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**GB/T 18910.1-2012**

Replacing GB/T 18910.1-2002

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**Liquid crystal display devices - Part 1: Generic specification**

液晶显示器件 第1部分：总规范

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## Table of Contents

|                                                                                           |    |
|-------------------------------------------------------------------------------------------|----|
| 1 Scope .....                                                                             | 1  |
| 2 Normative references .....                                                              | 1  |
| 3 Terms and definitions .....                                                             | 1  |
| 4 General .....                                                                           | 1  |
| 4.1 Order of precedence .....                                                             | 1  |
| 4.2 Preferred values of temperature, humidity and pressure .....                          | 2  |
| 4.3 Marking .....                                                                         | 2  |
| 4.4 Quality assessment categories .....                                                   | 2  |
| 4.5 Screening .....                                                                       | 3  |
| 4.6 Handling .....                                                                        | 3  |
| 5 Quality assessment procedures .....                                                     | 3  |
| 5.1 General .....                                                                         | 3  |
| 5.2 Eligibility for qualification approval .....                                          | 3  |
| 5.3 Commercially confidential information .....                                           | 3  |
| 5.4 Composition of the inspection lot .....                                               | 3  |
| 5.5 Structurally similar devices .....                                                    | 3  |
| 5.6 Granting of qualification approval .....                                              | 3  |
| 5.7 Quality conformance inspection .....                                                  | 4  |
| 5.8 Statistical sampling procedures .....                                                 | 6  |
| 5.9 Endurance tests .....                                                                 | 7  |
| 5.10 Endurance tests at a specified failure rate .....                                    | 7  |
| 6 Test and measurement procedures .....                                                   | 8  |
| 6.1 Standard atmospheric conditions for electro-optical measurement .....                 | 8  |
| 6.2 Physical examination .....                                                            | 8  |
| 6.3 Electro-optical measurement .....                                                     | 8  |
| 6.4 Environmental tests .....                                                             | 9  |
| Annex A (informative) Main differences between this part and GB/T 18910.1-2002 .....      | 10 |
| Annex B (normative) Lot tolerance percent defective (LTPD) sampling plans .....           | 12 |
| Annex C (informative) Examples of outline drawings of liquid crystal display panels ..... | 18 |
| Annex D (normative) Orientation of liquid crystal display modules .....                   | 20 |

## 1 Scope

This part of GB/T 18910 is the generic specification for liquid crystal display devices. It lays down the general procedures for quality assessment under the IECQ system, gives the general requirements for the methods of measuring electro-optical characteristics, and gives the climatic, mechanical and endurance test methods.

It applies to liquid crystal display devices, including liquid crystal display panels and liquid crystal display modules.

## 2 Normative references

The documents referred to normatively are GB/T 4589.1-2006 (semiconductor devices, part 10, generic specification for discrete devices and integrated circuits, identical to IEC 60747-10:1991); GB/T 17573-1998 (semiconductor devices, discrete devices and integrated circuits, part 1, general, identical to IEC 60747-1:1983); GB/T 18910.5-2008 (liquid crystal and solid-state display devices, part 5, environmental, endurance and mechanical test methods, identical to IEC 61747-5:1998); GB/T 18910.11-2012 (liquid crystal display devices, part 1-1, terms and symbols); GB/T 18910.61-2012 (liquid crystal display devices, part 6-1, measuring methods for liquid crystal display devices, optoelectrical parameters); IEC 60068, all parts, environmental testing; IEC 60410:1973, sampling plans and procedures for inspection by attributes; IEC 60747, all parts, semiconductor devices, discrete devices; IEC 60748, all parts, semiconductor devices, integrated circuits; IEC 60749:1996, semiconductor devices, mechanical and climatic test methods; QC 001002:1986, rules of procedure of the IEC quality assessment system for electronic components (IECQ); ISO 1101:1983, technical drawings, geometrical tolerancing; and ISO 2859, all parts, sampling procedures for inspection by attributes.

## 3 Terms and definitions

The terms and definitions defined in GB/T 18910.11-2012 apply to this document.

## 4 General

4.1 Order of precedence. In the event of a dispute the documents shall be applied in the following order of authority: a) detail specification; b) blank detail specification; c) family specification, where one exists; d) sectional specification; e) generic specification; f) basic specification; g) IECQ rules of procedure; h) any other international document that has to be consulted, for example an IEC document; i) national documents. The same order of precedence applies to equivalent national documents.

4.2 Preferred values of temperature, humidity and pressure. The preferred values of temperature, humidity and pressure for characteristic measurement, testing and operating

conditions follow GB/T 18910.5-2008.

4.3 Marking. 4.3.1 Device identification: the marking on the device shall be clear and legible. 4.3.2 Device traceability: the device shall carry a traceability code allowing the exact production lot and inspection lot of the device to be traced. 4.3.3 Packaging: the following markings shall appear on the packaging: a) the identification code of the device; b) the traceability code of the devices in the package; c) the number of devices in the package; d) other points to be noted, where required. The markings above may be adjusted in accordance with custom. A note adds that further requirements may be laid down in the relevant detail specification.

4.4 Quality assessment categories. The specification establishes three quality assessment categories. Devices within the same inspection lot bearing an identification code and a date code are inspected according to the quality category laid down. The acceptable quality level (AQL) or the lot tolerance percent defective (LTPD) associated with a given inspection group may differ from one quality category to another and shall conform to the detail specification.

The minimum requirements for each category are as follows. Category I: devices of this category meet the qualification approval requirements of category II or category III; every lot meets the group A inspection requirements, functional tests included; interconnection capability inspection is carried out every three months on one lot and shall meet the requirements; group B and group C inspections are carried out once a year and shall both meet the requirements (see 5.7.2). Category II: lots of this category meet the lot-by-lot inspection requirements of groups A and B and the periodic inspection requirements of group C. Category III: lots of this category undergo 100 % screening and meet the lot-by-lot inspection requirements of groups A and B and the periodic inspection requirements of group C.

The sectional specification and the blank detail specification shall lay down the minimum requirements for each of the categories above. The detail specification may include supplementary requirements, screening included, that are not present in the generic, sectional or blank detail specification.

4.5 Screening. Screening is the inspection and testing of every device in a lot. Where the detail specification so requires, all the devices in the lot submitted shall be screened according to one of the sequences given in the relevant table of the sectional specification or the blank detail specification, and every defective device removed. Another, unspecified screening sequence is used only where the sequences above are unrelated to, or in conflict with, the recognised failure mechanism. Where part of the screening procedure given in the relevant table of the sectional specification or the blank detail specification already forms part of the manufacturing process, those steps need not be repeated. For the purposes of this specification, burn-in is defined as the application of thermal and electrical stress to all the devices in a lot for a specified time, followed by inspection and the removal of potential

early failures.

4.6 Handling. Handling follows the requirements of section IX of GB/T 17573-1998. Where toxic and harmful substances are present, a warning marking shall be provided, beryllium oxide for example.

## 5 Quality assessment procedures

5.1 General. Quality assessment comprises the procedures laid down in 4.4 for obtaining qualification approval and, thereafter, the lot-by-lot quality conformance inspection laid down by the detail specification, screening included where required, and the periodic quality conformance inspection. Quality assessment tests are divided into the group A, group B and group C tests carried out lot by lot or periodically as laid down in 4.4. In certain cases group D tests may also be prescribed, for qualification approval for example.

5.2 Eligibility for qualification approval. A device type is eligible for qualification approval only when it satisfies clause 11 of QC 001002:1986. 5.2.1 The initial manufacturing stage is laid down in the sectional specification or the blank detail specification.

5.3 Commercially confidential information. Where part of the manufacturing process involves commercial secrets, it shall be marked appropriately, and the chief inspector shall certify to the satisfaction of the national supervising inspectorate (NSI) that 10.2.2 of QC 001002:1986 has been complied with.

5.4 Composition of the inspection lot. See the provisions of 12.2 of QC 001002:1986.

5.5 Structurally similar devices. See the provisions of 8.5.3 of QC 001002:1986. The details of the grouping are laid down in the relevant sectional specification or blank detail specification.

5.6 Granting of qualification approval. See 11.3.1 of QC 001002:1986. The manufacturer may choose method a) or method b) of 11.3.1 of QC 001002:1986 in accordance with the inspection requirements given in the sectional specification or the blank detail specification. The sample may be made up of suitable structurally similar devices. In certain cases qualification approval requires group D tests. All measurements of variation carried out as end-point measurements after the tests in the detail specification shall have their variation data recorded.