



Dolby Vision Legal Range Workflows for Home Distribution

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Contents

1 About Dolby Vision Dolby Vision legal range workflows.....4

2 Video Range standards.....4

3 Color grading5

4 Monitoring in Legal Range.....6

5 Delivering a Dolby Vision mezzanine.....7

5.1 Delivering the Dolby Vision Mezzanine in Full Range.....7

5.2 Delivering the Dolby Vision Mezzanine in Legal Range.....7

6 Dolby Vision encoding7

1 About Dolby Vision Dolby Vision legal range workflows

This document outlines Dolby's recommendations for managing legal range sources as well as creating legal range deliverables in Dolby Vision content creation pipelines and workflows, when so requested for by a studio or client.

Note: We recommend that you check with the studio or client for detailed delivery specifications and requirements before designing workflows for creating or delivering content.

Dolby Laboratories has established guidelines for facilities entrusted with creating and delivering Dolby Vision content for distribution.

Dolby recommends:

- Using full range source material
- Working in full range throughout the content creation process
- Delivering Dolby Vision content in full range whenever possible.

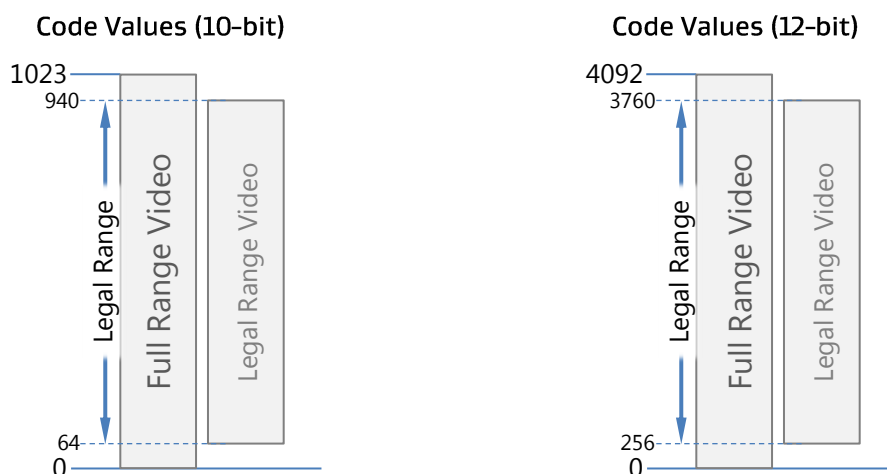
2 Video Range standards

10-bit Video Range Options (code values)

Full Range	0-1023
SDI Range	4-1019
SMPTE/Video/Legal Range	64-940

12-bit Video Range Options (code values)

Full Range	0-4095
SDI Range	16-4079
SMPTE/Video/Legal Range	256-3760



3 Color grading

When presented with legal range material for grading, use one of the following methods to grade and deliver Dolby Vision content.

- **Grading for delivery of the Dolby Vision master in full range**

When starting with legal range source material, we recommend scaling the source material to full range, using the appropriate tools on the color correction system before grading. This provides the colorist with the entire luminance range to work with, allowing for increased latitude and creative flexibility.

- **Grading for delivery of the Dolby Vision master in legal range**

If the graded content is to be delivered in Legal Range, create the Dolby Vision Master in full range and deliver a legal range version to fulfill the request from the client. You can then archive the full range Master to preserve for future use. The conversion from full range to legal range must be performed by scaling. Make sure to avoid clipping valuable details in the shadows and highlights of the image during the conversion.

Alternatively, the colorist can also work in legal mode during the grading process and deliver a legal range Dolby Vision master. This option is not a Dolby recommended practice and must be confirmed with the client before finalizing the workflow and creating or delivering any content.

4 Monitoring in Legal Range

If the colorist decides to work in legal range, the color correction system and all associated peripherals and infrastructure including monitoring (such as displays, waveforms, and scopes) must be set up to work in legal range. Doing so accurately monitors and tracks the progress of the content throughout the creative process.

As a part of the Dolby Vision metadata creation process, it is important to perform the analysis (to generate L1 metadata) on the final HDR grade. In this case, it is legal range video. Once L1 metadata has been created, the trim pass to create L2 metadata must also be performed while monitoring the mapped output of the CMU in legal range. Since the CMU currently does not output legal range video, a LUT box or legalizer of some sort maybe required to create a legal range signal that can be monitored during the trim pass.

5 Delivering a Dolby Vision mezzanine

Upon completion of the color grading process, a Dolby Vision mezzanine may be requested to be delivered as:

- MXF file with embedded metadata
- ProRes 4444 XQ file along with an accompanying XML file carrying the metadata

Create a mezzanine using one of these tools:

- Directly from the Color Correction system, such as Resolve
- Using the Dolby Vision Professional Tools
- Using a system from a Dolby partner such as Clipster, Cortex, Mist, or Transcoder

Use one of the following methods to deliver the mezzanine.

5.1 Delivering the Dolby Vision Mezzanine in Full Range

If the content was graded in full range, you can create and deliver a full range mezzanine without any conversion.

If the content was graded in legal range, you can create a full range mezzanine by selecting the appropriate options in the tool as described in the previous section and scaling the legal range to full range.

5.2 Delivering the Dolby Vision Mezzanine in Legal Range

If the content was graded in legal range, you can create and deliver a legal range mezzanine without any conversion.

If the content was graded in full range, you can create a legal range mezzanine by selecting the appropriate options in the tool as described in the previous section and scaling the full range to legal range.

Note: Avoid clipping valuable details in the shadows and highlights of the image during this conversion.

6 Dolby Vision encoding

Dolby Vision content should be finished and delivered in full range to the encoding facility that creates the bitstream for OTT delivery or the Blu-Ray master. If the studio or client requests it, the content may also be delivered in legal range for encoding.

If the content is delivered as a Dolby Vision master with a separate XML file, the XML must correctly specify full or legal range and match the video range of the accompanying master files.

Dolby Vision encoding systems can use source material that is either legal or full range.

The final encoded Dolby Vision video elementary stream may be in legal or full range depending on the intended delivery or distribution platform.

Any required conversions between legal and full range are performed during the encoding process by scaling and avoiding any clipping or loss of valuable detail in the shadows and highlights.