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Photography and graphic technology — Extended colour encodings for digital image storage, manipulation and interchange —

Part 4:

European Colour Initiative RGB colour image encoding [eciRGB (2008)]

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

*Partie 4: Codage d'image en couleurs RGB par initiative de couleur
européenne [eciRGB(2008)]*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 cancels and replaces the first edition (ISO/TS 22028-4:2012), which has been technically revised.

The main changes are as follows:

- this document is released as an International Standard (prior edition was a Technical Specification);
- editorial revisions have been made.

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.

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Introduction

This document has been developed in order to meet the industry need for a complete, fully documented, publicly available definition of an output-referred extended gamut RGB colour image encoding which is optimized for an 8-bit encoding and the conversion of RGB images into offset print colour spaces. Since users have also asked for a 16-bit encoding it has been added to this document as well. This colour image encoding provides a way to represent output-referred images that does not limit the colour gamut to those colours capable of being displayed on a CRT monitor, such as that represented by the sRGB colour encoding, or require the use of negative RGB colorimetry coordinates, such as with extended sRGB colour encodings like bg-sRGB.

An extended colour-gamut colour encoding is particularly desirable for professional photography applications. For example, colours used for company logos may be outside a monitor gamut and would therefore need to be clipped or compressed to a less saturated colour. Similarly, scanned photographic prints that are to be duplicated may contain colours outside a monitor RGB colour-gamut. By using a standard output-referred extended gamut colour image encoding, images containing such colours can be stored, interchanged, manipulated, and later printed, without limiting or distorting the colours of the final output.

The European Colour Initiative (ECI) RGB colour image encoding [eciRGB (2008)] specified in this document meets the needs of these types of applications.

The primaries of eciRGB (2008) (see [Annex C](#), Figures C.1 and C.2) are between Reference Output Medium Metric RGB (ROMM RGB) and sRGB, thereby providing a larger gamut than sRGB, together with lower quantization errors than ROMM RGB. The tone curve has an encoding linear to the L^* axis defined in the CIE 1976 (L^* , a^* , b^*) colour space (CIELAB 1976).

This document has been prepared to provide sufficient documentation, consistent with the definitions of ISO 22028-1, to allow the imaging community adequate opportunity for implementation and evaluation of this colour image encoding. Sufficient implementation of, and practical experience in the use of, eciRGB (2008), has led to a revision of the former Technical Specification and its conversion into an International Standard.

The European Colour Initiative owns the copyright on the name eciRGB (2008) and has granted ISO the irrevocable non-exclusive right to use the name for the purpose of this document. A colour encoding named eciRGB was initiated by ECI in 2004. A second version of this encoding with a modified tonal curve was defined in 2008. Because of its importance to the European photographers and graphic arts industry, this document was prepared in order to fully define eciRGB according to ISO 22028-1.