

ガンマ変換用 1D LUT (1D ルックアップテーブル)

Gamma Transfer 1D LUT (1D Look Up Table)

■ LUT の分類

Viewing LUT

■ LUT の概要

Canon Log / Canon Log 2 / Canon Log 3 ガンマからの変換 1D LUT

■ ファイル形式

.cube 形式 (Blackmagic Design DaVinci Resolve 用 1D LUT 形式準拠)

■対応表

変換前			変換後	
ガンマ	レンジ	Bit 数	ガンマ	レンジ
Canon Log	Full	10/12/16	Wide DR	Full
Canon Log	Full	10/12/16	Cineon	Full
Canon Log	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log	Full	10/12/16	Linear	Linear
Canon Log 2	Full	10/12/16	Wide DR	Full,
Canon Log 2	Full	10/12/16	PQ	Full,
Canon Log 2	Full	10/12/16	HLG	Full,
Canon Log 2	Full	10/12/16	Cineon	Full
Canon Log 2	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log 2	Full	10/12/16	Linear	Linear
Canon Log 3	Full	10/12/16	Wide DR	Full,
Canon Log 3	Full	10/12/16	PQ	Full,
Canon Log 3	Full	10/12/16	HLG	Full,
Canon Log 3	Full	10/12/16	Cineon	Full
Canon Log 3	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log 3	Full	10/12/16	Linear	Linear

■ファイル名の規則

[Gamma]_[BitNum]-to-[Gamma]_[Range][Range]_[Version].cube

(1) (2) (3) (4) (5) (6)

例: CanonLog_10-to-BT709_FF_Ver.2.0.cube

1. 変換前のガンマ
2. 変換前のビット数
3. 変換後のガンマ
4. 変換前のレンジ (N: Narrow、F:Full)
5. 変換後のレンジ (N: Narrow、F:Full、L:Linear)
6. バージョン

■データの説明

例) Canon Log 2 to Cineon 10bit 版

# から始まる行	1D LUT ファイルの概要説明
LUT_1D_SIZE 1024	1D LUT のサイズ

0.000000 0.000000 0.000000
0.000510 0.000510 0.000510
0.001728 0.001728 0.001728
0.002946 0.002946 0.002946

■Linear LUT についての説明

-0.016363 -0.016363 -0.016363	データは Scene Linear の値を示しています。
-0.016298 -0.016298 -0.016298	例: 0.200000 = 20% (18% Grey)
-0.016234 -0.016234 -0.016234	1.000000 = 100% (90% White)
-0.016169 -0.016169 -0.016169	

■Wide DR への変換 LUT に関して

ナローレンジ版の Wide DR がスーパーホワイト(100%を超える出力)まで利用したカーブとなっているのに対し、フルレンジ版の Wide DR では 100%に収まるように圧縮したカーブになっています。

■Canon Log 2 / 3 から PQ / HLG への変換 LUT の基準信号レベルについて

Recommendation ITU-R BT.2100-2 で定義されている PQ(perceptual quantization)および HLG(Hybrid Log-Gamma)に変換するための LUT です。

Report ITU-R BT.2408-1 の TABLE 1 に記載されている信号レベルとなるように変換を行います。

■各輝度における各ガンマのデータ値(参考値)

Gamma	Range	Scene Linear % (Reflection %)					
		0% (0% Black)	20% (18% Grey)	100% (90% White)	800%	1600%	6400%
Canon Log	Full	0.1251	0.3434	0.5998	0.9929	-	-
Canon Log 2	Full	0.0929	0.3983	0.5623	0.7792	0.8518	0.9971
Canon Log 3	Full	0.1251	0.3434	0.5645	0.8872	0.9971	-
Cineon	Full	0.0928	0.4697	0.6691	0.9325	-	-
DCI (Gamma2.6)	Full	0.0000	0.4622	0.7938	1.0000	-	-
WideDR	Full	0.0000	0.3963	0.7294	0.9927	-	-
PQ	Full	0.0000	0.3790	0.5679	0.8216	0.9048	-
HLG	Full	0.0000	0.3781	0.7291	-	-	-

Gamma Transfer 1D LUT (1D Look-Up Table)

- LUT Category

Viewing LUT

- LUT Overview

A 1D LUT that converts from Canon Log / Canon Log 2 / Canon Log 3 gamma

- File Format

.cube format

- Correspondence Table

Input			Output	
Gamma	Range	Bits	Gamma	Range
Canon Log	Full	10/12/16	Wide DR	Full
Canon Log	Full	10/12/16	Cineon	Full
Canon Log	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log	Full	10/12/16	Linear	Linear
Canon Log 2	Full	10/12/16	Wide DR	Full,
Canon Log 2	Full	10/12/16	PQ	Full,
Canon Log 2	Full	10/12/16	HLG	Full,
Canon Log 2	Full	10/12/16	Cineon	Full
Canon Log 2	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log 2	Full	10/12/16	Linear	Linear
Canon Log 3	Full	10/12/16	Wide DR	Full,
Canon Log 3	Full	10/12/16	PQ	Full,
Canon Log 3	Full	10/12/16	HLG	Full,
Canon Log 3	Full	10/12/16	Cineon	Full
Canon Log 3	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log 3	Full	10/12/16	Linear	Linear
Canon Log	Full	10/12/16	Wide DR	Full
Canon Log	Full	10/12/16	Cineon	Full

Canon Log	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log	Full	10/12/16	Linear	Linear

- File naming conventions

[Gamma]_[BitNum]-to-[Gamma]_[Range][Range]_[Version].cube

(1) (2) (3) (4) (5) (6)

Example: CanonLog_10-to-BT709_FF_Ver.2.0.cube

1. Input gamma
2. Input bit depth
3. Output gamma
4. Input range (N: Narrow, F: Full)
5. Output range (N: Narrow, F: Full, L: Linear)
6. Version

- Explanation of the data format

Example: Canon Log 2 to Cineon 10-bit version

Lines beginning with the pound sign (#) Comments about the 1D LUT file
LUT_1D_SIZE 1024 Size of the 1D LUT

```
0.000000 0.000000 0.000000
0.000510 0.000510 0.000510
0.001728 0.001728 0.001728
0.002946 0.002946 0.002946
```

- Explanation of Linear LUTs

```
-0.016363 -0.016363 -0.016363      Indicates the data are Scene Linear values
-0.016298 -0.016298 -0.016298      Example: 0.200000 = 20% (18% Grey)
-0.016234 -0.016234 -0.016234      1.000000 = 100% (90% White)
-0.016169 -0.016169 -0.016169
```

- LUTs for conversions to Wide DR

The Narrow range version of Wide DR is a curve that was used into the super-whites (outputs over 100%), whereas with the Full range version of Wide DR, this curve is compressed in a format to fit within 100% output.

- Nominal signal levels of conversion LUT from Canon Log 2/3 to PQ/HLG

These LUT are used to convert to the perceptual quantization (PQ) and Hybrid Log-Gamma (HLG) defined by Recommendation ITU-R BT.2100-2.

Conversion is performed to achieve the signal levels described in TABLE 1 of Report ITU-R BT.2408-1.

- Reference: Gamma data values at different brightnesses

Gamma	Range	Scene Linear % (Reflection %)					
		0% (0% Black)	20% (18% Grey)	100% (90% White)	800%	1600%	6400%
Canon Log	Full	0.1251	0.3434	0.5998	0.9929	-	-
Canon Log 2	Full	0.0929	0.3983	0.5623	0.7792	0.8518	0.9971
Canon Log 3	Full	0.1251	0.3434	0.5645	0.8872	0.9971	-
Cineon	Full	0.0928	0.4697	0.6691	0.9325	-	-
DCI (Gamma2.6)	Full	0.0000	0.4622	0.7938	1.0000	-	-
WideDR	Full	0.0000	0.3963	0.7294	0.9927	-	-
PQ	Full	0.0000	0.3790	0.5679	0.8216	0.9048	-
HLG	Full	0.0000	0.3781	0.7291	-	-	-

Transfert Gamma 1D LUT (lookup table 1D)

- Catégorie LUT

Viewing LUT

- Aperçu LUT

Un 1D LUT qui convertit à partir de Canon Log / Canon Log 2 / Canon Log 3 gamma

- Format de fichier

Format .cube

- Tableau de correspondance

Entrée			Sortie	
Gamma	Plage	Bits	Gamma	Plage
Canon Log	Full	10/12/16	Wide DR	Full
Canon Log	Full	10/12/16	Cineon	Full
Canon Log	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log	Full	10/12/16	Linear	Linear
Canon Log 2	Full	10/12/16	Wide DR	Full,
Canon Log 2	Full	10/12/16	PQ	Full,
Canon Log 2	Full	10/12/16	HLG	Full,
Canon Log 2	Full	10/12/16	Cineon	Full
Canon Log 2	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log 2	Full	10/12/16	Linear	Linear
Canon Log 3	Full	10/12/16	Wide DR	Full,
Canon Log 3	Full	10/12/16	PQ	Full,
Canon Log 3	Full	10/12/16	HLG	Full,
Canon Log 3	Full	10/12/16	Cineon	Full
Canon Log 3	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log 3	Full	10/12/16	Linear	Linear
Canon Log	Full	10/12/16	Wide DR	Full
Canon Log	Full	10/12/16	Cineon	Full

Canon Log	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log	Full	10/12/16	Linear	Linear

- Conventions relatives à la désignation des fichiers

[Gamma]_[BitNum]-to-[Gamma]_[Range][Range]_[Version].cube

(1) (2) (3) (4) (5) (6)

Exemple : CanonLog_10-to-BT709_FF_Ver.2.0.cube

1. Gamma d'entrée
2. Profondeur du bit d'entrée
3. Gamma de sortie
4. Plage d'entrée (N: Narrow, F: Full)
5. Plage de sortie (N: Narrow, F: Full, L: Linear)
6. Version

- Explication du format des données

Exemple : Canon Log 2 à Cineon Version 10-bit

Lignes commençant par le signe dièse (#) Commentaires concernant le fichier 1D LUT
LUT_1D_SIZE 1024 Taille du 1D LUT

0.000000 0.000000 0.000000
0.000510 0.000510 0.000510
0.001728 0.001728 0.001728
0.002946 0.002946 0.002946

- Explication des LUT linéaires

-0.016363 -0.016363 -0.016363 Indique que les données sont des valeurs linéaires de scène

-0.016298 -0.016298 -0.016298 Exemple : 0.200000 = 20% (18% Grey)

-0.016234 -0.016234 -0.016234 1.000000 = 100% (90% White)

-0.016169 -0.016169 -0.016169

- Des LUT pour conversions à Wide DR

La version de plage étroite de Wide DR est une courbe qui a été utilisé dans les super-blancs (sorties de plus de 100%), alors que pour la version de plage entière de Wide DR, cette courbe est comprimée dans un format permettant de s'adapter à une sortie à 100%.

- À propos du niveau de signal nominal de la table de correspondance pour la conversion de Canon Log 2/3 à PQ/HLG

Table de correspondance pour convertir vers PQ (quantification perceptuelle) et HLG (Hybrid Log-Gamma), définis dans la recommandation ITU-R BT.2100-2.

Effectue la conversion pour obtenir le niveau de signal indiqué dans le TABLEAU 1 du rapport ITU-R BT.2408-1.

- Référence : Valeurs des données Gamma à différentes luminosités

Gamma	Range	Scene Linear % (Reflection %)					
		0% (0% Black)	20% (18% Grey)	100% (90% White)	800%	1600%	6400%
Canon Log	Full	0.1251	0.3434	0.5998	0.9929	-	-
Canon Log 2	Full	0.0929	0.3983	0.5623	0.7792	0.8518	0.9971
Canon Log 3	Full	0.1251	0.3434	0.5645	0.8872	0.9971	-
Cineon	Full	0.0928	0.4697	0.6691	0.9325	-	-
DCI (Gamma2.6)	Full	0.0000	0.4622	0.7938	1.0000	-	-
WideDR	Full	0.0000	0.3963	0.7294	0.9927	-	-
PQ	Full	0.0000	0.3790	0.5679	0.8216	0.9048	-
HLG	Full	0.0000	0.3781	0.7291	-	-	-

Transferencia de gamma 1D LUT (1D Look-Up Table)

- Categoría de LUT

Viewing LUT

- Descripción general de LUT

Un 1D LUT que convierte desde la gamma de Canon Log / Canon Log 2 / Canon Log 3

- Formato de archivo

Formato .cube

- Tabla de correspondencia

Entrada			Salida	
Gamma	Rango	Bits	Gamma	Rango
Canon Log	Full	10/12/16	Wide DR	Full
Canon Log	Full	10/12/16	Cineon	Full
Canon Log	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log	Full	10/12/16	Linear	Linear
Canon Log 2	Full	10/12/16	Wide DR	Full,
Canon Log 2	Full	10/12/16	PQ	Full,
Canon Log 2	Full	10/12/16	HLG	Full,
Canon Log 2	Full	10/12/16	Cineon	Full
Canon Log 2	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log 2	Full	10/12/16	Linear	Linear
Canon Log 3	Full	10/12/16	Wide DR	Full,
Canon Log 3	Full	10/12/16	PQ	Full,
Canon Log 3	Full	10/12/16	HLG	Full,
Canon Log 3	Full	10/12/16	Cineon	Full
Canon Log 3	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log 3	Full	10/12/16	Linear	Linear
Canon Log	Full	10/12/16	Wide DR	Full
Canon Log	Full	10/12/16	Cineon	Full

Canon Log	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log	Full	10/12/16	Linear	Linear

- Convenciones de nombre de archivo

[Gamma]_[BitNum]-to-[Gamma]_[Range][Range]_[Version].cube

(1) (2) (3) (4) (5) (6)

Ejemplo: CanonLog_10-to-BT709_FF_Ver.2.0.cube

1. Gamma de entrada
2. Profundidad de bit de entrada
3. Gamma de salida
4. Rango de entrada (N: Narrow, F: Full)
5. Rango de salida (N: Narrow, F: Full, L: Linear)
6. Versión

- Explicación del formato de datos

Ejemplo: Canon Log 2 a Cineon versión de 10 bits

Líneas que comienzan con el signo de números (#) Comentarios relacionados con el archivo 1D LUT

LUT_1D_SIZE 1024

Tamaño de 1D LUT

0.000000 0.000000 0.000000
0.000510 0.000510 0.000510
0.001728 0.001728 0.001728
0.002946 0.002946 0.002946

- Explicación de LUT lineales

-0.016363 -0.016363 -0.016363 Indica que los datos son valores lineales de escena
-0.016298 -0.016298 -0.016298 Ejemplo: 0.200000 = 20% (18% Grey)
-0.016234 -0.016234 -0.016234 1.000000 = 100% (90% White)
-0.016169 -0.016169 -0.016169

- LUT para conversiones a Wide DR (Rango Dinámico Amplio)

La versión de rango Estrecho de Wide DR (Rango Dinámico Amplio) es una curva que se usaba en superblancos (se emite por encima del 100 %), mientras que con la versión de rango Completo de Wide DR (Rango Dinámico Amplio), esta curva se comprime en un formato que se adapte dentro de la salida del 100 %.

- Acerca del nivel de señal nominal de conversión LUT desde Canon Log 2/3 a PQ/HLG
LUT para convertir a PQ (perceptual quantization) y HLG (Hybrid Log-Gamma) definida en la recomendación ITU-R BT.2100-2.
Convertir para alcanzar el nivel de señal descrito en la TABLA 1 del informe ITU-R BT.2408-1.

- Referencia: Valores de datos de gamma en distintos niveles de brillo

Gamma	Range	Scene Linear % (Reflection %)					
		0% (0% Black)	20% (18% Grey)	100% (90% White)	800%	1600%	6400%
Canon Log	Full	0.1251	0.3434	0.5998	0.9929	-	-
Canon Log 2	Full	0.0929	0.3983	0.5623	0.7792	0.8518	0.9971
Canon Log 3	Full	0.1251	0.3434	0.5645	0.8872	0.9971	-
Cineon	Full	0.0928	0.4697	0.6691	0.9325	-	-
DCI (Gamma2.6)	Full	0.0000	0.4622	0.7938	1.0000	-	-
WideDR	Full	0.0000	0.3963	0.7294	0.9927	-	-
PQ	Full	0.0000	0.3790	0.5679	0.8216	0.9048	-
HLG	Full	0.0000	0.3781	0.7291	-	-	-

伽玛传输 1D LUT（1D Look-Up Table）

- LUT 类别

Viewing LUT

- LUT 概述

一种从 Canon Log / Canon Log 2 / Canon Log 3 伽玛转换的 1D LUT

- 文件格式

.cube 格式

- 对应关系表

输入			输出	
伽玛	范围	位	伽玛	范围
Canon Log	Full	10/12/16	Wide DR	Full
Canon Log	Full	10/12/16	Cineon	Full
Canon Log	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log	Full	10/12/16	Linear	Linear
Canon Log 2	Full	10/12/16	Wide DR	Full,
Canon Log 2	Full	10/12/16	PQ	Full,
Canon Log 2	Full	10/12/16	HLG	Full,
Canon Log 2	Full	10/12/16	Cineon	Full
Canon Log 2	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log 2	Full	10/12/16	Linear	Linear
Canon Log 3	Full	10/12/16	Wide DR	Full,
Canon Log 3	Full	10/12/16	PQ	Full,
Canon Log 3	Full	10/12/16	HLG	Full,
Canon Log 3	Full	10/12/16	Cineon	Full
Canon Log 3	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log 3	Full	10/12/16	Linear	Linear
Canon Log	Full	10/12/16	Wide DR	Full
Canon Log	Full	10/12/16	Cineon	Full

Canon Log	Full	10/12/16	DCI (Gamma2.6)	Full
Canon Log	Full	10/12/16	Linear	Linear

- 文件命名约定

[Gamma]_[BitNum]-to-[Gamma]_[Range][Range]_[Version].cube

(1) (2) (3) (4) (5) (6)

例：CanonLog_10-to-BT709_FF_Ver.2.0.cube

1. 输入伽玛
2. 输入位深
3. 输出伽玛
4. 输入范围 (N: Narrow, F: Full)
5. 输出范围 (N: Narrow, F: Full, L: Linear)
6. 版本

- 数据格式说明

例：Canon Log 2 至 Cineon 10-位版本

以井号（#）开头的行

LUT_1D_SIZE 1024

关于 1D LUT 文件的备注

1D LUT 的尺寸

```
0.000000 0.000000 0.000000
0.000510 0.000510 0.000510
0.001728 0.001728 0.001728
0.002946 0.002946 0.002946
```

- 线性 LUT 的说明

```
-0.016363 -0.016363 -0.016363
-0.016298 -0.016298 -0.016298
-0.016234 -0.016234 -0.016234
-0.016169 -0.016169 -0.016169
```

表示数据为场景线性值

例：0.200000 = 20% (18% Grey)

1.000000 = 100% (90% White)

- 用于转换至 Wide DR 的 LUT

Wide DR 的窄域版本为一条用于超白（输出超过 100%）中的曲线，而对于 Wide DR 的全域版本，该曲线被压缩为匹配 100%输出的格式。

- 关于由 Canon Log 2/3 变换至 PQ/HLG 的 LUT（查找表）变换的 Nominal signal level

用于变换至由 Recommendation ITU-R BT.2100-2 定义的 PQ(perceptual quantization) 及 HLG(Hybrid Log-Gamma)的 LUT。
为变成 Report ITU-R BT.2408-1 的 TABLE 1 中所述信号电平而进行变换。

- 参考：不同亮度下的伽玛数据

Gamma	Range	Scene Linear % (Reflection %)					
		0% (0% Black)	20% (18% Grey)	100% (90% White)	800%	1600%	6400%
Canon Log	Full	0.1251	0.3434	0.5998	0.9929	-	-
Canon Log 2	Full	0.0929	0.3983	0.5623	0.7792	0.8518	0.9971
Canon Log 3	Full	0.1251	0.3434	0.5645	0.8872	0.9971	-
Cineon	Full	0.0928	0.4697	0.6691	0.9325	-	-
DCI (Gamma2.6)	Full	0.0000	0.4622	0.7938	1.0000	-	-
WideDR	Full	0.0000	0.3963	0.7294	0.9927	-	-
PQ	Full	0.0000	0.3790	0.5679	0.8216	0.9048	-
HLG	Full	0.0000	0.3781	0.7291	-	-	-