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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)

Photographie et technologie graphique — Codages par couleurs étendues pour stockage, manipulation et échange d'image numérique —

Partie 3: Codage d'image en couleurs RVB par référence d'entrée par voie métrique

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 of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 42, *Photography*.

This first edition of ISO 22028-3:2022 cancels and replaces the second edition (ISO/TS 22028-3:2012), which has been technically revised.

The main changes are as follows:

— the Kodak IP statement has been removed;

— some references have been added, deleted, or updated;

— Annex B has been added.

A list of all parts in the ISO 22028 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document has been developed in order to meet the industry need for a complete, fully-documented, publicly-available definition of a wide-primary scene-referred extended colour gamut red-green-blue (RGB) colour image encoding. This encoding provides a way to represent scene-referred images that does not limit the colour gamut to those colours capable of being displayed on a CRT monitor or require the use of negative RGB colourimetry coordinates.

A scene-referred extended colour gamut colour encoding is particularly desirable for professional photography and cultural heritage applications. For example, colours captured by digital cameras, as well as conventional capture devices such as photographic film, can be outside those that can be represented within the colour gamut of a typical monitor or other types of output devices. Similarly, scene-referred images can have a larger luminance dynamic range than output-referred images since they have not been modified by a colour rendering process to fit the images to a specific output medium applying appropriate tone and colour reproduction aims. Retaining the unrendered scene-referred image data has the advantage that it preserves the option to make decisions about how a particular image is to be rendered. For example, a scene-referred image of a backlit scene can retain information about both the dark foreground region and the bright background region of the scene. This information can be used to make a properly exposed print of either the foreground region or the background region, or alternatively can be used to create an improved image by rendering the two regions differently.

By using a standard scene-referred extended colour gamut colour image encoding, images can be stored, interchanged and manipulated without restricting the image to a particular rendering intent or output device. The reference input medium metric RGB (RIMM RGB) colour encoding specified in this document meets the needs of these types of applications, as described in References [14] and [15]. An extended dynamic range version of this colour image encoding known as extended reference input medium metric RGB (ERIMM RGB), and a floating point version known as FP-RIMM RGB are also specified for use with high-dynamic range input sources. The scene-referred RIMM RGB colour image encoding is intended to be complementary to the output-referred ROMM RGB colour image encoding specified in ISO 22028-2[10]. Both colour encodings are based on the same “wide RGB” additive colour space to facilitate the development of image processing algorithms and simple colour rendering transformations to convert scene-referred RIMM RGB images to rendered output-referred ROMM RGB images.