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**A subjective method for the evaluation of the  
displaying quality of LED displays**

LED 显示屏图像质量主管评价方法

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# A subjective method for the evaluation of the displaying quality of LED displays

## 1 Scope

This standard specifies the subjective evaluation method for the displaying quality of LED displays.

This standard applies to the subjective evaluation, of the displaying quality of indoor and outdoor full-color LHD displays, that are broadcast and controlled by a computer AND mainly display video images, animations, pictures.

This standard does not apply to LED displays, that mainly display text information, such as variable information signs, urban traffic guidance signs, bank and securities market information.

## 2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB/T 7401-1987 Method of subjective assessment of quality of color TV pictures

SJ/T 11141-2012 Generic specification for LED panels

SJ/T 11281-2007 Test methods of LED panels

## 3 Terms and definitions

### 3.1

#### **Subjective evaluation**

A method, that directly uses the observer's subjective reaction to the image of the system under test, to determine the performance of the system under test.

### 3.2

### **Quality evaluation**

A subjective evaluation of the performance of the tested display system, under certain viewing conditions.

#### **3.3**

##### **Test image**

An image or image sequence, which has specific requirements on the image material, AND is used for the subjective evaluation of the system under test.

#### **3.4**

##### **Rating scale**

The scoring scale, which is used in subjective evaluation.

#### **3.5**

##### **The dust effect**

A phenomenon, that the display is visually covered with dust, due to the degradation of image quality of the display, during playback, which is caused by the uneven light intensity of the light-emitting diodes or other reasons.

#### **3.6**

##### **False contour**

The contour lines of equal grayscale, which appear in the image, that shall be smoothly transitioned, due to insufficient grayscale or improper image enhancement and grayscale processing of the LED display.

## **4 Basic conditions and scoring criteria**

### **4.1 Basic observation conditions**

Unless otherwise specified, subjective evaluation shall be carried out under the conditions, which are specified in Table 1. When other observation conditions are required for individual specific evaluation items, they shall be explained separately in the evaluation items.

## 6 Evaluation procedures and guidelines

### 6.1 Test broadcast control device

The standard output interface of the test broadcast control device is DVI or HDMI. If there are N displays, for comparison and evaluation, it must use a DVI splitter or HDMI splitter with N interfaces, that meets the requirements of N displays working at the same time.

### 6.2 Arrangement of observers

The subjective evaluation is divided into 10 stages (or the test content is cut and compressed, only high-weight items are tested and evaluated). At the beginning of each test stage, first introduce the test content, evaluation method, scoring grade, to the observer. When the evaluation is officially started, the observer shall independently score the officially displayed images under evaluation, on the printed scorecard, according to the description of the scoring grade.

### 6.3 Scoring steps for observation evaluation

Perform two evaluation scoring on the display. The content and methods of these two evaluations are the same. See Appendix B for the scoring table for each time; summarize the scoring according to Appendix C. The specific steps for scoring are as follows:

- a) Perform the first-stage evaluation scoring, on ten evaluation items, in the order of evaluation form;
- b) After the first stage of evaluation scoring, collect the scoring evaluation forms of all observers immediately;
- c) In order to avoid the fatigue of the observer, thereby affecting the accuracy of the evaluation result, the observer shall have at least (10 ~ 20) minutes of rest time, between the two test stages;
- d) Then, perform the evaluation scoring of the second stage, according to the same method as the first stage;

- e) After the second stage of evaluation scoring, collect all observers' scoring evaluation forms immediately;
- f) According to the scoring criteria of 6.4.1 ~ 6.4.5, produce the final evaluation results.

## **6.4 Scoring criteria**

### **6.4.1 Criteria 1 (eliminate invalid scores for individual stage deviations)**

When an observer gives a score, which differs two or more grades, to the same image of the same display, under the same observation conditions, in the two test stages, the individual score is judged to be an invalid score for stage deviation.

### **6.4.2 Criteria 2 (eliminate invalid scores for individual extreme deviations)**

According to criteria 1, after removing the invalid score of the individual stage deviation, the highest score of the two totals of the single item AND the lowest score of the two totals of the single item, in the remaining scores, are judged as the invalid score of the extreme value deviation of this single item. If there are multiple observers who have the total individual scores, which are paratactic highest or paratactic lowest, THEN, select this individual score of one of the observers, as the invalid score of extreme deviation.

### **6.4.3 Criteria 3 (determine temporary individual score)**

After eliminating invalid scores for all stage deviations AND invalid scores for extreme deviations, according to criteria 1 and 2, perform the arithmetic average, for all valid scores of the two test stages of the evaluated display (the sum of the valid scores of the two stages divided by the number of valid observers), to get the temporary individual scores of all the items of the evaluated display.

### **6.4.4 Criteria 4 (determine the final individual score)**

All the temporary individual scores, which obtained according to criteria 3, are weighted according to Appendix D, to obtain the final individual scores of all the items of the evaluated display.

### **6.4.5 Criteria 5 (Determine the final total score)**

The final individual scores of all evaluation items of the evaluated display are summed, to obtain the final total score of the display.

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