

Appendix E

cineSpace LUT format (.csp) v1.0

E.1 Format

The cineSpace LUT format contains three main sections.

Header

This section contains the LUT identifier and the LUT type, 3D or 1D.

It is made up of the first two (2) valid lines in the file. See Notes below for the definition of a valid line.

Examples

- (3D LUT) header:

```
CSPLUTV100  
3D
```

- (1D LUT) header:

```
CSPLUTV100  
3D
```

1D preLUT data

This section is designed to allow for unevenly spaced data and also to accommodate input data that maybe outside the 0.0 <-> 1.0 range. Each primary channel, red, green and blue has each own 3 line entry. The first line is the number of preLUT data entries for that channel. The second line is the input and the third line is the mapped output that will then become the input for the LUT data section.

It is made up of valid lines 3 to 11 in the LUT. See Notes below for the definition of a valid line.

Examples

- Map extended input (max. 4.0) into top 10% of LUT

```
11
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 4.0
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
11
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 4.0
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
11
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 4.0
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
```

- Access LUT data via a gamma lookup
Red channel has gamma 2.0
Green channel has gamma 3.0 but also has fewer points
Blue channel has gamma 2.0 but also has fewer points

```
11
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
0.0 0.01 0.04 0.09 0.16 0.25 0.36 0.49 0.64 0.81 1.0
6
0.0 0.2 0.4 0.6 0.8 1.0
0.0 0.008 0.064 0.216 0.512 1.0
6
0.0 0.2 0.4 0.6 0.8 1.0
0.0 0.04 0.16 0.36 0.64 1.0
```

LUT data

This section contains the LUT data. The input stimuli for the LUT data is evenly spaced and normalised between 0.0 and 1.0. All data entries are space delimited floats. For 3D LUTs the data is red fastest.

It is made up of the valid lines 12 and onwards in the LUT. See Notes below for the definition of a valid line.

Examples

- Linear 3D LUT with cube sides R,G,B = 2,3,4 (ie. a 2x3x4 data set)

```
2 3 4
0.0 0.0 0.0
1.0 0.0 0.0
0.0 0.5 0.0
1.0 0.5 0.0
0.0 1.0 0.0
```

```

1.0 1.0 0.0
0.0 0.0 0.33
1.0 0.0 0.33
0.0 0.5 0.33
1.0 0.5 0.33
0.0 1.0 0.33
1.0 1.0 0.33
0.0 0.0 0.66
1.0 0.0 0.66
0.0 0.5 0.66
1.0 0.5 0.66
0.0 1.0 0.66
1.0 1.0 0.66
0.0 0.0 1.0
1.0 0.0 1.0
0.0 0.5 1.0
1.0 0.5 1.0
0.0 1.0 1.0
1.0 1.0 1.0

```

- Linear 1D LUT with length 1024

```

1024
0.015640 0.015640 0.015640
0.016618 0.016618 0.016618
0.017595 0.017595 0.017595
0.018573 0.018573 0.018573
0.019550 0.019550 0.019550
0.020528 0.020528 0.020528
0.021505 0.021505 0.021505
0.022483 0.022483 0.022483
0.023460 0.023460 0.023460
0.024438 0.024438 0.024438
0.025415 0.025415 0.025415
0.026393 0.026393 0.026393
0.027370 0.027370 0.027370
0.028348 0.028348 0.028348
0.029326 0.029326 0.029326
0.030303 0.030303 0.030303

.
.
.

0.988270 0.988270 0.988270
0.989247 0.989247 0.989247
0.990225 0.990225 0.990225
0.991202 0.991202 0.991202
0.992180 0.992180 0.992180
0.993157 0.993157 0.993157
0.994135 0.994135 0.994135

```

```

0.995112 0.995112 0.995112
0.996090 0.996090 0.996090
0.997067 0.997067 0.997067
0.998045 0.998045 0.998045
0.999022 0.999022 0.999022
1.000000 1.000000 1.000000

```

E.1.1 Notes

- All lines starting with white space are considered not valid and are ignored.
- Lines can be escaped to the next line with “\”.
- All values on a single line are space delimited.
- “BEGIN METADATA” indicates the start of the meta data section.
“END METADATA” indicates the end of the meta data section.
The above two lines and everything in between them are not considered valid lines are ignored by the parser.
- The first line must contain the LUT type and version identifier “CSPLUTV100”
- The second line must contain either “3D” or “1D”.
- The third valid line is the number of entries in the red 1D preLUT. It is an integer.
- The fourth valid line contains the input entries for the red 1D preLUT. These are floats and the range is not limited. The number of entries must be equal to the value on the third valid line.
- The fifth valid line contains the output entries for the red 1D preLUT. These are floats and the range is limited to 0.0 (-) 1.0. The number of entries must be equal to the value on the third valid line.
- The sixth valid line is the number of entries in the green 1D preLUT. It is an integer.
- The seventh valid line contains the input entries for the green 1D preLUT. These are floats and the range is not limited. The number of entries must be equal to the value on the sixth valid line.
- The eighth valid line contains the output entries for the green 1D preLUT. These are floats and the range is limited to 0.0 (-) 1.0. The number of entries must be equal to the value on the sixth valid line.
- The ninth valid line is the number of entries in the blue 1D preLUT. It is an integer.
- The tenth valid line contains the input entries for the blue 1D preLUT. These are floats and the range is not limited. The number of entries must be equal to the value on the ninth valid line.
- The eleventh valid line contains the output entries for the blue 1D preLUT. These are floats and the range is limited to 0.0 (-) 1.0. The number of entries must be equal to the value on the ninth valid line.
- The twelfth valid line in a ”3D” LUT contains the axis lengths of the 3D data cube in R G B order.
- The twelfth valid line in a ”1D” LUT contains the 1D LUT length

- The thirteenth valid line and onwards contain the LUT data. For 3D LUTs the order is red fastest. The data values are floats and are not range limited. The data is evenly spaced.
- The LUT file should be named with the extension `.csp`