

ICS 31.120
CCS L 53



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 20871.61-2024

Replacing GB/T 20871.61-2013

**Organic light emitting diode(OLED) displays - Part 6-1:
Measuring methods of optical and electro-optical parameters**

有机发光二极管显示器件 第6-1部分：光学和光电参数测试方法

(English Translation)

Issued on: April 25, 2024

Implemented on: August 1, 2024

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative references	
3 Terms and definitions, abbreviations	
3.1 Terms and Definitions	
3.2 Abbreviations	
4 Test device	
5 Standard test conditions	
5.1 Standard atmospheric conditions	
5.2 Standard test chamber conditions	
5.3 Standard setting conditions	
5.4 Standard location of test area	
5.5 Standard Test Pattern	
6 Test methods for optical parameters	
6.1 Brightness, Chromaticity and Non-uniformity of Full-color High-resolution Modules	
6.2 Brightness, Chroma and Uniformity of Low-Resolution Modules	
6.3 Signal loading	
6.4 Darkroom Contrast	
6.5 Display color gamut, color gamut coverage and color gamut volume	
7 Power consumption test method	
7.1 Purpose	
7.2 Test conditions	
7.3 Test Step	
Appendix A (Normative) Response time of passive matrix display devices	
A:1 Purpose	
A:2 Test conditions	
A:3 Test method	
Appendix B (Normative) Brightness Current Efficiency	
B:1 Purpose	
B:2 Test conditions	
B:3 Test method	

Appendix C (Informative) Truncated cone for blocking scattered light

Appendix D (Informative) Method for Determining Correlated Color Temperature (TCCT) from Chromaticity Coordinates

D:1 Method 1: Using McCamy's approximation formula

D:2 Method 2: Using the Javier Hernandez-Andres approximation formula

D:3 Method 3: Determine the correlated color temperature (CCT) from the chromaticity diagram

Appendix E (Informative) Testing of Modern Color Managers and Screen Performance

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting:

This document is Part 6-1 of GB/T 20871 Organic Light Emitting Diode Displays: GB/T 20871 has been published for the following part:

- Part 1-2: Terminology and text symbols;
- Part 6-1: Test methods for optical and optoelectronic parameters;
- Part 6-3: Image quality test methods:

This document replaces GB/T 20871.61-2013 Organic light emitting diode displays Part 6-1: Test methods for optical and optoelectronic parameters Compared with GB/T 20871.61-2013, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) Added terms and abbreviations of commonly used terms in the standard (see 3.1 and 3.2);
- b) Added provisions for the standard position of the test area and the standard test pattern (see 5.4 and 5.5);
- c) In the optical parameter test method, the brightness test canceled the maximum full screen brightness and 4% window brightness test methods, and added the full color High-resolution modules and low-resolution modules are used to measure brightness and brightness uniformity (see 6.1 and 6.2);
- d) In the optical parameter test method, the darkroom contrast test has been changed from full screen darkroom contrast and 4% window darkroom contrast to Calculate contrast by measuring white and black brightness at low APL loading (see 6.4);
- e) Added signal loading test items (see 6.3);

f) Added the color gamut volume test (see 6.5:6);

g) Added 7:3:2 Measurement of power consumption of OLED display modules using signal decoding embedded video connection terminals (see 7.3:2):

This document is equivalent to IEC 62341-6-1:2022 "Organic light emitting diode display devices Part 6-1: Optical and optoelectronic parameters measurement Test Methods:

Introduction

The new display industry is a strategic, basic and leading industry for national economic and social development: Organic light-emitting diode display devices the global market share of OLED has been steadily increasing, and it has been developing through low-temperature polycrystalline oxide (LTPO), touch and display driver integration (TDDI), etc:

Backplane technology effectively improves refresh rate, reduces screen power consumption, and expands application space:

The organic light emitting diode display device standard is to meet the production, manufacturing, inspection and it is formulated based on the needs of import and export trade:

The organic light emitting diode display device is proposed to be composed of the following parts:

--- Part 1-1: General specification: The purpose is to specify the general requirements for organic light emitting diode display devices:

--- Part 1-2: Terminology and text symbols: The purpose is to define the preferred terms, definitions and text symbols for organic light emitting diode displays:

Character number:

--- Part 2: Basic ratings and characteristics: The purpose is to specify the basic ratings and characteristics of organic light emitting diode display modules:

--- Part 3: Display screen sub-specification: The purpose is to provide the quality assessment procedures, inspection and requirements, screening sequences, sampling requirements, tests and test methods:

--- Part 4: Display module section specification: The purpose is to specify the quality assessment procedures required for organic light emitting diode display modules, including Inspection requirements, screening sequences, sampling requirements, tests and test methods:

--- Part 4-1: Detailed specification of display module for under-screen camera: The purpose is to specify the technical specifications of display module for under-screen camera:

Terms and definitions, requirements, quality assessment procedures, and testing procedures:

--- Part 5-1: Environmental test methods: The purpose is to provide the evaluation of organic light emitting diode display modules under specified environmental conditions:

Test methods for adaptability to working and storage environments:

--- Part 5-2: Mechanical test methods: The purpose is to specify the mechanical durability and Test methods for packaging for transport:

--- Part 5-3: Test methods for afterimage and life: The purpose is to specify the afterimage of organic light emitting diode displays and display modules Standard test conditions and test methods for durability and life:

--- Part 6-1: Test methods for optical and optoelectronic parameters: The purpose is to specify the optical properties of organic light emitting diode displays and display modules:

Standard measurement conditions and standard measurement methods for scientific parameters:

--- Part 6-2: Test methods - Visual quality and bright room performance: The purpose is to specify organic light emitting diode displays and display modules Standard test conditions and test methods for visual quality and bright room performance:

--- Part 6-3: Image quality test method: The purpose is to specify the image quality of organic light emitting diode displays and display modules Standard test conditions and test methods:

Organic light emitting diode display devices Part 6-1: Test methods for optical and optoelectronic parameters

1 Scope

This document describes standard test conditions and tests for optical and optoelectronic parameters of Organic Light Emitting Diode (OLED) displays and display modules step:

This document is applicable to the testing of OLED display devices under darkroom conditions:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document:

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document: