SLOVENSKI STANDARD
oSIST prEN 63181-2:2019

01-september-2019

Zaslonska oprema LCD z več zasloni - 2. del: Merilne metode

LCD multi-screen display terminals - Part 2: Measuring methods

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **prEN 63181-2:2019**

ICS:

33.160.60	Večpredstavni (multimedijski) sistemi in oprema za telekonference	Multimedia systems and teleconferencing equipment

oSIST prEN 63181-2:2019   **en,fr,de**

iTeh STANDARD PREVIEW

(standards.iteh.ai)

100/3242/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 63181-2 ED1	

DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2019-06-14	**2019-09-06**

SUPERSEDES DOCUMENTS:
100/3155/CD,100/3224/CC

IEC TC 100 : AUDIO, VIDEO AND MULTIMEDIA SYSTEMS AND EQUIPMENT

SECRETARIAT:	SECRETARY:
Japan	Mr Junichi Yoshio

OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD:
TC 110	☒
	Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC   ☐ ENVIRONMENT   ☐ QUALITY ASSURANCE   ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING   ☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

LCD multi-screen display terminals – Part 2: Measuring methods

---

PROPOSED STABILITY DATE: 2022

NOTE FROM TC/SC OFFICERS:

CONTENTS

45 INTERNATIONAL ELECTROTECHNICAL COMMISSION

46 _____

47
48 **LCD MULTI-SCREEN DISPLAY TERMINALS –**
49
50 **Part 2: Measuring methods**
51
52 FOREWORD

53 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising
54 all national electrotechnical committees (IEC National Committees). The object of IEC is to promote
55 international co-operation on all questions concerning standardization in the electrical and electronic fields. To
56 this end and in addition to other activities, IEC publishes International Standards, Technical Specifications,
57 Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC
58 Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested
59 in the subject dealt with may participate in this preparatory work. International, governmental and non-
60 governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely
61 with the International Organization for Standardization (ISO) in accordance with conditions determined by
62 agreement between the two organizations.

63 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international
64 consensus of opinion on the relevant subjects since each technical committee has representation from all
65 interested IEC National Committees.

66 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National
67 Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC
68 Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any
69 misinterpretation by any end user.

70 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications
71 transparently to the maximum extent possible in their national and regional publications. Any divergence
72 between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in
73 the latter.

74 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity
75 assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any
76 services carried out by independent certification bodies.

77 6) All users should ensure that they have the latest edition of this publication.

78 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and
79 members of its technical committees and IEC National Committees for any personal injury, property damage or
80 other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and
81 expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC
82 Publications.

83 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is
84 indispensable for the correct application of this publication.

85 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of
86 patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

87 International Standard IEC 63181-2 has been prepared by IEC technical committee 100:
88 Audio, video and multimedia systems and equipment.

89 The text of this International Standard is based on the following documents:

FDIS	Report on voting
XX/XX/FDIS	XX/XX/RVD

90

91 Full information on the voting for the approval of this International Standard can be found in
92 the report on voting indicated in the above table.

93 This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

94 The committee has decided that the contents of this document will remain unchanged until the
95 stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to
96 the specific document. At this date, the document will be

97 • reconfirmed,

98 • withdrawn,

99 • replaced by a revised edition, or

100 • amended.

101

102 The National Committees are requested to note that for this document the stability date
103 is ….

104 THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE
105 DELETED AT THE PUBLICATION STAGE.

106

107

LCD MULTI-SCREEN DISPLAY TERMINALS –

Part 2: Measuring methods

1 Scope

This part of IEC 63181 specifies measuring methods for LCD multi-screen display terminals. To evaluate the characteristics of LCD multi-screen display terminals, the following measurement items are specified:

- Gap (physical, optical) -- Detailed splicing precision;
- Splicing deviation – Splicing accuracy of active areas of LCD splicing screen;
- Installation deviation -- The flatness of terminal surfaces in vertical and horizontal directions;
- Luminance uniformity – Luminance uniformity of adjacent LCD units;
- Chromatic uniformity – Chromatic uniformity of adjacent LCD units.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60107-1:1997 Method of measurement on receivers for television broadcast transmissions Part1: General considerations measurements at radio and video frequencies.

IEC 61747-30-1:2012 Measuring methods for liquid crystal display modules – Transmissive type.

IEC 63181-1 LCD Multi-screen display terminals – Part 1: Conceptual model

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in IEC 63181-1 are applied in this document.

4 Measuring conditions

4.1 Standard measuring environmental conditions

Measurements shall be carried out under the standard environmental conditions:

- Temperature: 25 ºC $\pm$ 3 ºC;
- Relative humidity: 25 %RH ~ 85 %RH;
- Atmospheric pressure: 86 kPa ~ 106 kPa;
- Illuminance range: $\leq$ 1 lx.

When different environmental conditions are applied, they shall be noted in the measurement report.

4.2 Optical measuring distance

We provide two measurement distance options to perform the measurement:

Option 1 (Recommended): non-contact measurement

In this option, the measurement distance shall set to 3 times the height of the single LCD units; the measurement device shall perpendicular to test point(s) during entire measurement.

Option 2: contact measurement

In this option, there has no measurement distance between LCD units and measurement device, which means the measurement device will directly contact the surface of LCD units for test point(s) during entire measurement.

5 Measuring methods of structure test for LCD multi-screen display terminals
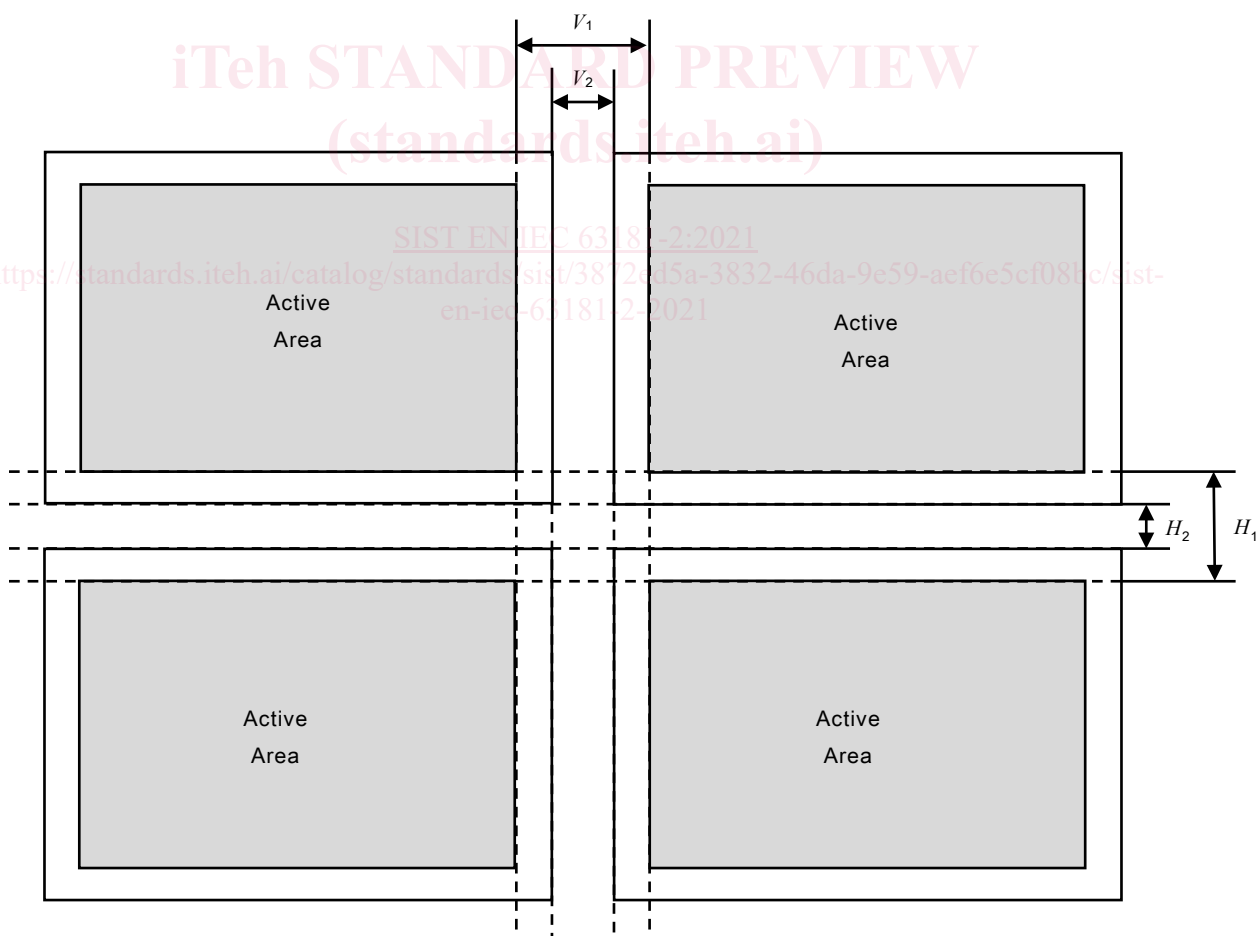
5.1 Physical gap

5.1.1 General

The purpose of this test is to measure the gap between two sides of adjacent LCD units.

5.1.2 Method of measurement

Apply feeler gauge to measure all the adjacent screen sides of the LCD splicing screen, choose the largest data recorded as physical gap (See Figure 1 shown as below):

Key

V_1, H_1 the optical gap

V_2, H_2 the physical gap

Figure 1 – Illustration for physical gap and optical gap

167 **5.2 Optical gap**

168 **5.2.1 General**

169 The purpose of this test is to measure the gap between the boundaries of two adjacent active
170 areas in LCD splicing screen.

171 **5.2.2 Method of measurement**

172 a) Input a full white signal to LCD multi-screen display terminals, set all LCD units of LCD
173 splicing screen to standard states that are factory default settings or manufacturer
174 specified settings;

175 b) Apply calliper to measure all the distance between the boundaries of each two adjacent
176 active areas in LCD splicing screen, record the largest data as optical gap (See Figure 1
177 as shown above).

178 **5.3 Splicing deviation**

179 **5.3.1 General**

180 The purpose of this test is to measure the displacement of active areas (in pixel) in LCD
181 splicing screen.

182 **5.3.2 Method of measurement**

183 a) Set all LCD units in LCD splicing screen to standard states that are factory default
184 settings or manufacturer specified settings;

185 b) Input a graduation & circle signal separately to each 2-by-2 LCD units in LCD splicing
186 screen;

187 c) Preliminarily measure the effect of whole LCD splicing screen by the circle signal (See
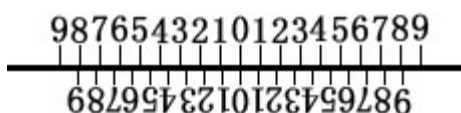188 Figure 2 a) as shown below);

189 d) Accurately measure the displacement of the boundaries of two adjacent active areas in
190 vertical and horizontal directions of the LCD units by the partial graduation signal (See
191 Figure 2 b) as shown below):
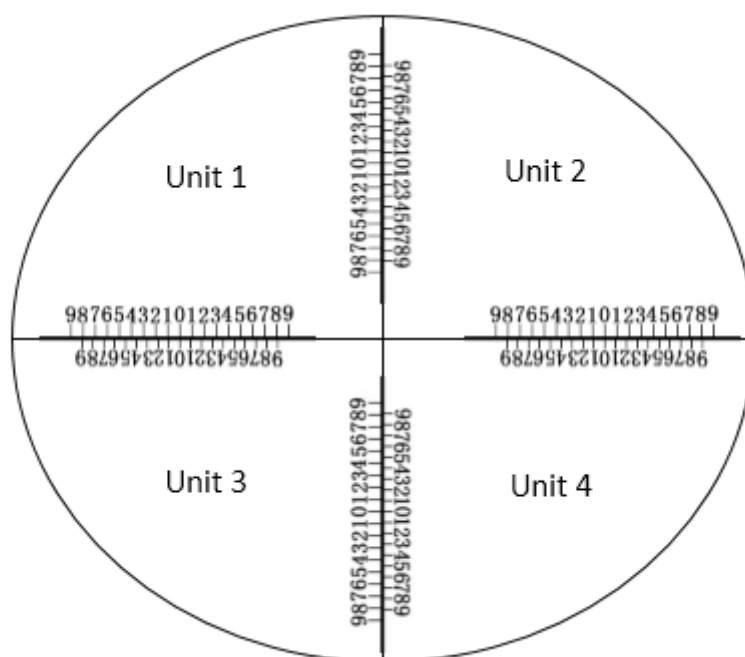
192

193 **a) Test signal**

9876543210123456789

b) Partial test signal

Figure 2 – Illustration for test signal

5.4   LCD multi-screen display terminals installation deviation

5.4.1   General

The purpose of this test is to verify the flatness and installation deviation of LCD multi-screen display terminals, including diagonal deviation, edge flatness, LCD splicing screen display surface flatness, vertical installation deviation.

5.4.2   Method of measurement

a) Define the four corners of LCD splicing screen as A, B, C, D (See Figure 3 as shown below);

b) Measure the length of AC and recorded as L_{AD}, measure the length of BD and recorded as L_{BC}, then diagonal deviation is calculated as $\Delta L = L_{AD} - L_{BC}$. Assuming the LCD splicing screen display surface is under flatness condition, if $\Delta L \neq 0$, it means that the surfaces is not in flatness condition, or otherwise;

c) Measure the edge lengths of AB, BD, CD, AC, compare the lengths of AB and CD with the width of the LCD splicing screen without installation deviation, record the differences as $\Delta L_{width,1}$ and $\Delta L_{width,2}$; compare AD and BC with the accurate height of the LCD splicing screen without installation deviation, record the differences as $\Delta L_{height,1}$ and $\Delta L_{height,2}$. The differences are edge flatness;

d) Measure the LCD splicing screen display surface flatness by calculating the differences of $\Delta L = L_{AD} - L_{BC}$ in part b) with assuming the all the outer edges of LCD splicing screen are aligned. If $\Delta L \neq 0$, it means that the surfaces is not in flatness condition, or otherwise;

e) Hang a vertical plumb from B point, measure and calculate $\angle EBD$ in degree as LCD splicing screen vertical installation deviation (See Figure 4 as shown below).
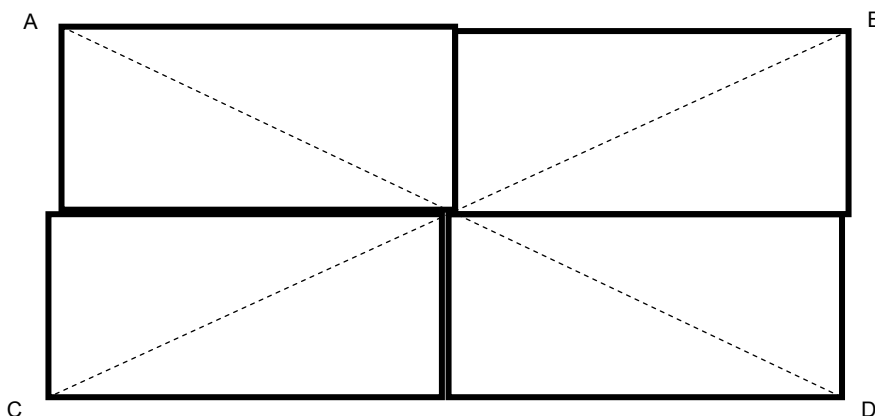
NOTE 1   A, B, C, D is the four vertexes of the LCD splicing screen

NOTE 2   The idea gap between LCD units at any installation for calculation is 0

Figure 3 – Illustration for diagonal distances