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

GB/T 19894-2025

Replacing GB/T 19894-2005

**Digital still-picture cameras - Methods for measuring
opto-electronic conversion functions(OECFs)
(English Translation)**

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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 replaces GB/T 19894-2005 "Measurement method of optical-electrical conversion function (OECFs) of digital cameras" and GB/T 19894-Compared with 2005, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

--- Added two OECF test standard diagrams (see Figure A.2 and Figure A.3), added Y1/3i and four charts of brightness range There are two tables of density values for ($D_{min}=0.10$) (see Table A.2 and Table A.3).

This document is equivalent to ISO 14524:2009 "Photographic digital cameras - Measurement methods of optoelectronic transfer functions (OECFs)".

The following minimal editorial changes have been made to this document.

--- To coordinate with the existing standard, the name of the standard is changed to

"Measurement method of optical-electrical conversion functions (OECFs) of digital cameras";

--- Added the text referring to informative Appendix C (see 9.2.2 Note);

---According to the usage habits of current standards, textbooks, technical data and other documents in my country's photographic machinery industry, the effective F number of the lens does not need to be f , so in this document, F_e and F are used instead of f_e and f respectively.

This document was proposed by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee for Standardization of Photographic Machinery (SAC/TC107).

Introduction

This document establishes the functional relationship between logarithmic exposure or scene brightness in the test focal plane and the digital output level of a digital camera.

This information is very useful for developing and testing digital cameras and is also used for measuring other digital cameras.

Yes, and may be helpful in the processing of digital image data.

The OECF for a digital camera may look similar to the characteristic curves used for photography and television, but they are not identical.

Indicates the relationship between a physical input (such as logarithmic exposure or reflectance) and a physical output (such as density or voltage).

It shows the relationship between a physical signal input and the digital code representing the physical response caused by the input. Because this assignment is arbitrary the value itself has no physical meaning or unit. For example, if the value changes by one time, the corresponding physical response may increase by one time, or a certain amount may increase by one time.

level changes, or other changes, depending on how the code values are assigned.

In digital photography applications, it is usually not necessary to know the physical response of the digital camera, but only to know how much a changing input produces.

Digital values are sufficient. Therefore, this document does not specify how to measure the actual characteristic curve of a digital camera. This document only specifies How to measure the relationship between the input to a digital camera and the digital values it produces. These values are only useful insofar as they represent information.

Absolute meaning.

digital camera

Measurement methods for optical-electrical conversion functions (OECFs)

1 Scope

This document describes in detail the measurement of the optical-electrical transfer functions (OECFs) of digital cameras that output digitally encoded image files.

OECF is defined as the logarithmic exposure of the focal plane or the logarithmic brightness of the scene and the digital output signal value of an optoelectronic digital image capture system.

The relationship between them.

This document applies to the measurement of the photoelectric conversion function of black and white and color digital cameras.

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.

ISO 5-1 Photography-Densitymeasurements-Part 1: Terms, symbols and signs Note. GB/T 12823.1-2008 Photographic density measurement Part 1: Terms, symbols and representation (ISO 5-1:1984, IDT) ISO 5-2 Photography-Densitymeasure-Part 2: Geometric conditions for transmission density Note. GB/T 11500-2008 Photographic density measurement Part 2: Geometric conditions for perspective density (ISO 5-2:2001, IDT) ISO 5-3 Photography-Densitymeasurements-Part 3: Spectral conditions Note. GB/T 12823.3-2025 Photographic and graphic techniques Density measurement Part 3: Spectral conditions (ISO 5-3:2009, MOD) Note. GB/T 12823.4-2008 Photographic density measurement Part 4: Geometric conditions for reflection density (ISO 5-4:1995, IDT) ISO 516 Camera shutters-Timing-General definitions and measurement of mechanical shutters Note. GB/T 8338-2023 Measurement of camera shutter time (ISO 516:2019, IDT) ting-Specifications) ISO 7589:2002 Specification for light sources for photogrammetry. fluorescent lamps, incandescent tungsten lamps and printers Note. GB/T 15061-1994 General rules for the determination of the sensitivity of silver halide photographic materials Part 1: Exposure profiles for specimens exposed to incandescent tungsten light and simulated sunlight Parts (ISO 7589:1984, NEQ)

3 Terms and Definitions

For the purposes of this document, the following terms and definitions apply¹⁾.

1) For other terms and definitions, see ISO 12232.