

SMPTE STANDARD

Mastering Display Color Volume Metadata Supporting High Luminance and Wide Color Gamut Images



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Foreword

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Introduction

This section is entirely informative and does not form an integral part of this Engineering Document.

The content mastering process begins when the creative talents (Director/Director of Photography/Studio) select a viewing environment and a look for the production. The creative intent is established in this environment. The most common display color space examples are Digital Cinema P3 for theatrical distribution and Recommendation ITU-R BT.709 for home distribution of HD content. For distribution to the homes, the mastering process could be redone with creative adjustments performed on a mastering display.

The mastering display is the display where creative work (adjustments and approval) is done during the mastering process.

To improve the color reproduction of this mastered content when shown on other displays, it is useful to have optional information that can be used to more closely reproduce the creative intent originally achieved in the mastering suite. This document provides a specification of the metadata defining the color volume (the color primaries, white point, and luminance range), which can be used to assist in achieving consistent results on different displays. The color volume metadata are values that a mastering display is configured to. In a simple mastering process, the device native value, i.e., the value configured at the production plant, can be used. In a multifaceted mastering process, the set up value, i.e., the value configured at the viewing environment of the mastering room, would be used. This standard provides a first step towards improving color reproduction, but does not define the mastering environment or the method of measurement of color volume metadata that would be needed in the case of a multifaceted mastering process.

The final archived master of digital imagery commonly includes encoded images only. In order to exactly reproduce the creative intent, it is useful to know the color volume specification of the original mastering display. This need is especially critical as the display technology continues to advance.

This standard is well suited to describe the metadata for the current state of the art displays as well as the new generation of displays that exhibit high luminance and wide color gamut.

This standard is entirely devoted to providing the color volume metadata of the display, and does not cover any additional layers of metadata regarding the visual appearance of images, or the color and tonal

transformations that would be used to convert between different display color volumes. The information described herein is not the complete set of metadata required for all of the image processing required for all steps in every workflow. Each implementation of a production and post-production workflow requires other types of metadata to characterize the image acquisition, processing and mastering environment. However, the information described in this standard represents the anticipated minimum metadata required for all implementations of any image processing workflow. Specific implementations of image processing workflows will require additional metadata, some specific to those particular implementations, which are out of scope of this standard.

If an application uses a digital representation with a precision exceeding that specified for the item, it is expected to round to the nearest value with the precision specified for that item before using it pursuant to this standard.