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

GB/T 18721.2-2017

**Graphic technology -- Prepress digital data exchange -- Part 2:
XYZ/sRGB encoded standard colour image data (XYZ/SCID)**

印刷技术 印前数据交换 第2部分：XYZ/sRGB编码的标准彩色图像数据(XYZ/SCID
)

(English Translation)

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Table of Contents

Preface
Introduction
1 Scope
2 Normative reference document
3 Terms and definitions
4 Image data
5 Data description and definition
6 Electronic data
Appendix A (Normative Appendix) Standard Color Image Data - Usage Guide
Appendix B (Normative Appendix) Checksum
Appendix C (informative) The typical TIFF file header in the image data file
Appendix D (informative) Text mark
Appendix E (informative) Image evaluation and reproduction
Reference

Foreword

GB/T 18721 "Printing technology pre-press data exchange" is divided into the following five parts.

- Part 1. CMYK standard color image data (CMYK/SCID);
- Part 2. XYZ/sRGB encoded standard color image data (XYZ/SCID);
- Part 3. CIELAB standard color image data (CIELAB/SCID);
- Part 4. Wide color gamut range display Standard color image data (AdobeRGB (1998)/SCID);
- Part 5. Standard color image data (RIMM/SCID) with reference to scene.

This part is part 2 of GB/T 18721.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part uses the translation method equivalent to ISO 12640-2:2004 "Printing technology prepress data exchange Part 2. XYZ /sRGB encoded standard color image data (XYZ/SCID) ".

In this part of the normative reference to the international documents have a consistent

correspondence between the following documents.

Printing techniques - Spectral measurements and chromaticity calculations for printed images (ISO 13655.:1996, IDT); GB/T 19437-2004.

--- GB/T 22113-2008 Printing technology Pre-press data exchange Label image file format for image technology (TIFF/IT (ISO 12639.:2004, IDT).

The following editorial changes are made in accordance with the requirements of GB/T 1.1-2009.

- Incorporated the contents of ISO 12640-2 Technical Corrigendum 1 issued by ISO on November 15, 2008.

This part of the State Press and Publication by the State Administration of Radio.

This part of the National Printing Standardization Technical Committee (SAC/TC170) centralized.

This part of the drafting unit. Shenzhen Vocational and Technical College, Hunan Tian Wen Xinhua Printing Co., Ltd., Hong Bo Haotian Technology Co., Ltd., Hangzhou Electric Science and Technology University, Beijing Institute of Printing, Shanghai Pan Cai Image Equipment Co., Ltd.

Introduction

This part was originally submitted by the Japan Image Processing Technology Standards Committee to the International Organization for Standardization Printing Technology Committee (ISO/TC130) Working Group II, which was developed by the Working Group.

0.1 Standard XYZ/sRGB digital test image of the role

The standard color image data (CMYK/SCID, ISO 12640-1) that have been issued is defined as a percentage of CMYK outlets, so the master to apply to the printing industry. If you want to apply this data to other systems, such as monitors, CMY printers, etc., there will be the following one Some questions.

There is no clear correspondence between the image data and the chromaticity value defined by the CMYK dot percentage;

--- The group of image data only 8-bit data encoding, will make the color conversion results are not accurate enough;

The set of image data is associated with the CMYK output device and may be generated on other color imaging devices.

And the image data of other devices.

In order to solve the above problem, an image data based on the following conditions is

proposed.

--- is represented by sRGB , that is, the RGB value is based on the tristimulus value of ITU-RBT.709-3RGB primary color coding;

- Associated with the standard sRGB display and standard observation conditions defined in IEC 61966-2-1.

In addition, this part also provides 16-bit encoded CIEXYZ image data, which corresponds to the white color coordinates for the CIE Standard illuminated body D65 conditions under the sRGB image presented by the color.

Because this set of images provided by this section has a high image quality, data consistency is good, it can be widely used in the following areas.

- Evaluate the color reproduction capability of the imaging system and the output device;
- evaluation of storage and transmission of high-definition image data encoding technology.

0.2 Test image features

Performance evaluation of color imaging systems typically involves subjective (visual observation of the final output image) and objective (by measuring the image control System unit) two methods. This evaluation method requires that the test image include both natural images (photographs) and other synthetic images (Computer graphics, business charts, color tables and gradient colors).

Because the results of subjective evaluation are largely influenced by the image content, thus ensuring the high quality and diversity of natural images is very important.

0.3 Description of the digital test image

In order to determine the ideal image content, in the International Organization for Standardization Printing Technology Committee members within the scope of the investigation and solicitation Image that matches the condition. The final image set consists of eight natural images and seven composite images. 8 natural images contain skin Color, neutral color, very high light or dark tone has a rich level of change in the image, and usually more difficult to copy the brown and wood color, memory, complex of the geometric shape, subtle levels and high light and dark tone gradient. The selected composite image is generated by a computer, including several computer graphics, A business chart, a color table and a series of gradient colors.

According to the general observation habits, all images of the pixel arrangement are based on the upper left corner of the origin, line by line. RGB images with TIFF6.0 Format storage. The TIFF6.0 format does not define a method for storing XYZ color space data. XYZ images will be in TIFF6.0 format the Photometric tab is set to 2 (RGB), which allows the TIFF reader to open the TIFF file but does not display the image correctly Colour. If

necessary, such images can be in a variety of operating systems, with the industry common image processing software into and edit. on See Appendix C for a detailed description of the TIFF file header.

Printing technology prepress data exchange Part 2. Standard color for XYZ/sRGB encoding Image data (XYZ/SCID)

1 Scope

This section specifies a set of 15 standard color images (16-bit encoded XYZ data and 8-bit encoded RGB data electronic text), Suitable for evaluation coding, image processing (including conversion, compression and decompression), display or print on the display image quality Variety. These images can be used in many areas of printing technology, such as research, development, product evaluation and process control.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

IEC 61966-2-1.:1999 Multimedia systems and equipment - Color measurement and management - Part 2-1. Default RGB color space sRGB
(Multimediasystemsandequipment-Colormeasurement andmanagement-Part 2-1. Default RGB colorspace-sRGB) ITU-RBT.709-3..1998 HDTV standard parameter values for program production and international program exchange (Parametervaluefor theHDTVstandardsforproductionandinternationalprogrammeexchange) TIFF6.0 Final Edition, Aldus Corporation (now AdobeSystemsIncorporated), July 3, 1992 [TIFF, Revision 6.0Final, Aldus Corporation (nowAdobeSystemsIncorporated), June3, 1992]

3 Terms and definitions

The following terms and definitions apply to this document.

Checksum

The sum of the digits in the file, used to check whether the file was transferred correctly.

Note: Only the least significant bits are usually summed.

Color sequence coloursequence the order of the colors stored in the data file.

Color space

Describe the geometric space of the color set, usually a three-dimensional space.

[CIE publication 17.4, 845-03-25 definition] Note. This part is based on XYZ and sRGB two