

DIN EN ISO 9241-306:2018-12 (E)

Ergonomics of human-system interaction - Part 306: Field assessment methods for electronic visual displays (ISO 9241-306:2018)

Contents		Page
European foreword		4
Foreword		5
Introduction		6
1	Scope	8
2	Normative references	8
3	Terms and definitions	8
4	Preparation for assessment	8
4.1	Cleaning	8
4.2	Set-up	8
4.3	Display warm-up	9
4.4	Control settings of the visual display	9
5	Assessment methods	10
5.1	Viewing conditions	10
5.1.1	Design viewing distance	10
5.1.2	Design viewing direction	11
5.1.3	Gaze and head tilt angles	12
5.1.4	Virtual images	12
5.2	Luminance	12
5.2.1	Illuminance	12
5.2.2	Display luminance	12
5.2.3	Luminance balance and glare	12
5.2.4	Luminance adjustment	13
5.3	Special physical environments	13
5.3.1	Vibration	13
5.3.2	Wind and rain	13
5.3.3	Excessive temperatures	13
5.4	Visual artefacts	13
5.4.1	Luminance non-uniformity	13
5.4.2	Colour non-uniformity	13
5.4.3	Contrast non-uniformity	14
5.4.4	Geometric distortions	14
5.4.5	Pixel faults	14
5.4.6	Temporal instability (flicker)	14
5.4.7	Spatial instability (jitter)	14
5.4.8	Moiré effects	14
5.4.9	Other instabilities	15
5.4.10	Unwanted reflections	15
5.4.11	Unintended depth effects	15
5.5	Legibility and readability	15
5.5.1	Luminance contrast	15
5.5.2	Image polarity	15
5.5.3	Character height	16
5.5.4	Text size constancy	17
5.5.5	Character stroke width	17
5.5.6	Character width-to-height ratio	17
5.5.7	Character format	17
5.5.8	Between-character spacing	17
5.5.9	Between-word spacing	17
5.5.10	Between-line spacing	17

5.6	Legibility of information coding.....	17
5.6.1	Luminance coding.....	17
5.6.2	Absolute luminance coding.....	17
5.6.3	Blink coding.....	18
5.6.4	Colour coding.....	18
5.6.5	Geometrical coding.....	18
5.7	Legibility of graphics.....	18
5.7.1	Monochrome and multicolour object size.....	18
5.7.2	Contrast for object legibility.....	18
5.7.3	Grey and colour considerations for graphics.....	18
5.7.4	Background and surround image effects.....	18
5.7.5	Number of colours.....	18
5.8	Fidelity.....	19
5.8.1	Grey scale and gamma.....	19
5.8.2	Rendering of moving images.....	19
5.8.3	Colour misconvergence.....	19
5.8.4	Image formation time (IFT).....	19
5.8.5	Spatial resolution.....	20
6	Other considerations.....	20
6.1	Isotropic surface.....	20
6.2	Anisotropic surfaces.....	20
6.3	Viewing angle range.....	20
6.4	Adjustability.....	20
6.5	Controllability.....	20
6.6	Luminous environment.....	21
Annex A (informative) Overview of the ISO 9241 series.....		22
Annex B (informative) Influences on ergonomics parameters of visual displays.....		23
Annex C (informative) Unwanted reflections.....		26
Annex D (informative) Definition and application of test charts for display output linearization for eight different ambient light reflections at office work places.....		29
Annex E (informative) Considerations for Cathode ray tube (CRT) displays.....		60
Bibliography.....		62