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**NATIONAL STANDARD OF THE
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Digital still cameras -- Noise measurements

数码照相机 噪声的测量

(English Translation)

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method identical with ISO 15739:2013 "Photographic electronic imaging noise measurement method." this standard made the following editorial changes.

--- In line with the existing standard series, the standard name was changed to "digital camera noise measurement." Please note that some of this document may be patentable. The issuing agencies of this document do not bear the responsibility of identifying these patents.

This standard is proposed by the China Machinery Industry Federation.

This standard by the National Standardization Technical Committee camera (SAC/TC107) centralized.

This standard was drafted. Hangzhou Camera Institute of Machinery, Zhejiang University.

Introduction

Noise is a very important feature of electronic photography systems. This standard specifies the camera noise measurement methods, through digital analysis Technology, in the digital realm.

Under different exposure time and operating temperature conditions, the noise performance of the image sensor can be very different, so the test conditions must is specific.

The visibility of the noise to the observer depends on the severity of the noise. The external tone of the image area contains the spatial frequency of noise and noise rate. The performance of noise in the output depends on the performance of the noise in the stored image data and on the contrast amplification or increase applied to the output data processing beneficial. The visibility of noise is different in different luminance (or monochrome) channels and color (or color difference) channels. Therefore, this standard is measuring the above factors are taken into account in recording camera noise.

Appendix A describes the method of determining the digital camera noise composition by a number of samples.

The perception of noise in an image may vary, depending on the distance observed, the spatial frequency, the density, the color, and the viewing bar Pieces. Appendix B illustrates a procedure for testing visual noise levels using the human visual model to weight the spectral components of noise method.

Appendix C gives a method for removing low-frequency variables in the data result of a tile, for example, the brightness shade.

Appendix D provides a recommended method for step-by-step determination of signal to noise ratio and incremental gain.

In Appendix E, recommendations are made for the effective observation of various output media.

Digital camera noise measurement

1 Scope

This standard specifies the digital camera noise and the corresponding signal level and dynamic range of measurement and recording methods.

This standard applies to black and white and color electronic digital camera.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

ISO 7589-2002 photographic detection of light source daylight, incandescent tungsten lamp and printer light source specifications (Photography-Illuminants for sensitometry-Specifications for daylight, incandescent tungsten and printer) ISO 12232-2006 Photography Digital camera exposure index, ISO sensitivity, standard output sensitivity and recommended exposure index (Photography-Digital still cameras-Determination of exposure index, ISO speed ratings, standard output sensitivity, and recommended exposure index) ISO 14524:2009 Photography Electrophotographic photometric conversion functions (OECFs) measurement method [Photography-Electronic still picture cameras-Methods for determining photo-electronic conversion functions (OECFs)] ITU-R BT.709-5 HDTV standard for high-definition television standards and international program communication Parameter (Parameter values for the HDTV Standards for production and international programme exchange) CIE 15:2004 Colorimetry, 3rd edition (Colorimetry, 3rd edition)

3 Terms and definitions

The following terms and definitions apply to this document.

Camera photoelectric conversion function camera photo-electronic conversion function
Camera OECF camera OECF Enter the relationship between the logarithm of the brightness of the scene and the pixel value of the photo-electricity digital photography system.

Note: The unit of measure for this function is $\log_{10} \text{cd/m}^2$.

Cutoff value clipping value Further increase the exposure while keeping the value of a

constant pixel output (highlight cutoff), or further reduce the exposure to the number of Constant pixel output value (dark cutoff).

Digital camera digitalstilcamera; DSC Digital still images are generated by the digital output of the solid-state image sensor and can use digital media (such as a removable memory card) Camera for storing digital still images.

Image sensor Electronic equipment that converts incident electromagnetic radiation into electrical signals.