EK1-ITB 2000:2009

AG1-EK1
176-08 rev 1

Bases for GS-mark tests of IT Equipment in Combination with Visual Display Units

(Status as of January 01, 2009)

The processing of test principles for the evaluation of visual display units occurred initially in Germany under management of the Administrative Legal Accident Insurance. With the reorganization of the Experience Exchange of GS Test Organizations, Exchange of Experience Forum 1 (EK1) assumed this task in 1998.

With the progress of European standardization, and with increasing experience in the assessment of IT equipment in combination with visual display units, the test principles are being maintained up to date.

New display techniques, as PDA's, micro displays and beamers can be included. Therefore, the test principles were provided with a new number, complemented with the date of the current state of the discussions as a permanent document.

These test principles comprise the requirements that are prerequisites for the safe and ergonomic design of the equipment. In addition, there are requirements for the workplace and the workplace environment, which are to be considered by the user or operator, and therefore, are not subject to these test principles.

These test principles are to be used in the current version at the time of the investigation. Certificates that refer to earlier versions of this document remain basically valid within the frame of the usual period of validity of a GS Certificate, unless EK1 decides in exceptional cases due to urgent necessities differently.

Disclaimer: This is a translation from the German original version to English. In the case of any inconsistencies the German version is valid!

A.1 General Principles

A.1.1 Guidelines and Laws

2006/95/EC
Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (codified version).

~~**89/336/EEC**~~
~~Council Directive of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility, implemented in Germany by the Electromagnetic Compatibility of Equipment Act.~~
(replaced by 2004/108/EC)

2004/108/EC
Directive of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC.

90/270/EEC
Council Directive of 29 May 1990 on the minimum requirements concerning the safety and health protection during work on visual display units (Individual Directive in the context of Article 16, Clause 1 of Directive 89/391/EEC), implemented in Germany by the Ordinance on Visual Display Units (Occupational Safety Law, 19. December 1998 version).

93/68/EEC
Council Directive of 22 July 1993 on the amendment of the above-mentioned Directives.

98/37/EC
Council Directive of 22 June 1998 on the approximation of the laws of the Member States relating to machinery, implemented in Germany by the ninth ordinance to the Technical Plant and Equipment Act.

2001/95/EC
Directive of the European Parliament and of the Council of 3. December 2001 on general product safety.

German Product Safety & liability law (GPSG)
dated January 6, 2004 including therein named changes of ordinances of the overrulled GSG (Product Safety Law).

~~Electromagnetic Compatibility of Equipment Act **(EMVG)**, 18. September 1998 version.~~
(not in force)

Electromagnetic Compatibility of Equipment Act **(EMVG)**, 26.02.2008.

Ordinance on occupational safety and health protection during work with visual displays **(Bildschirmarbeitsverordnung** - BildscharbV), 04. December 1996 version.

Ordinance on the protection against injury by X-ray radiation **(X-ray Ordinance** - RöV), 08 January 1987 version.

R&TTE directive 1999/5/EC
Directive on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity

A.1.2 Test and Evaluation Considerations

The manufacturer defines the intended context of use of the equipment. If necessary, he has to determine any special environmental conditions in the Instructions for Use. These declarations are to be considered during the test and are to be repeated in the certificate. In particular, restrictive declarations of the manufacturer in his product description must also be documented in the certificate.

Information necessary for installation, startup procedure and safe use must accompany the product in writing (German language). Broader information may be contained on data storage devices (CD, floppy disk).

The existing test principles are binding on all GS test- and certification bodies and are to be considered by market surveillance authorities in Germany too.

If the requirements of the applicable standards are not specific, the Essential Requirements of the Directives or the protection objectives of the Standards are to be interpreted by the experts accordingly**.**

A.2 Standards for Product Safety

A.2.1 Basic Standard

DIN EN 60950-1	Safety of information technology equipment
DIN EN 60065	Audio, visual and similar electronic apparatus - Safety requirements

Additionally, the following standards may be applicable:

A.2.2 Safety in General

DIN EN ISO 12100-1	Safety of machinery; basic concepts, general principles for design; part 1: basic terminology, methodology
DIN EN ISO 12100-2	Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles and specifications

A.2.3 Electrical Safety

DIN EN 60204 - 1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements

A.2.4 Mechanical Safety

DIN EN 294	Safety of machinery; safety distances to prevent danger zones from being reached by the upper limbs
DIN EN 349	Safety of machinery; minimum gaps to avoid crushing of parts of the human body
DIN EN 547 - 1	Safety of machinery - Human body measurements - Part 1: Principles for determining the dimensions required for openings for whole body access into machinery
DIN EN 547 - 2	Safety of machinery - Human body measurements - Part 2: Principles for determining the dimensions required for access openings
DIN EN 61310 part 1	Safety of machinery - Indication, marking and actuation - Part 1: Requirements for visual, auditory and tactile signals
DIN EN 61310 part 2	Safety of machinery - Indication, marking and actuation - Part 2: Requirements for marking

A.2.5 Safety concerning high temperature

~~DIN EN 563~~	~~Safety of machinery - Temperatures of touchable surfaces - Ergonomics data to establish temperature limit values for hot surfaces (includes Corrigendum AC:1994 and Amendment A1:1999)~~
~~CEN guide 12~~	~~Temperatures of surfaces likely to be touched~~

Replaced by

CENELEC Guide 29	Temperatures of hot surfaces likely to be touched

A.2.6 Safety concerning noise

DIN EN ISO 7779	Acoustics; measurement of airborne noise emitted by information technology and telecommunications equipment
DIN EN 29295	Acoustics; measurement of high-frequency noise emitted by computer and business equipment (ISO 9295:1989); German version EN 29295:1991
ISO 9296	Acoustics; declared noise emission values of computer and business equipment

A.2.7 Labelling and Information in Instructions for Use

ISO/IEC 12119	Information technology - Software packages – Quality requirements and testing
ISO/IEC Guide 37	Instructions for use of products of consumer interest
DIN EN 62079	Preparation of instructions Structuring, content and presentation

A.2.8 Ergonomic design

For testing of the ergonomic design of a product in particular apply:

DIN 2137 Part 1	Text and office systems - Keyboards - Part 1: German keyboard for typewriters; key arrangement and allocation of characters to keys
DIN 2137 Part 2	Text and office systems - Keyboards - Part 2: German keyboard for data and text processing; key arrangement and allocation of graphic characters to keys
DIN 2137 Part 6	Text and office systems - Keyboards - Part 6: German keyboard for data and text processing as well as for typewriters; key arrangement and allocation of functions to keys

DIN 2137 Part 6, Annex 1	Text and office systems - Keyboards - Part 6: German keyboard for data and text processing as well as for typewriters; information on the symbols to be used to represent functions
DIN 2137 Part 10	Text and office systems - Keyboards - Part 10: German keyboard for data and text processing as well as for typewriters; arrangement of key positions and key distances
DIN 2137 Part 11	Text and office systems - Keyboards - Part 11: German keyboard for data and text processing as well as for typewriters; principles governing the allocation of graphic characters or of functions to keys and the placement of their symbols on the keys
DIN 2137 Part 12	Text and office systems - Keyboards - Part 12: German keyboard for data and text processing; key arrangement and allocation for portable computers
Annex 1 to DIN 2137	Text and office systems - Keyboards - German keyboard data and text processing as well as for typewriters; information on graphic keys and the allocation of graphic characters or symbols
DIN EN ISO 9241-1	Ergonomic requirements for office work with visual display terminals (VDTs) - Part 1: General introduction (ISO 9241-1:1997); German version EN ISO 9241-1:1997
DIN EN 29241 - 2	Ergonomic requirements for office work with visual display terminals (VDTs); part 2: guidance on task requirements
~~DIN EN 29241 - 3~~	~~Ergonomic requirements for office work with visual display terminals (VDTs); part 3: visual display requirements~~ (replaced by ISO 9241-3xx in 2008)
DIN EN ISO 9241-4	Ergonomic requirements for office work with visual display terminals (VDTs) - Part 4: Keyboard requirements for visual display terminals (ISO 9241-4:1998); German version EN ISO 9241-4:1998
DIN EN ISO 9241-6	Ergonomic requirements for office work with visual display terminals (VDTs) - Part 6: Guidance on the work environment

~~DIN EN ISO 9241-7~~	~~Ergonomic requirements for office work with visual display terminals (VDTs) - Part 7: Requirements for display with reflections (ISO 9241-7:1998); German version EN ISO 9241-7:1998~~ (replaced by ISO 9241-3xx in 2008)
~~DIN EN ISO 9241-8~~	~~Ergonomic requirements for office work with visual display terminals (VDTs) - Part 8: Requirements for displayed colours (ISO 9241-8:1997); German version EN ISO 9241-8:1997~~ (replaced by ISO 9241-3xx in 2008)
DIN EN ISO 9241-9	(Draft standard) DIN EN ISO 9241-9, Publication date:1998-10 Ergonomic requirements for office work with visual display terminals (VDTs) - Part 9: Requirements for non-keyboard input devices (ISO/DIS 9241-9:1998); German version EN ISO 9241-9:1998
DIN EN 60068-2-70	Environmental testing - Part 2: Tests - Test Xb: Abrasion of marking and letterings caused by rubbing of fingers and hands
~~DIN EN ISO 13406-2~~	~~Ergonomic requirements for work with visual displays based on flat panels – Part 2: Ergonomic requirements for flat panel displays~~ (replaced by ISO 9241-3xx in 2008)
DIN EN ISO 9241-3xx (xx means 00-07)	Ergonomic requirements for visual displays (replaces ISO 9241 -3,-7,-8, ISO 13406 in 2008)
ISO/IEC 9995-1	Information technology - Keyboard layouts for text and office systems - Part 1: General principles governing keyboard layouts
ISO/IEC 9995-2	Information technology - Keyboard layouts for text and office systems - Part 2: Alphanumeric section
ISO/IEC 9995-3	Information technology - Keyboard layouts for text and office systems - Part 3: Complementary layouts of the alphanumeric zone of the alphanumeric section
ISO/IEC 9995-4	Information technology - Keyboard layouts for text and office systems - Part 4: Numeric section
ISO/IEC 9995-5	Information technology - Keyboard layouts for text and office systems - Part 5: Editing section
ISO/IEC 9995-6	Information technology - Keyboard layouts for text and office systems - Part 6: Function section

ISO/IEC 9995-7	Information technology - Keyboard layouts for text and office systems - Part 7: Symbols used to represent functions
ISO/IEC 9995-8	Information technology - Keyboard layouts for text and office systems - Part 8: Allocation of letters to the keys of a numeric keypad
ISO TR 24784	Information technology -- Keyboard layouts for alphanumeric inputs -- Description of ISO/IEC 9995 issues regarding users' needs and necessary innovations

A2.9 Further decisions from meetings of the Exchange of Experience Forum 1 (EK1) and its Working Group AG1

A.2.9.1 Keyboards (1st meeting AG1 EK1):
If the key board does not comply with the above mentioned standards, decisions must be made for special groups of users.

A.2.9.2 Keyboard caps, labelling of the front side (4th meeting AG1 EK1):
In principle the same requirements apply as for labelling of the topside.

A.2.9.3 Notebooks, keyboard height (4th meeting AG1 EK1):
Cancelled - 12th meeting AG1 EK1

A.2.9.4 Gloss of keyboard and housing (4th meeting AG1 EK1):
The evaluation of the contrast and the gloss of keyboards and housings are to be made with consideration of the manufacturer's specification for the intended use. If no other life cycle is indicated by the manufacturer or specifications are made by standards, the values on key caps are to be judged after 5 million cycles.

A.2.9.5 Specification for antireflection coating of monitors (4th meeting AG1 EK1):
Monitor class or targeted application is to be indicated on the certificate.

A.2.9.6 Specification for noise in certificates (5th meeting AG1 EK1):
For the orientation of the operator the emitted sound pressure level and sound power level are to be indicated on the certificate for operation in standby and full performance mode, according to DIN EN ISO 7779 and DIN EN ISO 29295.

A.2.9.7 Keying feedback (5th and 6th meeting AG1 EK1):
Actuation of a key shall be accompanied by a feedback. The feedback can be kinaesthetic (key displacement with snap function) or not kinaesthetically (key displacement with ramp function) accompanied by an auditory feedback. The auditory feedback can take place in terms of hardware solution (e.g. by a loudspeaker integrated in the keyboard) or by software solutions (e.g. as part of the operating system). The today generally used kinaesthetic feedback is sufficient, not however an end-impact noise.

A.2.9.8 Segmented keyboards (4th meeting EK1):
Cancelled – replaced by A.2.9.13

A.2.9.9 Video graphic boards (3rd meeting EK1):
Video graphic boards are not qualified for a GS-Mark.

A.2.9.10 Keyboards, abrasion test (7th meeting AG1 EK1):
The abrasion test with synthetic sweat in its present form is confirmed. Testing with diluted (thin) Oil of Olaz can be accepted only, when the proof is produced, that the results are equivalent.

A.2.9.11 Keyboards, DIN 60068-2-70 (7th meeting AG1 EK1):
Applicable for testing are DIN EN ISO 9241 part 4 in combination with DIN 60068-2-70 (in that order). The abrasion test shall be performed with the force of 1,5 N ± 20% as defined in DIN EN ISO 9241 part 4 for an applied force for key displacement and not with the values given by DIN EN 60068-2-70.

A.2.9.12 Keyboards, laser inscription (7th meeting AG1 EK1):
The durability of legends with laser inscription has to be proofed with the test procedures as intended in DIN EN ISO 9241 part 4. If a test confirms that the durability of legends for a specific, qualified laser inscription procedure and clearly specified materials is given, specific tests could be skipped.

A.2.9.13 Segmented keyboards (8th meeting AG1 EK1):
All participants agree, due to insufficient definition of test requirements, not to accept test orders for such keyboards. Segmented keyboards with adjustable angle have to be tested in normal position according to ISO 9241-4 and DIN 2137.

A.2.9.14 Character size on visual displays (8Th meeting AG1 EK1):
Due to some inconsistency in ISO 9241-3, the test is conducted with a character size of 20 min. of arc. Equivalent test pattern with horizontal or vertical lines may be used if not otherwise specified by the manufacturer. An example for a 17" CRT is given in annex 2.

A.2.9.15 Keyboard layout, Notebook keyboards (9th + 12th meeting AG1 EK1):
The layout must be suitable for the intended user group. The tests are performed in accordance with DIN 2137-12.

A.2.9.16 Deviations from test basis
In case of deviations from test basis EK1-ITB 2000 the following procedure apply:
1. Preparation of an test report. The test report shows the deviation from the test basis.
2. Proof of necessity of the deviation.
3. Presentation of the results within the Exchange of Experience Forum 1 (EK 1)

Alternative test method for keyboards (addition):
4. Performing of an user test concerning the acceptance of deviations by a qualified laboratory according to ISO 9241-4 and ISO 9241-11
5. Presentation of the results within the Exchange of Experience Forum 1 (EK 1)

~~**A.2.9.17 DIN EN ISO 13406-2**~~
~~DIN EN ISO 13406-2 will be added within EK1-ITB 2000 (additional row within the table). DIN EN ISO 13406-2 is applicable since 01.01.2003. Already existing certificates, based on previous test procedure (ISO 9241) expire on December 31, 2004.~~
(no longer considered)

A.2.9.18 Evaluation of gloss within the direct field of view
Company logos are not considered during gloss measurements.

A.2.9.19 GS test with restricted scope

For GS tests of IT equipment used within a restricted scope (like home area, entertainment, toys etc.) the test has to follow the test principles EK1-ITB 2000. Deviations and their necessity shall be reported within the test report.

A.2.9.20 ~~DIN EN ISO 13406-2 testing~~

~~GS certificates shall indicate the following information from May 1, 2003 on:~~

- ~~Pixel fault class~~
- ~~Class reflection (for positive/negative polarity)~~
- ~~CLass viewing contrast~~
- ~~Class viewing chromaticity uniformity~~

(decision changed due to the release of ISO 9241-307; data according to Annex 6 have to be implemented)

A.2.9.21 GS mark for Pocket PC's (11th meeting AG1 EK1):

~~The requirements for pocket PC's have to be applied from October 1, 2003. The procedure is described in document EK1/70-02, which is incorporated in the annex.~~

(ISO 9241-307 has to be applied)

A.2.9.22 Plasma Displays, LCD/TFT-TV's (11th meeting AG1 EK1):

~~If the manufacturer does not explicit exclude the work at visual display work places these test principles have to be applied to Plasma Displays and LCD/TFT-TV's.~~

(ISO 9241-307 has to be applied)

A.2.9.23 Graphic boards (11th meeting AG1 EK1):

If a graphic board offers a analogue as well as digital output, the analogue output has to be evaluated due to expectation of higher quality at the digital output. Use this procedure unless otherwise specified by the manufacturer.

If a graphic board use different chip sets every version of the chip sets has to be evaluated.

A.2.9.24 Classic typewriters (11th meeting AG1 EK1):

DIN 2137 part 1 as well as all parts belonging to DIN 2137 have to be applied for electronic typewriters.

A.2.9.25 Gloss of housing for a server (12th meeting AG1 EK1):
The test of the gloss of housing for a server follows annex 1. Here the following criteria are used:

Set-up Location of the server*)	Decision criteria	GS test according to
Within a server room	Without graphic board	EN 60950 + noise
	With graphic board	EK1-ITB 2000 incl. Gloss of housing
Within a server room	With graphic board. The manufacturer declares that the set-up of the server is made in the server room only and shall not be in the field of vision of the user **)	EK1-ITB 2000 without measurement of the gloss of housing

*) Server = computer for data processing with or without graphic board for use in server rooms

**) Scope: Declaration of the manufacturer given in the brochure and in the User's Manual:
The product is not suitable for use at visual display workplaces according to §2 of the German Ordinance for Work with Visual Display Units.
Statements on the GS certificate:
- Test specification
- Hint that the tested product is not suitable for use at visual display workplaces.

A.2.9.26 Pocket PC's having a size larger than DIN A5 (12th meeting AG1 EK1):
For Pocket PC's having a size up to DIN A4 the corresponding test principles have to be applied. Therefore "sub-notebooks" are included as well.

The minimum character size of 2,6 mm for key legends is applicable to characters only. Symbols like +, -, ; are excluded.

A.2.9.27 User's Manual (12th meeting AG1 EK1):
Safety relevant instructions of the User's Manual have to be delivered in paper format. It is not sufficient to store these instructions on a hard disk or a CD-ROM.

A.2.9.28 ~~Keyboard (13th meeting AG1 EK1):~~
~~A reduction of the number of key activities from 5 Mio. to 4 Mio is possible, if after 4 Mio. key activities a minimum contrast of 3,3:1 will be achieved. If the contrast ratio is lower the test has to be continued until 5 Mio. activities.~~

repealed (17. meeting AG1 EK1 decision **A.2.9.33**)

A.2.9.29 Flat panel displays (13th meeting AG1 EK1):
The requirement of the inclination in front of the screen has not to be applied for flat panel displays.

A.2.9.30 Data to be supplied in GS certificates (14th meeting AG1 EK1):
For clear and uniform presentation of information a minimum data are required in GS certificates for IT products (see appendix 6).

A.2.9.31 Gloss of housing of peripheral devices (15th / 22 meeting AG1 EK1):
The requirements for the gloss of housing apply to peripheral devices used at the visual display workplace according to BildscharbV. Peripheral devices intended for use outside the visual display workplace can receive a GS-Mark if the scope is indicated in the User's Manual as well as the certificate.

That means the following wording is possible in situations where the use within the field of view is not intended and where sufficient hints are given in the User's Manual for the avoidance of such situations to ensure that display work is not affected.

Wording in the certificate: "This device is not intended for use in the direct field of view at visual display workplaces. To avoid incommoding reflexions at visual display workplaces this device must not be placed in the direct field of view."

Note:
(direct) field of view see ISO 8995, ISO 11064-4, EN 842, DIN 5340

A.2.9.32 Reflections with „Bright View Notebooks" (16th meeting AG1 EK1):

The GS certification for notebooks is possible, if EK1-ITB 2000 and ISO 13406-2 are fulfilled. In addition pay attention to the following:

- Two test engineers have to evaluate the display surface by subjective and visual inspection. Aim of this test is to assess disturbing reflections in the intended context of use.
- ~~If disturbing reflections are detected the intended context of use has to be described in more detail within the safety instructions. A hint that the use in bright environments is restricted, e.g. during mobile use, must be given in the safety instructions as well as the GS certificate.~~ (no longer applicable due to release of ISO 9241-3xx)

According to ISO 9241-307 the reflection classes have to be replaced by luminance and maximum illuminance values from ISO 9241-307:

- If disturbing reflections are detected in case of $L_{REF,EXT}$ = 200 cd/m² and/or $L_{REF,SML}$ = 2000 cd/m² the intended context of use has to be described in more detail within the safety instructions. A hint that the use in bright environments is restricted, e.g. during mobile use, must be given in the safety instructions as well as the GS certificate.

The statement depends on the intended context of use. Example:
"During mobile use with disadvantageous illumination conditions (e.g. direct sun light) reflections may occur which result in reduced readability."

A.2.9.33 Keyboard (17th meeting AG1 EK1)

A reduction of the key strokes for keyboards made of PBT material with laser inscription processes from 5 million to 2 million is possible if, after 2 million strokes a minimum contrast of 3,3:1 is achieved and the gloss level is under 20 gloss units.

A reduction of the key strokes for keyboards with laser inscription processes from 5 million to 4 million is possible if, after 4 million strokes a minimum contrast of 3,3:1 is achieved and the gloss level is under 20 gloss units.

The resolution A.2.9.28 is herewith nullified.

Note: The gloss level of key caps can be determined alternatively with gloss level plates (maximum matt or semi matt). (Hint: gloss templates/gloss level plates are available from Institut für Lackprüfung, Felsweg 19, 35435, Wettenberg, Germany).

A.2.9.34 Application of DIN EN 50332-1/-2 (18th and 19th meeting AG1 EK1)

The requirements of EN 50332 for limitations of the sound pressure level of ear-/headphone outputs is expanded to include stationary products with ear-/headphone outputs because they are subject to the same dangers regarding hearing damage/hearing loss. The following items have to be considered:

1. Measurement procedure
Use a) or b):

a) Electric test (IT device without supplied ear-/headphone)
In deviation to EN 50332 a measurement of the output voltage with adjustment of the volume control to center position has to be made with and without equalizer. During the measurements the equalizer is adjusted to its neutral or center position (factory setting). In case the reading is $\leq$ 150 mV the instructions for use must consider a warning note to fulfill the requirements according to EK1-ITB 2000. In case the reading is > 150 mV the requirements according to EK1-ITB 2000 are not fulfilled.

b) Acoustic test (IT device with supplied ear-/headphone)
In case of a system (IT device with an ear-/headphone) the type of the ear-/headphone (manufacturer and model/type) has to be specified in the instructions for use. The requirements according to EN 50332-1 have to be fulfilled. In deviation to EN 50332-1 the measurements shall be conducted with adjustment of the volume control to center position with and without equalizer. The instructions for use must contain a warning note.

Informative: A measurement of the output voltage with adjustment of the volume control and equalizer to maximum has to be carried out.

2. Warning note (example)

Excessive sound pressure from ear-/headphones can cause hearing damage /hearing loss.

Adjustment of the volume control as well as the equalizer to other settings than the center position may increase the ear-/headphones output voltage and therefore the sound pressure level.

The use of factors influencing the ear-/headphones output other than those specified by the manufacturer (e.g. operating system, equalizer software, firmware, driver) may increase the ear-/headphones output voltage and therefore the sound pressure level.

The use of ear-/headphones other than those specified by the manufacturer may lead to heightened sound pressure level.

A.2.9.35 The requirements for electronic scales with LCD indicators for the use in weighing work stations are to adhere to Annex 7.

Note: Products limited to one indicator line only are exempted.

A.2.9.36 Input devices; keyboards (20 meeting AG1 Ek1)
ISO TR 24784 is introduced into the testing principles in addition to DIN 2137 and ISO 9995.

A.3 Contents of the Test documentation

- product description
- intended context of use
- Test report according to EN 45001 / DIN ISO/IEC 17025
- Specifications for sound emission values according to Annex 1

Annex 1
Tabular compilation of the ergonomic bases for the GS testing of IT devices in cobination with visual display units.
(changes have to be considered with release of ISO 9241-3xx)

Annex 2
Test procedure for character height

Annex 3
Cancelled - 12th meeting AG1 EK1

Annex 4
Requirements for flat panels for the GS-mark (Interpretation of DIN EN ISO 13406-2)
(changes have to be considered with release of ISO 9241-3xx)

Annex 5
Requirements for Pocket PC's
(changes have to be considered with release of ISO 9241-3xx)

Annex 6: Specifications in a GS Certificate
(changes have to be considered with release of ISO 9241-3xx)

Annex 7: Annex 7: Requirements for electronic scales
(changes have to be considered with release of ISO 9241-3xx)

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Annex 1 (don't use the following table with release of ISO 9241-3xx)
Basis for GS Test of IT Equipment in Combination with Visual Display Units (EK1-ITB 2000)
(Summary, Date 2009-01-01)

Requirement	Standard / Reference	CRT - VDU	Flat panel Display	PC (System unit) with CRT – VDU or Flat panel Display	Keyboard	Notebook	Printer Scanner	Peripheral devices	Non-keyboard input devices
1 Image quality	DIN EN 29241-3	**X**		**X or**					
	DIN EN ISO 13406-2		**X**	**X**		**X**			
2 Reflection characteristics	DIN EN ISO 9241-7	**X**							
	DIN EN ISO 13406-2		**X**			**X**			
3 Colour requirements	DIN EN ISO 9241-8	**X**		**X or**					
	DIN EN ISO 13406-2		**X**	**X**		**X**			
4 Input requirements	DIN EN ISO 9241-4				**X**	**X** 3)			
	DIN 2137				**X** 2)	**X** 2)			
	DIN EN ISO 9241-9					**X**			**X**
5 Sound power level L_{WAd} (Operation according to manufacturer)	ISO 7779 (ISO 9296) BildscharbV, A 17.	**X** 1)	**X** 1)	**X** 1)	**X** 1)	**X** 1)	**X** 1)	**X** 1)	**X** 1)
6 Sound pressure level L_{pAm} (Operation according to manufacturer)	ISO 7779 (ISO 9296) BildscharbV, A 17.	**X** 1)	**X** 1)	**X** 1)	**X** 1)	**X** 1)	**X** 1)	**X** 1)	**X** 1)
7 Tilt angle max. forward: min. backward:	BildscharbV, A 5.	 5° ≥ 5°	 ≥ 5°		**X** 7)	 ≥ 5°			
8 Swivel (rotation)	BildscharbV, A 5.	max. ± 180°	max. ± 180°						
9 Max. force to swivel	BildscharbV, A 5.	max. 100 N	max. 100 N						
10 Brightness adjustable	BildscharbV, A 3.	**X**	**X**			**X**			
11 Contrast adjustable	BildscharbV, A 3.	**X**	**X** 4)			**X** 4)			
12 Gloss of housing	BildscharbV, A 8., A 15.	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units
13 Headphone output	EN 50332	**X** 5)	**X** 5)	**X** 5)	**X** 5)	**X** 5)		**X** 5)	
14 Technical documentation	GPSG	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
15 User's manual	GPSG	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**

Remark:
Requirements marked with **X** have to be proved.
1) With integrated fan.
2) With German layout.
3) Apply DIN EN ISO 9241-4 excluding exeptions given in DIN 2137-12.
4) If technically provided.
5) if available
6) (Not used)
7) A mechanism for tilt shall be available, the maximum tilt is 15°.

BildscharbV = German Ordinance for work with Visual Display Units, based on European Council Directive 90/270/EEC
GPSG = German Product Safety & liability law

Annex 1 (use the following table with release of ISO 9241-3xx)
Basis for GS Test of IT Equipment in Combination with Visual Display Units (EK1-ITB 2000)

Requirement	Standard / Reference	CRT - VDU	Flat panel Display	PC (System unit) with CRT – VDU or Flat panel Display	Keyboard	Notebook	Printer Scanner	Peripheral devices	Non-keyboard input devices	Pocket-PC 8)
1 Image quality	DIN EN ISO 9241-3xx	X	X	X		X				X
2 Input requirements	DIN EN ISO 9241-4				X	X 3)				*X 8)*
	DIN 2137				X 2)	X 2)				
	DIN EN ISO 9241-9					X			X	*X 8)*
3 Sound power level L_{WAd} (Operation according to manufacturer)	ISO 7779 (ISO 9296) BildscharbV, A 17.	X 1)	X 1)	X 1)	X 1)	X 1)	X 1)	X 1)	X 1)	
4 Sound pressure level L_{pAm} (Operation according to manufacturer)	ISO 7779 (ISO 9296) BildscharbV, A 17.	X 1)	X 1)	X 1)	X 1)	X 1)	X 1)	X 1)	X 1)	
5 Tilt angle max. forward: min. backward:	BildscharbV, A 5.	 5° ≥ 5°	 ≥ 5°		X 7)	 ≥ 5°				
6 Swivel (rotation)	BildscharbV, A 5.	max. ± 180°	max. ± 180°							
7 Max. force to swivel	BildscharbV, A 5.	max. 100 N	max. 100 N							
8 Brightness adjustable	BildscharbV, A 3.	X	X			X				*X 4)*
9 Contrast adjustable	BildscharbV, A 3.	X	X 4)			X 4)				*X 4)*
10 Gloss of housing	BildscharbV, A 8., A 15. DIN EN ISO 9241-3xx	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units	≤ 20 gloss units
11 Headphone output	EN 50332	X 5)	X 5)	X 5)	X 5)	X 5)		X 5)		X 5)
12 Technical documentation	GPSG	X	X	X	X	X	X	X	X	X
13 User's manual	GPSG	X	X	X	X	X	X	X	X	X 8)

Remark:
Requirements marked with **X** have to be proved.
1) With integrated fan.
2) With German layout.
3) Apply DIN EN ISO 9241-4 excluding exeptions given in DIN 2137-12.
4) If technically provided.
5) if available
6) (Not used)
7) A mechanism for tilt shall be available, the maximum tilt is 15°.
8) see Annex 5
BildscharbV = German Ordinance for work with Visual Display Units, based on European Council Directive 90/270/EEC, GPSG = German Product Safety & liability law

Annex 2

Test procedure for character heigth: Example for 17“ CRT - VDU

Viewing distance: 500 mm
Resolution: 1024 x 768

System-configuration	Font	Character height		Matrix	Alternative test pattern for character „m“	Alternative test pattern for character „e“
Small fonts	Arial 10	2,95 mm	20,3‘	7 x 10	●○○○●○○○● ●○○○●○○○● ●○○○●○○○● ●○○○●○○○●	●●●● ○○○○ ○○○○ ●●●● ○○○○ ○○○○ ●●●●
Large fonts	Arial 10	3,7 mm	25,4‘	9 x 12	●○○○○●○○○○● ●○○○○●○○○○● ●○○○○●○○○○● ●○○○○●○○○○●	●●●● ○○○○ ○○○○ ○○○○ ●●●● ○○○○ ○○○○ ○○○○ ●●●●

Annex 3

Cancelled - 12th meeting AG1 EK1

Annex 4.1 (with release of ISO 9241-3xx replaced by Annex 4.2)
Ergonomic Requirements for flat panels for GS-mark
(Interpretation of DIN EN ISO 13406-2 according to AG1 of EK1, 72a-03 Rev. 1)

1. Viewing distance (typical)= 500 mm

2. Viewing direction class:
- Class III: Θ range = Θ range $_{min}$ or according to manufacturers specification
- Class II: Θ range = 2 x arc tan Dactive/Ddesign view but < 80°
- Class I: Θ range ≥ 80 °

3. Equation 49 in chapter 8.7.2.1 does not apply for viewing direction class I.

4. Required inclination-angle range classes shall be taken from table 45.

5. Set up of the display:
a) Use of the natural resolution
b) Verical frequency = 60 Hz or according to manufacturers specification
c) Adjust brightness to maximum
d) Adjustment of the screen at analogues input: use auto adjustment (if an auto adjustment is not available use a pixel checkerboard for adjustment (clock, pase and geometry))
e) Generate a gray scale image: gray steps of more than 10% must be visually distinguishable
f) Warm-up time before test: minimum 1 h, better 2 h (use a screen saver during warm-up)
g) Colour temperature: according to manufacturers specification otherwise 6500 K.

6. Guideline for the GS test

Requirement	Classes	obligatory	for GS mark
7.1 Design viewing distance (touch screens)		≥400mm ≥300 mm	500 mm
7.2 Design viewing direction	I,II,III,IV		Table 45
7.3 Design screen illumination emissive displays transflective and reflective displays		250-750 lx Minimum illuminance Defined by the manufacturer	Screen tilt angle 10° 250 lx + 250 lx cos α Minimum illuminance Defined by the manufacturer
7.5 Chromaticity uniformity difference	I,II,III,IV	IV	Table 45
7.6 Character height		≥16 ´	20´ - only for fix fonts
7.7 Stroke width		8% till 20%	8% till 20% - only for fix fonts
7.8 Character width to height ratio		0,5:1 till 1:1	0,5:1 till 1:1 - only for fix fonts
7.9 Fill factor		≥0,3	≥0,3
7.10 Character format		≥ 5x7	≥ 7x9 - only for fix fonts
7.11 Between-character spacing		≥ 1 pixel	≥ 1 pixel - only for fix fonts
7.12 Between- word spacing		≥ 1 pixel	≥ 1 pixel - only for fix fonts
7.13 Between-line spacing		≥ 1 pixel	≥ 1 pixel - only for fix fonts
7.14 Display luminance	I,II,III,IV	III	Table 45
7.15 Contrast	I,II,III,IV	III	Table 45
7.17 Reflections class reflection	I,II,III	I,II or III	see EK1-ITB 2000 and EK1 decision A.2.9.5
7.17.1 Contrast in the presence of reflections	I,II,III,IV	I,II,III,IV	see EK1-ITB 2000 and EK1 decision A.2.9.5
7.17.2 Contrast of un-wanted reflections	I,II,III,IV	I,II,III,IV	see EK1-ITB 2000 and EK1 decision A.2.9.5
7.18 Image polarity		If the screen is intended for use in negative and positive polarity, use both polarities during the tests.	If the screen is intended for use in negative and positive polarity, use both polarities during the tests.

Requirement	Classes	obligatory	for GS mark
7.19 Luminance uniformity	I,II,III,IV	IV	Table 45
7.20 Pixel faults	I,II,III,IV	I,II,III,IV	I or II according to Table 3
7.21 Image formation time	t≤10 ms 10<t≤55 ms 55<t≤200 ms t>200 ms	manufacturers specification within table 1	manufacturers specification within table 1
7.22 Absolute luminance coding	I,II,III,IV	IV	Not tested (see 7.27)
7.24 Flicker		Annex B (informativ)	Test according to Annex B or visual
7.27 Colour differences	I,II,III,IV	IV	Table 45; default colour set 16 Farben (255, 0, 128, 192); in case of non compliance check with absolute luminance coding 7.22

Annex 4.2 (with release of ISO 9241-3xx)
Ergonomic Requirements for flat panels for GS-mark
(Interpretation of DIN EN ISO 9241-3xx)

Determination of the intended context of use according to ***ISO 9241-307, (example)***

Element	Attribut	Quantification
User	Vision	User with normal or to normal corrected vision of any age, 7 years or older (any literate user).
Environment	Design screen illuminance, E_S	Vertical 250 lx + 250 lx × cos(α) in offices, where α is the screen tilt angle. The screen tilt angle is considered to be 75°.
	Typical components of the illumination: Large aperture source (15°) and small aperture source (1°) illumination	1. $L_{REF,EXT}$ = 200 cd/m² and $L_{REF,SML}$ = 2 000 cd/m² (suitable for general office use); 2. $L_{REF,EXT}$ = 200 cd/m² or $L_{REF,SML}$ = 2 000 cd/m² (suitable for most, but not all, office environments); 3. $L_{REF,EXT}$ = 125 cd/m² or $L_{REF,SML}$ = 200 cd/m² (requires a specially controlled luminous environment). Dabei ist: $L_{REF,EXT}$ is the luminance of the large aperture source (15°) and $L_{REF,SML}$ is the luminance of the small aperture source (1°).
	Illuminant	CIE illuminant D65
	Ambient temperature	ambient temperature of approximate 15°C to 35°C is considered.
Task	Content and perception	Artificial information
	Amount of information	Preferred screen size for sufficient amount of information with appropriate object size and resolution.
	Image type	Still image, quasi-static or moving image is considered, if not otherwise specified by the supplier.
	Design viewing distance, $D_{design,view}$	500 mm
	Design viewing direction, Θ_D, Φ_D	Within a specific range of angles from the normal.
	Design viewing direction range (angle of inclination and azimuth)	Viewing cone with a single visual display The maximum inclination angle range Θ_{range} is: $\Theta_{range} = 2 \times \arctan(D_{active}/2 \times D_{design,view})$. Where D_{active} is the diagonal of the active display area and $D_{design,view}$ is the design viewing distance. The design inclination angle is within $0° \le \Theta_D \le 40° - \Theta_{range}/2$. The azimuth angle Φ is 0° bis 360°. NOTE This definition correspond to viewing direction range class $Class_{viewing}$ III of earlier ISO 13406-2.
	Eye and head position	From fixed to moving.
	Number of users	Typical single or multiple.
Usage	Display handling	For this compliance route stationary display handling is considered, if not otherwise specified by the supplier.

Annex 5:
Ergonomic Requirements for Pocket-PC's (AG1 of EK1, 70-02)

1. Definition: Pocket-PC
PC with integrated Display, which is smaller than DIN A4 (12th meeting AG1 EK1) and which includes an alphanumeric keyboard and/or a pen for data input and which is not used for steady work of visual display tasks.

2. Use of Pocket-PC
In general Pocket-PC's are hold by hand or standy-situated on a table.

3. Requirements according EK1-ITB 2000 and remarks

don't use the following table with release of ISO 9241-3xx

Requirements	Standards /references	Pocket-PC
1 Image Quality	ISO 13406-2	see a)
2 reflection characteristics	ISO 13406-2	see a)
3 Color characteristics	ISO 13406-2	see a)
4 Input requirements	DIN EN ISO 9241-4 DIN 2137 DIN EN ISO 9241-9	see b) see c)
5 Sound power level LWAd (operation according manufacturer)	ISO 7779 (ISO 9296) BildscharbV, A 17.	N/A
6 Schalldruckpegel LpA (Betrieb laut Hersteller)	ISO 7779 (ISO 9296) BildscharbV, A 17.	N/A
7 tilt angle max. forward: min. backward:	BildscharbV, A 5.	N/A
8 Swivel rotation	BildscharbV, A 5.	N/A
9 force to swivel	BildscharbV, A 5.	N/A
10 brightness adjustable	BildscharbV, A 3.	**X** (as far as foreseen)
11 contrast adjustable	BildscharbV, A 3.	**X** (as far as foreseen)
12 gloss of housing (reflections)	BildscharbV, A 8., A 15.	≤ 20 Gloss units
13 technical documentation	GSG	**X**
14 User's manual	GSG	**X** see d)

With **X** marked requirements basically have to be fulfilled.

don’t use the following table 3 a) with release of ISO 9241-3xx

a) Display and information presentation (ISO 13406-2):

Clause DIN EN ISO 13406-2	Applicability/Limitation
7.1	**Design viewing distance** Viewing distance min. 300mm at pocket PC’s held by hand Viewing distance min. 500mm at pocket PC’s lying on table
7.2	**Design viewing direction** Taking into account a viewing direction of up to 20° (max. 40°).
7.3	**Design screen illuminance** Specification of minimum and maximum ambient illumination by manufacturer
7.4	**Gaze and head-tilt angles** N/A
7.5	**Chromaticity uniformity difference** minimum Viewing direction class IV
7.6	**Character height** Character height minimum 20-22 minutes of arc
7.7	**Stroke width** Apply
7.8	**Character width-to-height ratio** Apply
7.9	**Fill factor** Apply
7.10	**Character format** Apply
7.11	**Between-character spacing** Apply
7.12	**Between-word spacing** Apply
7.13	**Between-line spacing** Apply
7.14	**Display luminance** Illumination according actual presented research results With integrated illumination: minimum 3cd/m² .
7.15	**Contrast** Contrast according actual presented research results $CR_{min} = 2{,}2 \bullet (1 + 2{,}2 \bullet L_L^{-0{,}65}) = 2{,}2 + 4{,}84 \bullet L_L^{-0{,}65}$
7.16	**Luminance balance** N/A
7.17	**Reflections** Small sized specular reflections (1°) are not to be considered as they can be eliminated by typical use. Only diffuse and specular big sized reflections (15°) have to be considered.
7.18	**Image polarity** Apply
7.19	**Luminance uniformity** Minimum Viewing direction class IV
7.20	**Pixel faults** Apply

7.21	**Image formation time** Apply
7.22	**Absolute luminance coding** N/A
7.23	**Blink coding** N/A
7.24	**Temporal instability (flicker)** Apply: Flickermeasurement can also be performed for grey-scale
7.25	**Default colour set** Apply
7.26	**Multicolour object size** N/A
7.27	**Colour differences** Anwenden
7.28	**Spectrally extreme colours** N/A
7.29	**Number of colours** N/A

b) Keyboard of Pocket-PC's (ISO 9241-4, ISO/IEC 9995):

Clause ISO 9241-4	Applicability/Limitation
6.1.1	**Palm-rests** N/A
6.1.2	**Sections of the keyboard** N/A
6.1.3	**Home row height** N/A
6.1.4	**Slope of the keyboard** Apply
6.1.5	**Profile of keyboard** Anwenden
6.1.6	**Keyboard surfaces and material properties of keyboards** Apply
6.1.7	**Keyboard placement** N/A
6.1.8	**Keyboard slope adjustment mechanism** N/A
6.2.1	**Key layout and center-line spacing** N/A
6.2.2	**Keytop design** Minimum 64mm²
6.2.3	**Key displacement and force** Anwenden
6.2.4.1	**General** Apply
6.2.4.2	**Kinaesthetic feedback** N/A

6.2.4.3	**Auditory feedback** N/A
6.2.4.4	**Visual feedback** Apply
6.2.5	**Rebound action (bounce)** Apply
6.2.6	**Key roll-over** Apply
6.2.7	**Key repeat function** Apply (Software)
6.2.8.1	**Graphical symbols** N/A
6.2.8.2	**Geometric design of key legends** Apply
6.2.8.3	**Number and positioning of legends** N/A
6.2.8.4	**Durability of legends** Apply
6.2.9	**Cursor keys and keys in the editing section** Apply modified
6.2.10	**Numeric keypad** Apply if applicable
6.2.11	**Keytop shape** Apply

ISO/IEC 9995

Clause ISO 9995-1	Applicability/Limitation
7.4	Key location numbering requirements Anwendbar
8.1	Group positions Ersten Absatz nicht anwenden Zweiten Absatz anwenden
8.2	Level positions within one group Anwendbar, wenn die drei Ebenen in einer Spalte dargestellt werden
Clause ISO 9995-2	Applicability/Limitation
7	Arrangement and location of keys in the alphanumeric zone of the alphanumeric section N/A
8	Functions of the alphanumeric zone of the alphanumeric section Applicable
Clause ISO 9995-3	Applicability/Limitation
5	Common secondary group layout Applicable
6	Complementary Latin group layout Applicable
Clause ISO 9995-4	Applicability/Limitation
5-10	Apply if present
Clause ISO 9995-5	Applicability/Limitation
5-12	Apply grouping of Cursor keys only as „Cross“ or „Inverte T“ Layout
Clause ISO 9995-6	Applicability/Limitation
5-6	Apply
Clause ISO 9995-7	Applicability/Limitation
5	Descriptions of functions Not to apply as used keys are not commonly used
Clause ISO 9995-8	Applicability/Limitation
5-6	Apply if present

c) Pen (ISO 9241-9):
Requiremnets according ISO 9241-9:2000 Clause 6.2.6.1 (**Grasp surface)**, 6.2.6.5 (**Size)** und 6.2.6.6 (**Weight)** shall be fulfilled.

d) Remark in the Users Manual and certificate
„not for permanent video display work“
„nicht für stänige Bildschirmarbeit geeignet“

Annex 6: Data to be provided by the GS certificate (minimum)

a) Notebook
with release of ISO 9241-3xx replaced by a1)

Item	***Example***	**Item**
1 Zertifikat-Nr. Certificate No.	*123456789*	2 Ausstellungsdatum Date of Issue
3 Genehmigungsinhaber License Holder	*Notebook GmbH*	4 Fertigungsstätte Manufacturing Plant
5 Abbildung des Prüfzeichens Figure of test mark	*= GS-Zeichen der Prüfstelle*	6 Prüfberichtsnummer Test Report No.
7 Prüfgrundlagen Test basis	*EN 60950-1:2001*	
	EK1-ITB 2000:2004	
8 Zertifiziertes Produkt (Geräteidentifikation) Certified Product (Product identification)	*Bezeichnung* *Type designation*	
9 Nennspannung/-frequenz Rated Voltage Rated Frequency	*Xvc V/u Hz*	
10 Nennstrom Rated Current	*S A*	
11 Schutzklasse Protection Class	*N*	
12 LCD-Display/Modul LCD Panel	*Xyxxxx123*	
13 Pixelfehlerklasse Pixel Fault Class	*P*	
14 Reflexionsklasse (für pos./neg. Polarität) Reflection Class (neg./pos. Polarity)	*c/d*	
15 Blickrichtungsklasse für den Kontrast Class Viewing Contrast	*ef*	
16 Blickrichtungsklasse für die Farben Class Viewing Colour	*g/h*	
17 Schalldruckpegel Sound Pressure level	*Ui dB*	
18 deklarierter Schallleistungspegel Declared Sound Power Level	*Kl dB(A)*	
19 Gültigkeitsdauer des Zertifikates Certificate valid until	*uv.wx.yz*	
20 Name des Zertifizierers Name of the person who does the certification	*V. Certus*	21 Unterschrift des Zertifizierers Signature of the person who does the certification
22 Zertifizierungsstelle mit Angabe der Anschrift Certification Body inc. address	*Cert GmbH, Certhausen*	
23 Hinweis, dass dem Zertifikat eine Prüf- und Zertifizierungsordnung zugrunde liegt. Hint, that the certificate is based on Testing and Certification Regulations.		

24 Feststellung, dass das Produkt die Anforderungen des GPSG erfüllt. Statement, that the product meets the requirements of GPSG.

a1) Notebook
with release of ISO 9241-3xx use the following table

Bezeichnung	***Beispiel***	**Bezeichnung**
1 Zertifikat-Nr. Certificate No.	*123456789*	2 Ausstellungsdatum Date of Issue
3 Genehmigungsinhaber License Holder	*Notebook GmbH*	4 Fertigungsstätte Manufacturing Plant
5 Abbildung des Prüfzeichens Figure of test mark	*= GS-Zeichen der Prüfstelle*	6 Prüfberichtsnummer Test Report No.
7 Prüfgrundlagen Test basis	*EN 60950-1:2005*	
	EK1-ITB 2000:2007	
8 Zertifiziertes Produkt (Geräteidentifikation) Certified Product (Product identification)	*Bezeichnung* *Type designation*	
9 Nennspannung/-frequenz Rated Voltage Rated Frequency	*Xvc V/u Hz*	
10 Nennstrom Rated Current	*S A*	
11 Schutzklasse Protection Class	*N*	
12 LCD-Display/Modul LCD Panel	*Xyxxxx123*	
13 Pixelfehlerklasse Pixel Fault Class	*P*	
14 Geeignet für Umgebungen nach EN 12464-1 Suitable for environments according to EN 12464-1		
15 vorgesehener Sehabstand design viewing distance	*ef*	
16 vorgesehene Sehrichtung und Sehrichtungsbereich design viewing direction and viewing direction range	°	
Inhalt und Wahrnehmung Content and perception		
17 Schalldruckpegel Sound Pressure level	*Ui dB*	
18 deklarierter Schallleistungspegel Declared Sound Power Level	*Kl dB(A)*	
19 Gültigkeitsdauer des Zertifikates Certificate valid until	*uv.wx.yz*	
20 Name des Zertifizierers Name of the person who does the certification	*V. Certus*	21 Unterschrift des Zertifizierers Signature of the person who does the certification
22 Zertifizierungsstelle mit Angabe der Anschrift Certification Body inc. address	*Cert GmbH, Certhausen*	

23 Hinweis, dass dem Zertifikat eine Prüf- und Zertifizierungsordnung zugrunde liegt. Hint, that the certificate is based on Testing and Certification Regulations.
24 Feststellung, dass das Produkt die Anforderungen des GPSG erfüllt. Statement, that the product meets the requirements of GPSG.

b) Flat Panel Display
with release of ISO 9241-3xx replaced by b1)

Item	***Example***	**Item**
1 Zertifikat-Nr. Certificate No.	*123456789*	2 Ausstellungsdatum Date of Issue
3 Genehmigungsinhaber License Holder	*Display GmbH*	4 Fertigungsstätte Manufacturing Plant
5 Abbildung des Prüfzeichens Figure of test mark	*= GS-Zeichen der Prüfstelle*	6 Prüfberichtsnummer Test Report No.
7 Prüfgrundlagen Test basis	*EN 60950-1:2001*	
	EK1-ITB 2000:2004	
8 Zertifiziertes Produkt (Geräteidentifikation) Certified Product (Product identification)	*Bezeichnung* *Type designation*	
9 Nennspannung/-frequenz Rated Voltage Rated Frequency	*Xvc V/u Hz*	
10 Nennstrom Rated Current	*S A*	
11 Schutzklasse Protection Class	*N*	
12 LCD-Display/Modul LCD Panel	*Xyxxxx123*	
13 Pixelfehlerklasse Pixel Fault Class	*P*	
14 Reflexionsklasse (für pos./neg. Polarität) Reflection Class (neg./pos. Polarity)	*c/d*	
15 Blickrichtungsklasse für den Kontrast Class Viewing Contrast	*ef*	
16 Blickrichtungsklasse für die Farben Class Viewing Colour	*g/h*	
19 Gültigkeitsdauer des Zertifikates Certificate valid until	*uv.wx.yz*	
20 Name des Zertifizierers Name of the person who does the certification	*V. Certus*	21 Unterschrift des Zertifizierers Signature of the person who does the certification
22 Zertifizierungsstelle mit Angabe der Anschrift Certification Body inc. address	*Cert GmbH, Certhausen*	
23 Hinweis, dass dem Zertifikat eine Prüf- und Zertifizierungsordnung zugrunde liegt. Hint, that the certificate is based on Testing and Certification Regulations.		
24 Feststellung, dass das Produkt die Anforderungen des GPSG erfüllt. Statement, that the product meets the requirements of GPSG.		

b1) Flat Panel Display
with release of ISO 9241-3xx use the following table

Bezeichnung	***Beispiel***	**Bezeichnung**
1 Zertifikat-Nr. Certificate No.	*123456789*	2 Ausstellungsdatum Date of Issue
3 Genehmigungsinhaber License Holder	*Display GmbH*	4 Fertigungsstätte Manufacturing Plant
5 Abbildung des Prüfzeichens Figure of test mark	*= GS-Zeichen der Prüfstelle*	6 Prüfberichtsnummer Test Report No.
7 Prüfgrundlagen Test basis	*EN 60950-1:2005*	
	EK1-ITB 2000:2007	
8 Zertifiziertes Produkt (Geräteidentifikation) Certified Product (Product identification)	*Bezeichnung* *Type designation*	
9 Nennspannung/-frequenz Rated Voltage Rated Frequency	*Xvc V/u Hz*	
10 Nennstrom Rated Current	*S A*	
11 Schutzklasse Protection Class	*N*	
12 LCD-Display/Modul LCD Panel	*Xyxxxx123*	
13 Pixelfehlerklasse Pixel Fault Class	*P*	
14 Geeignet für Umgebungen nach EN 12464-1 Suitable for environments according to EN 12464-1	cd/m² / cd/m²	
15 vorgesehener Sehabstand design viewing distance	*ef*	
16 vorgesehene Sehrichtung und Sehrichtungsbereich design viewing direction and viewing direction range	°	
Inhalt und Wahrnehmung Content and perception		
19 Gültigkeitsdauer des Zertifikates Certificate valid until	*uv.wx.yz*	
20 Name des Zertifizierers Name of the person who does the certification	*V. Certus*	21 Unterschrift des Zertifizierers Signature of the person who does the certification
22 Zertifizierungsstelle mit Angabe der Anschrift Certification Body inc. address	*Cert GmbH, Certhausen*	
23 Hinweis, dass dem Zertifikat eine Prüf- und Zertifizierungsordnung zugrunde liegt. Hint, that the certificate is based on Testing and Certification Regulations.		
24 Feststellung, dass das Produkt die Anforderungen des GPSG erfüllt. Statement, that the product meets the requirements of GPSG.		

c) PC (Personal Computer)

Item	***Example***	**Item**
1 Zertifikat-Nr. Certificate No.	*123456789*	2 Ausstellungsdatum Date of Issue
3 Genehmigungsinhaber License Holder	*PC GmbH*	4 Fertigungsstätte Manufacturing Plant
5 Abbildung des Prüfzeichens Figure of test mark	*= GS-Zeichen der Prüfstelle*	6 Prüfberichtsnummer Test Report No.
7 Prüfgrundlagen Test basis	*EN 60950-1:2001*	
	EK1-ITB 2000:2004	
8 Zertifiziertes Produkt (Geräteidentifikation) Certified Product (Product identification)	*Bezeichnung* *Type designation*	
9 Nennspannung/-frequenz Rated Voltage Rated Frequency	*Xvc V/u Hz*	
10 Nennstrom Rated Current	*S A*	
11 Schutzklasse Protection Class	*N*	
17 Schalldruckpegel Sound Pressure level	*Ui dB*	
18 deklarierter Schallleistungspegel Declared Sound Power Level	*Kl dB(A)*	
19 Gültigkeitsdauer des Zertifikates Certificate valid until	*uv.wx.yz*	
20 Name des Zertifizierers Name of the person who does the certification	*V. Certus*	21 Unterschrift des Zertifizierers Signature of the person who does the certification
22 Zertifizierungsstelle mit Angabe der Anschrift Certification Body inc. address	*Cert GmbH, Certhausen*	
23 Hinweis, dass dem Zertifikat eine Prüf- und Zertifizierungsordnung zugrunde liegt. Hint, that the certificate is based on Testing and Certification Regulations.		
24 Feststellung, dass das Produkt die Anforderungen des GPSG erfüllt. Statement, that the product meets the requirements of GPSG.		

Annex 7 Requirements for Electronic Scales

7.1 Definition

Electronic scales with indicators for the weighing of wares for use at cash registers and weihing work stations.
Note: Products limited to a single indicator line are exempt.

7.2 Application

Electronic scales are used at display terminal work stations (i.e. as weighing or measuring instruments by employees of markets).
The use/implementation usually takes place at stationary cash register and weighing work stations as well as at standing and sitting work stations.

7.3 Requirements

Electronic scales with LCD indicators and display terminals must comply with the same requirements as those for flat panel displays. The actual context of use (environment, task, user) are to be taken into consideration. For technologies other than LCD, the analog equivalent standardized requirements apply.
don't use the following table with release of ISO 9241-3xx

Requirement	Standard / Referenz	Elektronic Scale
1 Image quality	DIN EN 29241-3	
	DIN EN ISO 13406-2	**X** 1)
2 Reflection characteristics	DIN EN ISO 9241-7	
	DIN EN ISO 13406-2	**X** 1)
3 Colour requirements	DIN EN ISO 9241-8	
	DIN EN ISO 13406-2	**X** 1)
4 Input requirements	DIN EN ISO 9241-4	–
	DIN 2137	–
	DIN EN ISO 9241-9	**X**
5 Sound power level L_{WAd} (Operation according to manufacturer)	ISO 7779 (ISO 9296) BildscharbV, A 17.	–
6 Sound pressure level L_{pAm} (Operation according to manufacturer)	ISO 7779 (ISO 9296) BildscharbV, A 17.	–
7 Tilt angle max. forward: min. backward:	BildscharbV, A 5.	≥ 5°
8 Swivel (rotation)	BildscharbV, A 5.	–
9 Max. force to swivel	BildscharbV, A 5.	–
10 Brightness adjustable	BildscharbV, A 3.	**X**
11 Contrast adjustable	BildscharbV, A 3.	**X** 2)
12 Gloss of housing (Reflexion)	BildscharbV, A 8., A 15.	≤ 20 gloss units
13 Headphone output	EN 50332	–
14 Technical documentation	GPSG	**X**
15 Instructions for use	GPSG	**X**

Remarks:
Requirements marked with an X must always be included
1) Also included is an analysis of the character attributes of the various character sets as well as the contrast and reflection of the various color combinations.
2) if technically provided

with release of ISO 9241-3xx use the following table

Requirement	**Standard / Referenz**	**Elektronic Scale**
1 Image quality	DIN EN ISO 9241-3xx	**X** 1)
2 Input requirements	DIN EN ISO 9241-4	–
	DIN 2137	–
	DIN EN ISO 9241-9	**X**
3 Sound power level L_{WAd} (Operation according to manufacturer)	ISO 7779 (ISO 9296) BildscharbV, A 17.	–
4 Sound pressure level L_{pAm} (Operation according to manufacturer)	ISO 7779 (ISO 9296) BildscharbV, A 17.	–
5 Tilt angle max. forward: min. backward:	BildscharbV, A 5.	≥ 5°
6 Swivel (rotation)	BildscharbV, A 5.	–
7 Max. force to swivel	BildscharbV, A 5.	–
8 Brightness adjustable	BildscharbV, A 3.	**X**
9 Contrast adjustable	BildscharbV, A 3.	**X** 2)
10 Gloss of housing (Reflexion)	BildscharbV, A 8., A 15. DIN EN ISO 9241-3xx	≤ 20 gloss units
11 Headphone output	EN 50332	**2)**
12 Technical documentation	GPSG	**X**
13 Instructions for use	GPSG	**X**

Remarks:

Requirements marked with an X must always be included

1) Also included is an analysis of the character attributes of the various character sets as well as the contrast and reflection of the various color combinations.

2) if technically provided