

DRAFT INTERNATIONAL STANDARD

ISO/DIS 5926

ISO/TC 36

Secretariat: ANSI

Voting begins on:
2022-08-30

Voting terminates on:
2022-11-22

Technical requirements and test methods for digital cinema stereoscopic projection

ICS: 37.060.99

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/PRF 5926

<https://standards.iteh.ai/catalog/standards/sist/a5b9f883-bdfe-4877-9e53-1ce8819786ce/iso-prf-5926>

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

This document is circulated as received from the committee secretariat.



Reference number
ISO/DIS 5926:2022(E)

© ISO 2022

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/PRF 5926

<https://standards.iteh.ai/catalog/standards/sist/a5b9f883-bdfe-4877-9e53-1ce8819786ce/iso-prf-5926>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Technical requirements.....	2
5 Test methods.....	2
5.1 Measuring equipments.....	2
5.1.1 Spectroradiometer.....	2
5.1.2 Photometer.....	2
5.2 Signal of measurement.....	2
5.2.1 White field signal.....	2
5.3 Measurement conditions and measurement requirements.....	2
5.4 The measurement of the optical system of stereoscopic projection.....	3
5.4.1 Luminance, center.....	3
5.4.2 Luminance, difference.....	3
5.4.3 Luminance, uniformity (side).....	4
5.4.4 White chromaticity, center.....	5

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/PRF 5926](https://standards.iteh.ai/catalog/standards/sist/a5b9f883-bdfe-4877-9e53-1ce8819786ce/iso-prf-5926)

<https://standards.iteh.ai/catalog/standards/sist/a5b9f883-bdfe-4877-9e53-1ce8819786ce/iso-prf-5926>

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 36, *Cinematography*.

ISO/PRF 5926

<https://standards.iteh.ai/catalog/standards/sist/a5b9f883-bdfe-4877-9e53-1ce8819786ce/iso-prf-5926>

Introduction

This document was developed in response to worldwide demand for minimum specifications for the digital cinema stereoscopic projection distributed internationally.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/PRF 5926

<https://standards.iteh.ai/catalog/standards/sist/a5b9f883-bdfe-4877-9e53-1ce8819786ce/iso-prf-5926>

Technical requirements and test methods for digital cinema stereoscopic projection

1 Scope

This document specifies the technical requirements and corresponding measurement methods for the parameters of images generated by digital cinema stereoscopic projection optical systems.

This document is applicable to the measurement of digital cinema stereoscopic projection systems.

2 Normative references

The following documents for the application of this document are essential. For dated references, only the dated versions apply to this document. For undated references, the latest edition (including any amendments) applies.

ISO 10527:2007, *CIE standard colorimetric observers*

ISO 26431-1:2008, *Digital cinema (D-cinema) quality — Part 1: Screen luminance level, chromaticity and uniformity*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org>

3.1

luminance, center

the luminance value of the center point of the screen under the white field signal is expressed as the arithmetic mean of the luminance values of the center of the left and right white screens

3.2

luminance, difference

the ratio of the absolute value of luminance difference between the left and right white screen centers and the luminance of the center of the screen

3.3

luminance, uniformity (side)

the luminance of the top, bottom, left, and right sides of the left (right) eye screen is consistent with the luminance of the left (right) eye center

3.4

white chromaticity, center

the chromaticity of the center point of the left (right) eye white field, expressed in color coordinates

4 Technical requirements

The technical requirements for the parameters of images generated by digital cinema stereoscopic projection optical systems are given in [Table 1](#). Target A shall be preferred for theaters, followed by B and C.

Table 1 — Technical requirements for the parameters of images generated by digital cinema stereoscopic projection optical systems

Number	Parameter	Requirements				Test methods
		Target ^a	Nominal	Review rooms range	Theaters range	
1	Luminance, center (cd/m ²)	A	48.0	±3.5	±10.2	refer to 5.4.1
		B	24.0	±1.8	±5.1	
		C	15.5	±1.1	±3.3	
2	Luminance, difference	shall not be more than 5%				refer to 5.4.2
3	Luminance, uniformity (side)	(should be): 75% to 90% of luminance center				refer to 5.4.3
4	White chromaticity, center	(should be): $x = 0.314 \pm 0.006, y = 0.351 \pm 0.006$				refer to 5.4.4

^a Filmmakers can prepare content that is optimized for any or each of the targets.

5 Test methods

5.1 Measuring equipments

5.1.1 Spectroradiometer

The spectroradiometer shall comply with the requirements specified in 4.5, ISO 26431-1:2008.

5.1.2 Photometer

Screen luminance shall be measured with a spot photometer having the spectral luminance response of the standard observer (photopic vision), as defined in ISO 10527:2007. The acceptance angle of the photometer shall be 2° or less. The lower limit of the measuring range shall be 0.01 cd/m² or better. The photometer response to luminance variation over time shall be to properly integrate any such variation occurring at frequencies at or above 24 Hz and display the arithmetic mean value.

5.2 Signal of measurement

5.2.1 White field signal

The digital code values of the white field signal is (X'=3794,Y'=3960,Z'=3890).

5.3 Measurement conditions and measurement requirements

Measurement conditions shall meet the following requirements:

- All equipment shall be in normal operating status;
- Measurement shall be carried out after the light output of the digital projector stabilizes. Digital projector shall project white field signal through the stereoscopic equipment for 15 min;
- The light of the digital projector shall pass through the stereoscopic projection equipment;

- d) When measuring through the stereoscopic glasses they shall be placed in a horizontal state, as a viewer would wear them. No tilt from the horizontal axis is allowed;
- e) All signals shall be output to the digital projector by Media Block. The measurement shall cover all valid screen images;
- f) Measurement location in the auditorium shall comply with the requirements specified in 4.3, ISO 26431-1:2008.;
- g) Measurement locations on the screen of Luminance, difference shall comply with the requirements specified in 4.2, ISO 26431-1:2008;
- h) For using dual stereoscopic cinema screenings, both of the digital projectors shall also be turned on and working normally;
- i) The measurement of the optical system of stereoscopic projection should be carried out within the range of the white color chromaticity coordinates of the center of the screen.

5.4 The measurement of the optical system of stereoscopic projection

5.4.1 Luminance, center

Measurement Procedures:

- a) Open the photometer and make it work normally;
- b) Set the digital projector as the stereoscopic projection mode and use the stereoscopic projection equipment;
- c) The white field signal is simultaneously displayed in the left and right eyes;
- d) Using the photometer to measure and record the left-eye white field center luminance L_{lw} and the right-eye white field center luminance L_{rw} through the left-eye lens and the right-eye lens of the stereo glasses;
- e) Calculate and record the luminance center L according to [Formula \(1\)](#);

$$L = \frac{L_{lw} + L_{rw}}{2} \quad (1)$$

where

L Luminance, center;

L_{lw} The center luminance of the white field of the left-eye when the left and right eyes simultaneously display the white field signal;

L_{rw} The center luminance of the white field of the right-eye when the left and right eyes simultaneously display the white field signal.

5.4.2 Luminance, difference

Measurement Procedures:

- a) Refer to the measurement method of luminance center, record the left-eye white field center luminance L_{lw} and the right-eye white field center luminance L_{rw} ;
- b) Calculate and record the luminance difference L_d according to [Formula \(2\)](#);

$$L_d = \frac{|L_{lw} - L_{rw}|}{\left(\frac{1}{2}\right)(L_{lw} + L_{rw})} \times 100 \% \quad (2)$$

where

L_d Luminance difference;

L_{lw} The center luminance of the white field of the left-eye when the left and right eyes simultaneously display the white field signal;

L_{rw} The center luminance of the white field of the right-eye when the left and right eyes simultaneously display the white field signal.

5.4.3 Luminance, uniformity (side)

Measurement Procedures:

- a) Open the photometer and make it work normally;
- b) Set the digital projector as the stereoscopic projection mode and use the stereoscopic projection equipment;
- c) The white field signal is simultaneously displayed in the left and right eyes;
- d) Measure the luminance L_{lw} of white field in the center of screen and the luminance L_{ls} of white field of four sides by using photometer through stereoscopic glasses of left-eye;
- e) Measure the luminance L_{rw} of white field in the center of screen and the luminance L_{rs} of white field of four sides by using photometer through stereoscopic glasses of right-eye;
- f) Calculate and record the luminance uniformity (side) U_l of the upper, lower, left and right edges of the white field of the left-eye according to [Formula \(3\)](#);

$$U_l = \frac{L_{ls}}{L_{lw}} \times 100 \% \quad (3)$$

where

U_l Left-eye luminance, uniformity (side);

L_{lw} The center luminance of the white field of the left-eye when the left and right eyes simultaneously display the white field signal;

L_{ls} The left-eye luminance of white field of four sides when the left and right eyes simultaneously display the white field signal.

- g) Calculate and record the luminance uniformity (side) U_r of the upper, lower, left and right sides of the white field of the right-eye according to [Formula \(4\)](#).

$$U_r = \frac{L_{rs}}{L_{rw}} \times 100 \% \quad (4)$$

where

U_r Right-eye luminance, uniformity (side);

L_{rw} The center luminance of the white field of the right-eye when the left and right eyes simultaneously display the white field signal;