N-Log
Specification Document
Version 1.0.0
Version History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
</tr>
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<tbody>
<tr>
<td>1.0.0</td>
<td>September 1st, 2018</td>
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1. Introduction

This document describes N-Log curve and colorimetric information. N-Log is designed to permit full use of sensor dynamic range in a professional movie workflow. The curve characteristics of N-Log balance shadows and highlights and are optimized for 10-bit movie recording.
2. Curve Characteristics

The following figure shows N-Log curve characteristics.

The function from N-Log to reflectance is as follows.

\[
\text{if } (x < 452) \\
\quad y = (x/650)^3 - 0.0075 \\
\text{else} \\
\quad y = \exp[(x-619)/150] \\
\text{end}
\]

\(x\) is the N-Log 10-bit code value.

\(y\) is reflectance. (“\(y = 0.18\)” is equivalent to Stop 0.)

The function from reflectance to N-Log is as follows.

\[
\text{if } (y < 0.328) \\
\quad x = 650 \times (y + 0.0075)^{1/3} \\
\text{else} \\
\quad x = 150 \times \log(y) + 619 \\
\text{end}
\]
3. Gamut and White Point

The table below shows the gamut and white point for N-Log.

<table>
<thead>
<tr>
<th></th>
<th>CIE xy chromaticity</th>
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<tbody>
<tr>
<td></td>
<td>x</td>
</tr>
<tr>
<td>White point</td>
<td>0.3127</td>
</tr>
<tr>
<td>Red primary</td>
<td>0.708</td>
</tr>
<tr>
<td>Green primary</td>
<td>0.170</td>
</tr>
<tr>
<td>Blue primary</td>
<td>0.131</td>
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</table>

The white point of N-Log is D65.

The gamut for N-Log is same as the wide color gamut known as “ITU-R BT.2020”.