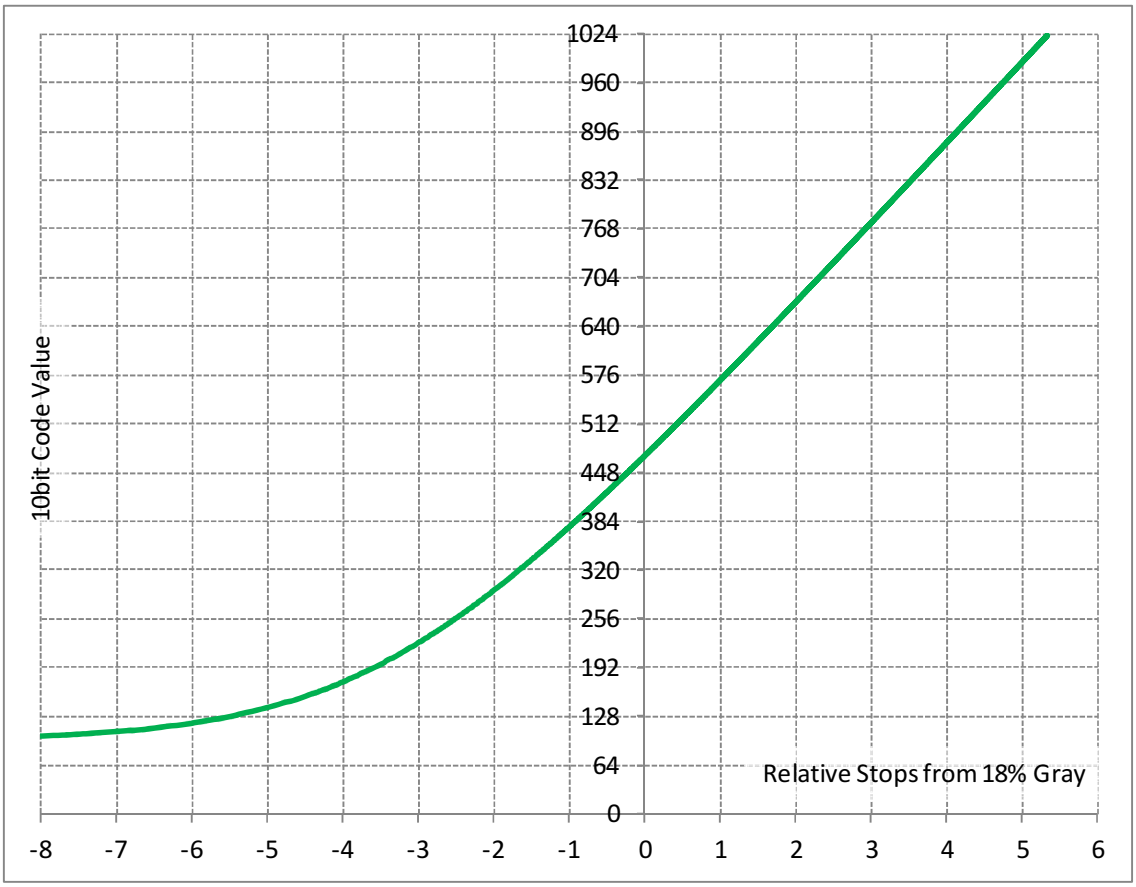
F-Log Data Sheet Ver.1.0

1. Introduction

This document describes how the gamma curve and the gamut of F-log are loaded onto the FUJIFILM X-T2. The gamma curve of F-log follows the density of negative films, which has a high compatibility with post production technique fostered in the field of cinema film. It also configures 0% CV(Code value) as 95/10 bits and 18% gray CV as 470/10 bits. The gamut of F-log complies with ITU-R BT.2020 and realises ease of cinema-like exposure and easy grading on the DCI.P3 color space.

2-1. F-Log curve characteristics

As the figure below shows, the code value by 10 bits are 95 for 0% of reflection, 470 for 18% and 705 for 90%.



2-2. F-Log Code Value

Input reflection	F-Log	
	IRE	10bit Code Value
0	3.5	95
18	46	470
90	73	705

2-3. F-Log conversion formula

a = 0.555556, b = 0.009468, c = 0.344676, d = 0.790453

e = 8.735631, f = 0.092864

cut1 = 0.00089

cut2 = 0.100537775223865

Scene Linear Reflection to F-Log

out = c * Log10(a * in + b) + d (in >= cut1)

out = e * in + f (in < cut1)

in = reflection

0.0 <= out <= 1.0

F-Log to Scene Linear Reflection

out = (10^((in - d) / c)) / a - b / a (in >= cut2)

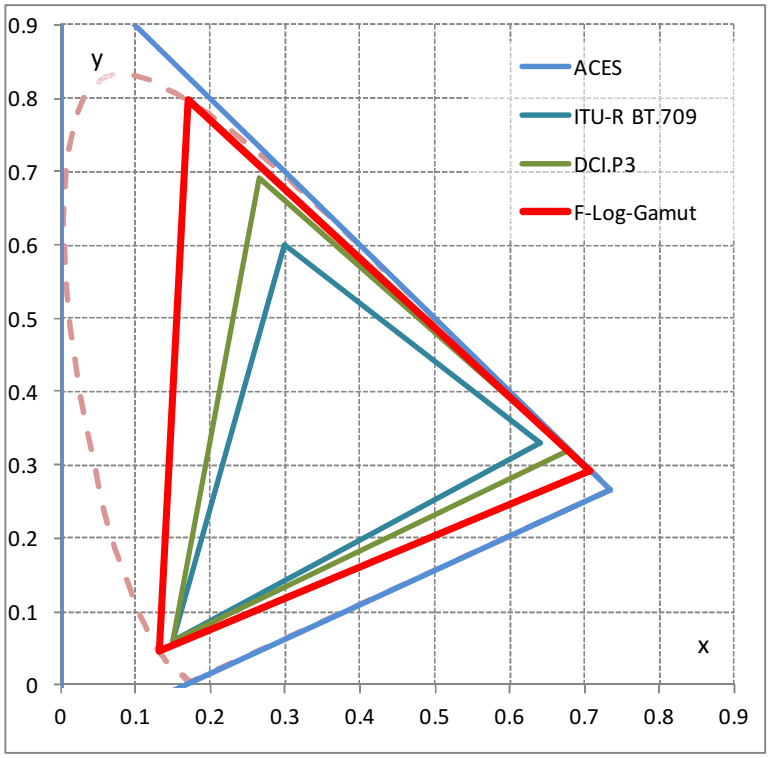
out = (in - f) / e (in < cut2)

0.0 <= in <= 1.0

out = reflection

3. F-Log Color Primaries

The gamut of F-log complies with ITU-R BT.2020, which is larger than ITU-R BT.709 or DCI.P3.



		x	y
F-Log Gamut	R	0.70800	0.29200
	G	0.17000	0.79700
	B	0.13100	0.04600
	White	0.31270	0.32900
ITU-R BT.2020	R	0.70800	0.29200
	G	0.17000	0.79700
	B	0.13100	0.04600
	White	0.31270	0.32900
DCI.P3	R	0.68000	0.32000
	G	0.26500	0.69000
	B	0.15000	0.06000
	White	0.31400	0.35100
ITU-R BT.709	R	0.64000	0.33000
	G	0.30000	0.60000
	B	0.15000	0.06000
	White	0.31270	0.32900
ACES	R	0.73470	0.26530
	G	0.00000	1.00000
	B	0.00000	-0.07700
	White	0.32168	0.33767

4. FAQ

Q. Is F-Log Full Range ?

A. Yes, it is Full Range to make effective use of the bit wide of the video signal.

Q. Why doesn’t F-log comply with a larger gamut than ITU-R BT.2020?

A. So as to prevent a tone jump which tends to take place when fitted from a large gamut to a small one.

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