

ICS 37.040.10

CCS N46



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

**GB/T 42978-2023**

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**Digital cameras - Shading measurements**

数码照相机 渐晕的测量

**Issued on: September 7, 2023**

**Implemented on: April 1, 2024**

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**Issued by: State Administration for Market Regulation;  
Standardization Administration of the PRC**

## Table of Contents

|                                       |    |
|---------------------------------------|----|
| 1 Scope .....                         | 1  |
| 2 Normative reference documents ..... | 1  |
| 3 Terms and Definitions .....         | 1  |
| 4 Test conditions and methods .....   | 1  |
| 4.1 General .....                     | 1  |
| 4.3 Light source .....                | 2  |
| 4.4 Test chart .....                  | 2  |
| 4.5 Image/Camera Settings .....       | 2  |
| 5 Analysis method .....               | 3  |
| 5.1 Overview .....                    | 3  |
| 5.2 Brightness unevenness .....       | 4  |
| 5.3 Brightness non-uniformity .....   | 4  |
| 5.4 Chroma unevenness .....           | 4  |
| 7 Reference .....                     | 12 |

## Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents" Drafting. This document has been modified to adopt ISO 17957.2015 "Measurement of Vignette in Photographic Digital Cameras". The technical differences between this document and ISO 17957.2015 and their reasons are as follows:

---Adjust ISO 7589, ISO 11664-2, ISO 11664-4, ISO 12231 and CIE15.2004 that are not specifically cited in the text. to references;

---Adjust the nature of Appendix A from normative to informative. The following editorial changes have been made to this document.

---Change the name of the standard to "Measurement of Vignette in Digital Cameras";

---Adjusted the formula number. Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents. This document is proposed by China Machinery Industry Federation. This document is under the jurisdiction of the National Photographic Equipment Standardization

Technical Committee (SAC/TC107). This document was drafted by: Chengdu Weiguang Collecting Technology Co., Ltd., Hangzhou Photographic Mechanical Research Institute Co., Ltd., Jiaxing Zhongrun Optical Technology Co., Ltd., University of Electronic Science and Technology of China, Hangzhou Guozhao Testing Technology Co., Ltd. The main drafters of this document. Wang Yong, Song Bo, Ge Shiqing, Zhang Jie, Chen Xiaobing, Li Jing, and Zeng Dan. Measurement of vignetting in digital cameras

## 1 Scope

GB/T 42978-2023 specifies the measurement of shading in digital cameras, adopting ISO 17957 with modifications. Shading is the fall-off of brightness and the shift of colour towards the corners of the frame, caused partly by the lens and partly by the angle at which light strikes the sensor's microlenses; every phone camera corrects it in software, which is exactly why a defined measurement is needed - what is being sold is the result after correction, and the correction can leave colour non-uniformity where it removed the brightness fall-off. The standard sets the test conditions and methods, including the test chart and the image and camera settings, and the analysis methods for luminance shading, luminance non-uniformity and colour shading, with informative annexes on the recommended measurement conditions and a worked example of the shading metric calculation. It took effect on 1 April 2024.

This document describes a method for measuring vignetting in digital cameras. The test method includes independent measurement of color and luminance signal components. program. This document applies to vignetting measurements on digital cameras and camera phones.

## 2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document.

IEC 61966-2-1.1999 AMD1.2003 Color measurement and management of multimedia systems and equipment Part 2-

## 3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Luminance non-uniformityluminancenon-unifority luminanceshading A gradual change in the brightness signal component over the image range.

3.2 Color non-uniformity colour non-uniformity color vignetting colour shading A gradual change in the components of the chrominance signal over the range of the image.

## 4 Test conditions and methods

4.1 General When measuring the vignetting of a digital camera, the test conditions in 4.2~4.5 should be used as standard conditions. If it is not possible or approximately achieved The standard operating conditions specified in 4.2~

4.5 and the actual operating conditions should be listed together with the reported results.

4.2 Equipment and Hardware The following hardware is required to control and report test conditions.

---Even and flat test card;

---light source;