display interaction or new contexts become available.

Using ISO 9241-303 and ISO 9241-305, together with the compliance method specified in this part of ISO 9241, it is possible to obtain a good understanding of how to analyse an environment for which there does not exist a specific analysis and compliance method.

Ergonomics of human-system interaction —

Part 307: Analysis and compliance test methods for electronic visual displays

1 Scope

This part of ISO 9241 establishes test methods for the analysis of a variety of visual display technologies, tasks and environments. It uses the measurement procedures of ISO 9241-305 and the generic requirements of ISO 9241-303 to define compliance routes suitable for the different technologies and intended context of use.

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.

ISO 9241-300, *Ergonomics of human-system interaction — Part 300: Introduction to electronic visual display requirements*

ISO 9241-302, *Ergonomics of human-system interaction — Part 302: Terminology for electronic visual displays*

ISO 9241-303, *Ergonomics of human-system interaction — Part 303: Requirements for electronic visual displays*

ISO 9241-305, *Ergonomics of human-system interaction — Part 305: Optical laboratory test methods for electronic visual displays*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9241-302 apply.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-