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Graphic technology — Prepress digital data exchange —

Part 5:
Scene-referred standard colour image data (RIMM/SCID)

Technologie graphique — Échange de données numériques de préimpression —

Partie 5: Données d'image standard en couleurs montrées en référence par scène (RIMM/SCID)

Reference number
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Foreword

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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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is Technical Committee ISO/TC 130, *Graphic technology.*

ISO 12640 consists of the following parts, under the general title *Graphic technology — Prepress digital data exchange*:

— *Part 1: CMYK standard colour image data (CMYK/SCID)*

— *Part 2: XYZ/sRGB standard colour image data (XYZ/SCID)*

— *Part 3: CIELAB standard colour image data (CIELAB/SCID)*

— *Part 4: Wide gamut display-referred standard colour image data (Adobe RGB(1998)/SCID)*

— *Part 5: Scene-referred standard colour image data (RIMM/SCID)*

Introduction

0.1 Need for standard colour image data

Standard colour image data provide a set of data that can be used for any of the following tasks:

— evaluating the colour reproduction of imaging systems;

— evaluating colour image output devices;

— evaluating the effect of image processing algorithms applied to the images;

— evaluating the coding technologies necessary for the storage and transmission of high-definition image data, etc.

These standard, well-defined image data sets, are typical of the high quality image content commonly encountered when capturing and printing images. Users can therefore be confident that the images should produce good quality reproductions if properly rendered, and that they provide a reasonable test of the evaluation task being undertaken. No limited set of images can fully test any system, but the sets provided give as reasonable a test as can be expected from a limited image set. Furthermore, the existence of a standard set enables users in different locations to produce comparisons without the need to exchange images prior to reproduction.

Different applications require that the standard image data be provided in different image states using different image encodings (see ISO 22028-1), so the user needs to select those appropriate to the evaluation task being undertaken. While transformation of the image data to another image state is always possible, there is, in general, no agreement amongst experts as to how this should be done. Thus, it has been considered preferable to provide data in different image states in the various parts of ISO 12640. The relationship between image states is shown in Figure 1 along with the applicable parts of ISO 12640.

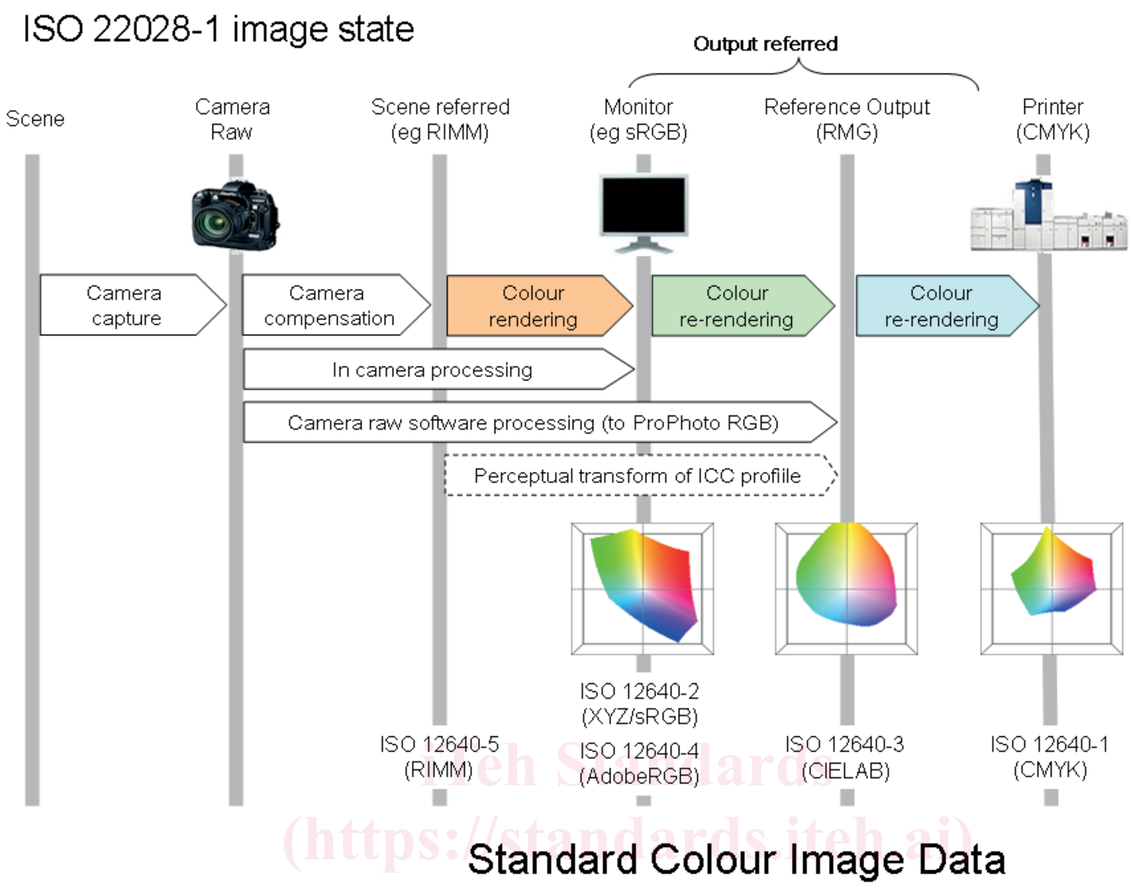

Figure 1 — Relationship between image states

ISO 12640-1 provides a set of 8 bits/channel data that is defined in terms of CMYK dot percentages. The colours resulting from reproduction of CMYK data are strictly defined only at the time of printing, and as such the data are only applicable to evaluation of CMYK printing applications. Transformations to other image states and colour encodings might not be well defined. In fact, the data might not even be useful for CMYK printing processes different from those typically found in traditional graphic arts applications, as the image data are defined to produce “pleasing” images when reproduced on systems using “typical” inks and producing “typical” tone value rendering. Printing systems that use inks of a distinctly different colour, or produce a very different tone value rendering, will not reproduce them as pleasing images without a well-defined colour transformation. Moreover, with a bit depth of only 8 bits/channel, any colour transformation employed might well introduce artefacts.

ISO 12640-2 provides a set of test image data encoded both as XYZ values with each channel scaled to the range 0-65535, and as sRGB (defined in IEC 61966-2-1), with a bit depth of 8 bits/channel. (The higher bit depth for the XYZ encoding is necessary because of the perceptual non-uniformity of the linear colour space.) Both sets of data are optimized for viewing on a reference sRGB display in the reference sRGB viewing environment, and relative to CIE standard illuminant D65 for which the XYZ tristimulus values were computed prior to scaling. The images are mainly designed to be used on systems utilizing sRGB as the reference encoding, and as such are primarily applicable to systems for which a colour monitor similar to the sRGB reference display is the “hub” device. Although such systems are used for consumer photography, they are less popular in the graphic arts industry because the sRGB colour gamut is quite different in shape from the colour gamut of typical offset printing. This difference can necessitate fairly aggressive colour re-rendering to produce optimal prints from sRGB image data.

ISO 12640-3 provides a set of test image data with a large reflection medium colour gamut, illuminated using illuminant D50. The bit depth of the natural images is 16 bits/channel, while the colour charts and vignettes are 8 bits/channel. In order to be useful for applications where large, print-referred output gamuts are encountered, common in graphic technology and photography, it was felt that it would be desirable to produce an image set in which some colours are permitted to be encoded close to the boundary of the full colour gamut attained with surface colours. Furthermore, from the perspective of colour management, it is advantageous if the images are referenced to illuminant D50, which is the predominant reference illuminant used in graphic arts and photography, both for viewing and measurement. For this reason, it has also become the predominant reference illuminant for most colour management applications.

ISO 12640-4 provides a set of wide-gamut test image data encoded as Adobe RGB with a bit depth of 16 bits/channel. These data are optimized for viewing on a reference Adobe RGB display in the reference Adobe RGB viewing environment (defined in the Adobe RGB (1998) Colour Image Encoding specification). The images are designed to be used mainly on systems utilizing Adobe RGB as the reference encoding, and as such are mainly applicable to the professional market and those systems for which the wide gamut colour monitor is the “hub” device. Such workflows are popular among professional photographers, and are increasingly used in the graphic arts. The Adobe RGB reference display colour gamut is closer to typical offset printing gamuts than the sRGB reference display colour gamut. Adobe RGB encoded images generally require much less aggressive colour re-rendering going to print than sRGB encoded images, although this difference can necessitate colour re-rendering between Adobe RGB images and sRGB images. The purpose of ISO 12640-4 is therefore to provide a test image data set with a larger colour gamut than sRGB, related to the Adobe RGB wide-gamut display-referred colour space. The bit depth of the natural images and synthetic images is 16 bits/channel.

The possible wide gamut colour encoding choices considered were Adobe RGB, opRGB (IEC 61966-2-5) and ROMM RGB (ISO 22028-2). For ISO 12640-4, it was important that the images were well-colour-rendered to a well-defined large gamut reference display, for which reason Adobe RGB was preferred over the other two choices. With opRGB, the completeness of the colour rendering is left more ambiguous, i.e. it is not as clearly output-referred, and the reference medium and viewing conditions are also slightly different. ROMM RGB (ISO 22028-2) is clearly output-referred, but the reference medium is a virtual reflection print (the ICC perceptual reference medium), so the image state is identical to that for ISO 12640-3.

This part of ISO 12640 provides a set of scene-referred test image data encoded as RIMM RGB with a bit depth of 16 bits/channel. These data are estimates of scene colorimetry obtained by capturing natural scenes using a variety of digital cameras and transforming the captured raw camera RGB signals to scene colorimetry estimates. The accuracy of these estimates is influenced by a number of factors including the degree to which the camera spectral sensitivities approximate human visual system colour matching functions, the appropriateness of the transformation from raw camera RGB signals to colorimetry estimates, optical effects such as off-axis decrease in signal, aberrations and flare, and the noise present in the camera signals. The transformations applied to obtain the colorimetry estimates were general transformations, i.e. they were not optimized for the spectral characteristics of each scene. Consequently, there can in some cases be significant errors in the estimates. The image state of these data is scene-referred because no attempt has been made to colour render the data to produce a pleasing reproduction on some output medium. The only processing applied to these data based on visual evaluation was to select the scene adopted white. This was accomplished by applying gains individually to the camera channels to achieve the desired white balance, converting to scene-referred, and then adjusting the overall gain in a linear, scene-referred working space while viewing the image with the example colour rendering transform specified in ISO/TS 22028-3:2012, Annex A, applied. Different white balances can be desired in some cases for aesthetic reasons, and different overall gains can be needed if different colour rendering transforms are used. The images provided in this part of ISO 12640 are mainly applicable for evaluating colour rendering to different output media.

0.2 Characteristics of the test images

The performance of any colour reproduction system will normally be evaluated both subjectively (by viewing the final output image) and objectively (by measurement of control elements). This requirement dictates that the test images include both natural scenes (pictures) and synthetic images (colour charts and colour vignettes). Because the results of subjective image evaluation are strongly affected by the image content, it was important to ensure that the natural images were of high quality and contained diverse subject matter. However, it is difficult within a single, relatively small, sample set to produce elements in the scene that contain all the subtle colour differences required in test images, and that span the full range of colours that can be encountered in real scenes. For this reason, synthetic colour charts are also included. These colour charts are limited by the integer RIMM RGB encoding and by the spectral locus (for areas where the RIMM RGB encoding extends outside the spectral locus). In the future, it is proposed to develop a second set of floating point RIMM/SCID which are not limited by the integer RIMM RGB encoding.

To obtain the images, a survey was conducted of all TC 130 member countries to identify desirable image content and to solicit submission of suitable images for consideration. The image set that resulted consists of 44 natural images, two colour charts and a series of colour vignettes. The natural images include flesh tones, hair, foliage, water, sky, flowers and other memory colours in scenes with a variety of dynamic ranges.

0.3 File format of the digital test images

All of the images consist of pixel interleaved data (R then G then B), with the data origin at the upper left of the image, as viewed naturally, and organized by rows. These data are included as individual files within this part of ISO 12640. The image file format is as specified in ISO 12639 (TIFF/IT). A RIMM RGB ICC profile meeting the requirements of ISO 15076-1 is embedded in each image file.

The images can be imported and manipulated as necessary by a wide variety of commonly used imaging software tools and platforms in general use in the industry. (See Annex C for details of the TIFF header and the RIMM RGB ICC profile.)

Graphic technology — Prepress digital data exchange —

Part 5: Scene-referred standard colour image data (RIMM/SCID)

1 Scope

This part of ISO 12640 specifies a set of standard scene-referred colour images (encoded as 16-bit RIMM RGB digital data) that can be used to evaluate transforms from a scene-referred image state to an output-referred image state (colour rendering transforms). They can be used for research, testing and assessing colour rendering transforms, in systems such as digital cameras, camera raw processing applications, colour management systems, colour profiles, and output devices such as displays and printers.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 12639:2004, *Graphic technology — Prepress digital data exchange — Tag image file format for image technology (TIFF/IT)*

ISO/TS 22028-3:2012, *Photography and graphic technology — Extended colour encodings for digital image storage, manipulation and interchange — Part 3: Reference input medium metric RGB colour image encoding (RIMM RGB)*

3 Terms and definitions

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

3.1
additive RGB colour space
colorimetric colour space having three colour primaries (generally red, green and blue) such that CIE XYZ tristimulus values can be determined from the RGB colour space values by forming a weighted combination of the CIE XYZ tristimulus values for the individual colour primaries, where the weights are proportional to the radiometrically linear colour space values for the corresponding colour primaries

Note 1 to entry: A simple linear 3 × 3 transformation can be used to transform between CIE XYZ tristimulus values and the radiometrically linear colour space values for an additive RGB colour space.

Note 2 to entry: Additive RGB colour spaces are defined by specifying the CIE chromaticity values for a set of additive RGB primaries and a colour space white point, together with a colour component transfer function.

[SOURCE: ISO 22028-1:2004, 3.3]

3.2
adopted white
spectral radiance distribution as seen by an image capture or measurement device and converted to colour signals that are considered to be perfectly achromatic and to have an observer adaptive luminance factor of unity; i.e. colour signals that are considered to correspond to a perfect white diffuser

Note 1 to entry: The adopted white may vary within a scene.

Note 2 to entry: No assumptions should be made concerning the relation between the adapted or adopted white and measurements of near perfectly reflecting diffusers in a scene, because measurements of such diffusers will depend on the illumination and viewing geometry, and other elements in the scene that may affect perception. It is easy to arrange conditions for which a near perfectly reflecting diffuser will appear to be grey or coloured.

[SOURCE: ISO 22028-1:2004, 3.4]

3.3
colour component transfer function
CCTF
single variable, monotonic mathematical function applied individually to one or more colour channels of a colour space

Note 1 to entry: Colour component transfer functions are frequently used to account for the nonlinear response of a reference device and/or to improve the visual uniformity of a colour space.

Note 2 to entry: Generally, colour component transfer functions will be nonlinear functions such as a power-law (i.e. “gamma”) function or a logarithmic function. However, in some cases a linear colour component transfer function may be used.

[SOURCE: ISO 22028-1:2004, 3.6, modified — Abbreviated term has been added]

3.4
colour gamut
solid in a colour space, consisting of all those colours that are: present in a specific scene, artwork, photograph, photomechanical or other reproduction; or capable of being created using a particular output device and/or medium

[SOURCE: ISO 22028-1:2004, 3.8]

3.5
colour rendering
mapping of image data representing the colour-space coordinates of the elements of a scene to output-referred image data representing the colour-space coordinates of the elements of a reproduction

Note 1 to entry: Colour rendering generally consists of one or more of the following: compensating for differences in the input and output viewing conditions, tone scale and gamut mapping to map the scene colours onto the dynamic range and colour gamut of the reproduction, and applying preference adjustments.

[SOURCE: ISO 22028-1:2004, 3.11]

3.6
colour sequence
order in which the colours are stored in an image data file

3.7
orientation
origin and direction of the first line of data, with respect to the image content as viewed by the end user

Note 1 to entry: The codes used to specify orientation are contained in ISO 12639.

3.8
output-referred image state
image state associated with image data that represents the colour-space coordinates of the elements of an image that has undergone colour rendering appropriate for a specified real or virtual output device and viewing conditions

Note 1 to entry: When the phrase “output-referred” is used as a qualifier to an object, it implies that the object is in an output-referred image state. For example, output-referred image data are image data in an output-referred image state.

Note 2 to entry: Output-referred image data are referred to the specified output device and viewing conditions. A single scene can be colour-rendered to a variety of output-referred representations depending on the anticipated output viewing conditions, media limitations, and/or artistic intents.

Note 3 to entry: Output-referred image data may become the starting point for a subsequent reproduction process. For example, sRGB output-referred image data are frequently considered to be the starting point for the colour re-rendering performed by a printer designed to receive sRGB image data.

[SOURCE: ISO 22028-1:2004, 3.33]

3.9
pixel
smallest discrete picture element in a digital image file

3.10
pixel interleaved
colour data organized such that the RGB colour space values for one pixel are followed by the same sequence of colour values for the next pixel

Note 1 to entry: The specific order of colour components is determined by the ColourSequence tag as defined in ISO 12639. Other forms of colour data interleaving are line and plane.

3.11
scene
spectral radiances of a view of the natural world as measured from a specified vantage point in space and at a specified time

Note 1 to entry: A scene may correspond to an actual view of the natural world or to a computer-generated virtual scene simulating such a view.

[SOURCE: ISO 22028-1:2004, 3.35]

3.12
scene-referred image state
image state associated with image data that represents estimates of the colour-space coordinates of the elements of a scene

Note 1 to entry: When the phrase "scene-referred" is used as a qualifier to an object, it implies that the object in a scene-referred image state. For example, scene-referred image data are image data in a scene-referred image state.

Note 2 to entry: Scene-referred image data can be determined from raw digital still camera (DSC) image data before colour rendering is performed. Generally, DSCs do not write scene-referred image data in image files, but some may do so in a special mode intended for this purpose. Typically, DSCs write standard output-referred image data where colour rendering has already been performed.

Note 3 to entry: Scene-referred image data typically represent relative scene colorimetry estimates. Absolute scene colorimetry estimates may be calculated using a scaling factor. The scaling factor can be derived from additional information such as the image OECF, Fnumber or ApertureValue, and ExposureTime or ShutterSpeedValve tags.

Note 4 to entry: Scene-referred image data may contain inaccuracies due to the dynamic range limitations of the capture device, noise from various sources, quantization, optical blurring and flare that are not corrected for, and colour analysis errors due to capture device metamerism. In some cases, these sources of inaccuracy can be significant.

Note 5 to entry: The transformation from raw DSC image to scene-referred image data depends on the relative adopted whites selected for the scene and the colour space used to encode the image data. If the chosen scene adopted white is inappropriate, additional errors will be introduced into the scene-referred image data. These errors may be correctable if the transform used to produce the scene-referred image data is known, and the colour encoding used for the incorrect scene-referred image data has adequate precision and dynamic range.

Note 6 to entry: The scene may correspond to an actual view of the natural world, or may be a computer-generated virtual scene simulating such a view. It may also correspond to a modified scene determined by applying modifications to an original scene to produce a different desired scene. Any such modifications should leave the image in a scene-referred image state, and should be done in the context of an expected colour rendering transform.

[SOURCE: ISO 22028-1:2004, 3.36]

4 Data description

4.1 General

This part of ISO 12640 consists of 47 image data files and specifications of the content of these files and their use as provided in this part of ISO 12640. The image file names are listed in Table 1, Table 2 and Table 3. The colour image data are encoded in RIMM RGB as specified in ISO/TS 22028-3, using 16 bits/channel and 48 bits/pixel. The image characteristics of these data are described in 4.5 and 4.6, and the electronic data structure in Clause 5.

4.2 Data set definition

The set of standard colour image data consists of 44 natural images, captured using digital still cameras, and three synthetic images. The primary set of natural images are identified as NP01 to NP27 and the secondary set as NS01 to NS17, respectively. Each of them also has a descriptive name derived from the picture content (e.g. “Falls”). The synthetic images are identified as S1, S2 and S3.

The label “ISO 12640-5 RIMM” is inserted in each image. The coordinates of the text insertion are provided in Annex D.

4.3 Image data arrangement

The image data are pixel interleaved in the colour sequence of R then G then B (16 bits/channel) for the images. The image data orientation corresponds to a value of 1 in TAG 274 of ISO 12639 (load from top left, horizontally; the 0th row represents the visual top of the image and the 0th column represents the visual left-hand side).

4.4 Data colour encoding

The image data are encoded as RIMM RGB as specified in ISO/TS 22028-3.

The Reference Input Medium Metric RGB (RIMM RGB) encoding is an extended-colour-gamut RGB colour image encoding of the colorimetry of a scene-referred image. The colorimetry is encoded using an additive RGB colour space associated with a hypothetical additive colour device having a specified set of primaries, no cross-talk between the colour channels and a maximum luminance value corresponding to 200 % of the luminance of the adopted white (i.e. a maximum luminance factor of 2,0).

There are three different precision levels specified for RIMM RGB. The images in this part of ISO 12640 are encoded as RIMM16 RGB for 16 bits/channel (48 bits/pixel) representations.

The scene-referred colorimetry has been adapted to the RIMM RGB encoding white, which has the chromaticity of CIE Standard Illuminant D_{50} (x_0 = 0,345 7, y_0 = 0,358 5). This colorimetry was obtained as follows.

a) Demosaic the digital camera raw image data where necessary and linearize with respect to scene radiance, including black frame and estimated flare subtraction.

b) Determine the linear camera raw channel values R_W, G_W and B_W that correspond to the scene adopted white.

c) Multiply the linear camera raw image data channels R, G and B by $1/R_W$, $1/G_W$ and $1/B_W$, respectively, so that values {1, 1, 1} are obtained for the scene adopted white. This results in white-balanced linear camera raw image data.

d) Determine a scene analysis matrix that converts the white-balanced linear camera raw image data to linear RIMM RGB image data, where the linear RIMM RGB image data represents estimates of the scene colorimetry after chromatic adaptation to D50. The matrices determined are typically camera and scene adopted white specific, and depend on the scene spectral radiance characteristics assumed. Technical information on how to determine scene analysis matrices is provided in ISO/TR 17321-2.

e) Apply the scene analysis matrix to the white-balanced linear camera raw image data to produce linear RIMM RGB image data.

f) Apply the RIMM16 RGB CCTF as specified in ISO/TS 22028-3.

A RIMM RGB ICC profile is embedded in each image file to facilitate use in colour managed systems, and to provide an example colour rendering for the images using the perceptual rendering intent. The example colour rendering specified in ISO/TS 22028-3:2012, Annex A, is used in the perceptual transform.

The above steps do not include any compensation for the colour appearance resulting from different scene illumination levels. Instead, the brightness value for each scene is recorded in Table 2. The brightness values (BV) are determined from the camera aperture, shutter speed and exposure index recorded in the raw image file metadata as shown in Formula (1).

$$\mathrm{BV} = \mathrm{AV} + \mathrm{TV} - \mathrm{SV} \tag{1}$$

where

AV = LOG2[A^2], where A is the effective f-number of the camera lens;

TV = LOG2(1/t), where t is the photosite integration (exposure) time in seconds;

SV = LOG2(EI/3), where EI is the exposure index that would have been used if the camera exposure compensation were zero.

For example, if the exposure index is set on ISO 100 and the exposure compensation is set on minus one stop, the effective exposure index is 200 and SV = LOG2(200/3) = 6.

The estimated midtone (18 % reflectance) scene luminance level L_A is calculated from the BV value as shown in Formula (2).

$$L_A = 3{,}7 \times 2^{\mathrm{BV}} \tag{2}$$

4.5 Natural images

4.5.1 Description

The characteristics of the natural images (orientation, image size, brightness value (BV), average luminance factor (Y), data range and dynamic range) are shown in Tables 1 and 2. Average Y, data range and dynamic range are calculated using the Y value of XYZ tristimulus values of an image scaled to be 1/16 of the original size (each dimension 1/16 of the original dimension) using bicubic scaling. The data range Y is the ratio of maximum Y value to the smallest Y value present in the image that is larger than zero. The dynamic range is calculated by taking the ratio of the highlight Y value to the shadow Y value, where the highlight Y value is the value corresponding to 0,999 5 on a cumulative Y histogram, and the shadow Y value is the value corresponding to 0,005 on a cumulative Y histogram. Other methods for highlight and shadow Y value estimation may also be used; the method used to calculate the dynamic range values in Tables 1 and 2 is not intended to be considered a recommended method.

Table 1 shows a primary set and comprises 27 images. Table 2 shows a secondary set and consists of 17 images. It is strongly recommended that all of the images in the primary set be used and, where necessary, additional images from the secondary set should be used to supplement this set.

The descriptive names of these images are given following the identification code. Two renderings are shown in Figure 2: a colorimetric conversion of the scene-referred image to sRGB and a perceptual colour rendering to sRGB.

The 44 natural images shall be interpreting as having the following characteristics:

— Resolution: 24 pixels/mm;

— Colour values: RIMM RGB data consisting of three 16-bit values;

— File format: ISO 12639:2004 (TIFF/IT);

— Label on image: “ISO 12640-5”;

— Image data orientation: load from top left, horizontally.

Table 1 — Primary set of natural images

Name	Aspect, image size	BV	Average Y	Data range Y	Dynamic range Y
NP01 Falls	Vertical, 2 014 × 3 040 pixels	9	1,985	2 621	**177,3**
NP02 Eiffel	Vertical, 2 014 × 3 040 pixels	10	0,322 5	1 513	**98,06**
NP03 Mickey	Vertical, 2 036 × 3 040 pixels	5	0,264 5	10 927	**248,1**
NP04 Butterfly	Horizontal, 4 256 × 2 848 pixels	8	0,103 0	126,4	**88,24**
NP05 Threads	Horizontal, 4 272 × 2 864 pixels	6	0,091 04	29 617 232	**647,4**
NP06 Fruits	Horizontal, 4 272 × 2 864 pixels	6	0,306 0	344,2	**173,4**
NP07 Canal	Horizontal, 4 256 × 2 848 pixels	9	0,125 6	1 145	**159,4**
NP08 WhiteFlowers	Horizontal, 3 872 × 2 592 pixels	8	0,131 5	890,3	**168,0**
NP09 BarHarborPresunrise	Horizontal, 4 284 × 2 408 pixels	7	0,161 7	24 647 243	**237,6**
NP10 BenJerrys	Horizontal, 4 288 × 2 412 pixels	10	0,193 9	3 195	**99,08**
NP11 DelicateFlowers	Horizontal, 4 288 × 2 848 pixels	7	0,342 1	252,6	**47,38**
NP12 DevilsBathtub	Horizontal, 4 288 × 2 412 pixels	11	0,089 18	20 662	**314,8**
NP13 Exploratorium	Horizontal, 4 288 × 2 848 pixels	10	0,155 3	16 405	**121,5**
NP14 GoldenGate	Horizontal, 4 288 × 2 844 pixels	−2	0,064 94	3 019	**188,2**
NP15 HancockSeedField	Horizontal, 4 280 × 2 408 pixels	8	0,410 5	9 286 174	**39,99**
NP16 NiagaraFalls	Horizontal, 4 280 × 2 408 pixels	10	0,353 4	458,2	**70,59**
NP17 RedwoodSunset	Horizontal, 4 284 × 2 408 pixels	8	0,172 3	60 083 240	**869,8**
NP18 Route66Museum	Horizontal, 4 288 × 2 848 pixels	3	0,411 3	11 407	**44,31**
NP19 SouthBranchKingsRiver	Vertical, 2 844 × 4 280 pixels	9	0,106 2	64 569 951	**304,5**
NP20 TupperLake	Horizontal, 4 288 × 2 848 pixels	9	0,235 9	60,38	**25,59**
NP21 Chandelier	Horizontal, 3 888 × 2 592 pixels	4	0,091 99	5 178	**800,0**
NP22 Clock	Horizontal, 3 888 × 2 592 pixels	3	0,220 4	42 953	**120,1**
NP23 Meat	Horizontal, 3 888 × 2 592 pixels	3	0,207 1	63 245 207	**220,1**
NP24 Peacock	Horizontal, 3 888 × 2 592 pixels	8	0,185 1	2 280	**168,5**
NP25 BlueFace	Vertical, 2 592 × 3 888 pixels	6	0,184 1	30 925 553	**239,84**
NP26 PoundPake	Horizontal, 3 888 × 2 592 pixels	0	0,158 5	1 031	**146,2**
NP27 LasVegas	Horizontal, 3 888 × 2 592 pixels	−3	0,091 99	3 437	**414,3**