

# ARRI LogC False Color Exposure Zones and Key

## SPECIFICATION

Date: 23<sup>rd</sup> January 2025

<b>Document Version History</b>		
Version	Author(s)	Change Note
2025-01-23	Sean Cooper	Initial document version

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# 1 Introduction

False Color allows a Director of Photography or Camera Operator to faithfully determine correct exposure of their subject, and simultaneously provides a quick view into the technical parameters of their capture such as noise floor and clipping ranges.

This document describes the computation and application of False Color tables for the ALEXA series of digital cinema cameras to LogC encoded signals. The document separates between common algorithms that are consistent between camera models and encoding types, and details that are specific to each camera model or encoding.

## 2 Common Algorithms

This section describes the process of calculating the False Color "Zones" for any EI and encoding curve. The information described here would, for example, allow a user to implement the algorithm into their software or hardware instead of relying on pre-computed look up tables.

False Color is defined as a collection of False Color Zones. A Zone is defined with upper and lower bound, within which the image signal is replaced with a constant color to visualize important exposure information. The bounds of the False Color Zones are defined with respect to normalized sensor linear values ( $E_{sensor}$ ) and applied on achromatic normalized log encoded values ( $A'$ ). Thus a two step process is required to calculate the input  $RGB_{LogC}$  values that should be colored in the False Color overlay.

**Note:** The term "LogC" will be used where the specific version of ARRI LogC is not specified or relevant to the context this term is used. For example when calculating the bounds the user should use either LogC3 or LogC4 where appropriate.

### 2.1 Achromatic Calculation

First an achromatic signal is calculated from the three channel  $RGB_{LogC}$  signal.

$$A' = f_{achrom}(E'_r, E'_g, E'_b) = 0.21260E'_r + 0.71520E'_g + 0.07220E'_b \quad (1)$$

where:

$A'$  = Achromatic LogC signal.

$E'_r$  = Red channel of the normalized  $RGB_{LogC}$  signal.

$E'_g$  = Green channel of the normalized  $RGB_{LogC}$  signal.

$E'_b$  = Blue channel of the normalized  $RGB_{LogC}$  signal.

### 2.2 False Color Calculation

$$(R, G, B) = f_{fc}(A') = \begin{cases} (R_z, G_z, B_z) & B_{z_l} \leq A' < B_{z_u} \\ (A', A', A') & \text{otherwise} \end{cases} \quad (2)$$

where:

$B_{z_l}$  = Lower bound for a particular zone  $z$ .

$B_{z_u}$  = Upper bound for a particular zone  $z$ .

$R_z$  = Red value from the corresponding False Color Zone Index.

$G_z$  = Green value from the corresponding False Color Zone Index.

$B_z$  = Blue value from the corresponding False Color Zone Index.

$A'$  = Achromatic LogC signal.

$(R, G, B)$  = Output display RGB signal.

The output RGB signal is implicitly in the LogC signal of the camera, no further color space conversion is necessary.

### 2.2.1 False Color Zone Color Index

The meaning of the zones provided by the False Color are consistent across camera systems. The description of each zone over time has changed; however, the technical calculation has remained consistent so only the present format is covered in this document.

Color	Description	$(R_z, G_z, B_z)$
Red	1/3 stop below clipping	(1.0, 0.0, 0.0)
Yellow	2/3 stops below clipping	(1.0, 1.0, 0.0)
Pink	1 stop above 18% middle grey	(1.0, 0.7, 0.7)
Green	18% middle grey	(0.0, 1.0, 0.0)
Blue	Edge of shadow detail	(0.0, 0.0, 1.0)
Purple	Noise floor	(0.7, 0.0, 1.0)

Table 1: The False Color Index colors have no colorimetric meaning and are purely categorical.

## 3 SDI Signal Range and Metadata

### 3.1 Signal Range

Across all camera models represented below, the output of SDI signals is encoded as 10-bit Legal Range. If you are directly interpreting LogC images over SDI, 10-bit Legal is the appropriate scaling to use.

Additional equipment put in-line of the signal path such as wireless transmitter/receiver and LUT boxes may alter the image signal by scaling from Legal to Full, in which case the appropriate scaling of the bounds should be used.

### 3.2 Metadata

Due to the False Color Tables being Exposure Index (EI) dependent, external hardware vendors may wish to automate the selection of the correct False Color Table for a live camera feed. This is facilitated by metadata sent over the SDI interface. Details on the specification and extraction of this metadata is defined outside of this document in the "ARRI SDI Metadata" White Paper which can be found on ARRI's website.

## 4 ARRI LogC3

### 4.1 False Color Calculation

The initial version of the document does not provide the derivation of the EI bounds from sensor linear signal. Please utilize the precomputed bounds provided below and reach out to our contact below if this information is needed for your use case.

### 4.2 Precomputed Bounds

#### EI 160

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	753	940	804	1023
Yellow	729	753	777	804
Pink	461	480	464	486
Green	397	415	389	410
Blue	147	151	97	102
Purple	64	147	0	97

Table 2: EI 160 - LogC3 Encoded False Color Zones

#### EI 200

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	772	940	827	1023
Yellow	748	772	799	827
Pink	461	480	464	486
Green	397	415	389	410
Blue	147	153	97	103
Purple	64	147	0	97

Table 3: EI 200 - LogC3 Encoded False Color Zones

#### EI 250

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	790	940	848	1023
Yellow	767	790	821	848
Pink	461	480	464	486
Green	397	415	389	410
Blue	148	154	98	105
Purple	64	148	0	98

Table 4: EI 250 - LogC3 Encoded False Color Zones

## EI 320

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	810	940	871	1023
Yellow	787	810	845	871
Pink	461	480	464	486
Green	397	415	389	410
Blue	148	157	98	108
Purple	64	148	0	98

Table 5: EI 320 - LogC3 Encoded False Color Zones

## EI 400

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	827	940	892	1023
Yellow	805	827	865	892
Pink	461	480	464	486
Green	397	415	389	410
Blue	149	159	99	111
Purple	64	149	0	99

Table 6: EI 400 - LogC3 Encoded False Color Zones

## EI 500

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	844	940	911	1023
Yellow	822	844	885	911
Pink	461	480	464	486
Green	397	415	389	410
Blue	150	163	100	115
Purple	64	150	0	100

Table 7: EI 500 - LogC3 Encoded False Color Zones

## EI 640

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	862	940	932	1023
Yellow	840	862	907	932
Pink	461	480	464	486
Green	397	415	389	410
Blue	151	167	101	121
Purple	64	151	0	101

Table 8: EI ? - LogC3 Encoded False Color Zones

## EI 800

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	878	940	951	1023
Yellow	857	878	926	951
Pink	461	480	464	486
Green	397	415	389	410
Blue	152	172	103	127
Purple	64	152	0	103

Table 9: EI 800 - LogC3 Encoded False Color Zones

## EI 1000

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	894	940	969	1023
Yellow	872	894	944	969
Pink	461	480	464	486
Green	397	415	389	410
Blue	154	179	105	134
Purple	64	154	0	105

Table 10: EI 1000 - LogC3 Encoded False Color Zones



## EI 1280

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	910	940	988	1023
Yellow	889	910	963	988
Pink	461	480	464	486
Green	397	415	389	410
Blue	156	188	107	144
Purple	64	156	0	107

Table 11: EI 1280 - LogC3 Encoded False Color Zones

## EI 1600

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	920	940	1000	1023
Yellow	900	920	977	1000
Pink	461	480	464	486
Green	397	415	389	410
Blue	158	197	110	156
Purple	64	158	0	110

Table 12: EI 1600 - LogC3 Encoded False Color Zones

## EI 2000

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	923	940	1003	1023
Yellow	906	923	983	1003
Pink	461	480	464	486
Green	397	415	389	410
Blue	161	210	114	170
Purple	64	161	0	114

Table 13: EI 2000 - LogC3 Encoded False Color Zones

## EI 2560

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	926	940	1006	1023
Yellow	910	926	988	1006
Pink	461	480	464	486
Green	397	415	389	410
Blue	166	225	119	188
Purple	64	166	0	119

Table 14: EI 2560 - LogC3 Encoded False Color Zones

## EI 3200

Color	Legal Range (10-bit)		Full Range (10-bit)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Red	927	940	1008	1023
Yellow	914	927	992	1008
Pink	461	480	464	486
Green	397	415	389	410
Blue	170	241	124	206
Purple	64	170	0	124

Table 15: EI 3200 - LogC3 Encoded False Color Zones

## 5 ARRI LogC4

### 5.1 ALEXA 35

#### 5.1.1 False Color Calculation

The LogC4 encoded False Color Zone bounds are split into two types, Exposure Index (EI) dependent and EI independent. EI dependent zones include those which visualize sensor noise or clipping behaviour which scale with the EI gain. Whereas EI independent zones are fixed relative to absolute sensor signal and calculated at a fixed EI of 400. To determine the active zone region, the Lower Bound value is inclusive and the Upper Bound value is exclusive.

Color	Description	Lower Bound ( $E_{sensor}$ )	Upper Bound ( $E_{sensor}$ )
Red	1/3 stop below clipping	207149	—
Yellow	2/3 stops below clipping	164414	207149
Blue	Edge of shadow detail	3	12
Purple	Noise floor	—	3

Table 16: EI Dependent False Color Zones ( $F_D$ )

Color	Description	Lower Bound ( $E_{sensor}$ )	Upper Bound ( $E_{sensor}$ )
Pink	1 stop above 18% middle grey	1440	1760
Green	18% middle grey	720	880

Table 17: EI Independent False Color Zones ( $F_I$ )

The LogC4 encoded False Color Zone bounds can then be determined by using the previously defined LogC4 Hardware Encoding Curve formulas, as follows:

$$B_z = f_{hw}\left(\frac{F_D}{N}, H_{EI}\right) \quad (3a)$$

$$B_z = f_{hw}\left(\frac{F_I}{N}, 400\right) \quad (3b)$$

$$N = 260991 \quad (3c)$$

where:

- $B_z$  = Normalized LogC4 Curve encoded bound for zone  $z$ .  $B_z \in \{B_{z_l}, B_{z_u}\}$
- $f_{hw}$  = LogC4 Hardware Encoding Curve function (Equation 1 of LogC4 Specification).
- $F_D$  = *Upper or Lower Bound* of EI dependent False Color Zone (Table 16).
- $N$  = Max signal normalization factor.
- $H_{EI}$  = User selected EI value.
- $F_I$  = *Upper or Lower Bound* of EI independent False Color Zone (Table 17).

**Note:** The two undefined upper and lower bounds for the signal extrema are respectively fixed at the min and max of the output signal  $A'$ , *i.e.* for the Red Upper Bound  $B_{z_u} = 1.0$  and for the Purple Lower Bound  $B_{z_l} = 0.0$  for all EI.

**Note:** For  $H_{EI} \geq 3200$ , the top two zone's bounds (Red, Yellow) are held at a constant EI 3200. This is due to this EI gain producing values beyond 1.0 in LogC4. This results in the visualization of earlier signal clipping than what is present in the sensor linear values or RAW file.

## 5.1.2 Precomputed Bounds

### EI 160

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	676	940	715	1023	2704	3760	2860	4095
Yellow	657	676	693	715	2628	2704	2772	2860
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	146	148	96	99	584	594	384	394
Purple	64	146	0	96	256	584	0	384

Table 18: EI 160 - LogC4 Encoded False Color Zones

### EI 200

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	694	940	736	1023	2777	3760	2946	4095
Yellow	675	694	714	736	2701	2777	2857	2946
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	146	149	96	99	585	596	385	398
Purple	64	146	0	96	256	585	0	385

Table 19: EI 200 - LogC4 Encoded False Color Zones

### EI 250

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	712	940	757	1023	2850	3760	3031	4095
Yellow	693	712	735	757	2774	2850	2943	3031
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	147	150	96	100	586	600	386	402
Purple	64	147	0	96	256	586	0	386

Table 20: EI 250 - LogC4 Encoded False Color Zones

### EI 320

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	733	940	781	1023	2930	3760	3125	4095
Yellow	714	733	759	781	2855	2930	3037	3125
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	147	151	97	102	588	605	387	408
Purple	64	147	0	97	256	588	0	387

Table 21: EI 320 - LogC4 Encoded False Color Zones

### EI 400

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	751	940	802	1023	3003	3760	3211	4095
Yellow	732	751	780	802	2928	3003	3122	3211
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	147	153	97	104	589	611	389	415
Purple	64	147	0	97	256	589	0	389

Table 22: EI 400 - LogC4 Encoded False Color Zones

### EI 500

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	769	940	823	1023	3076	3760	3296	4095
Yellow	750	769	801	823	3001	3076	3208	3296
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	148	154	98	106	591	618	391	423
Purple	64	148	0	98	256	591	0	391

Table 23: EI 500 - LogC4 Encoded False Color Zones

**EI 640**

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	789	940	847	1023	3157	3760	3391	4095
Yellow	770	789	825	847	3082	3157	3302	3391
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	148	157	99	108	594	627	394	434
Purple	64	148	0	99	256	594	0	394

Table 24: EI 640 - LogC4 Encoded False Color Zones

**EI 800**

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	808	940	868	1023	3230	3760	3476	4095
Yellow	789	808	846	868	3155	3230	3388	3476
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	149	159	99	111	596	638	398	446
Purple	64	149	0	99	256	596	0	398

Table 25: EI 800 - LogC4 Encoded False Color Zones

**EI 1000**

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	826	940	890	1023	3303	3760	3561	4095
Yellow	807	826	868	890	3228	3303	3473	3561
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	150	163	100	115	600	651	402	461
Purple	64	150	0	100	256	600	0	402

Table 26: EI 1000 - LogC4 Encoded False Color Zones

## EI 1280

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	846	940	913	1023	3384	3760	3656	4095
Yellow	827	846	891	913	3309	3384	3567	3656
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	151	167	102	120	605	668	408	481
Purple	64	151	0	102	256	605	0	408

Table 27: EI 1280 - LogC4 Encoded False Color Zones

## EI 1600

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	864	940	935	1023	3457	3760	3741	4095
Yellow	845	864	913	935	3382	3457	3653	3741
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	153	172	104	126	611	686	415	503
Purple	64	153	0	104	256	611	0	415

Table 28: EI 1600 - LogC4 Encoded False Color Zones

## EI 2000

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	883	940	956	1023	3530	3760	3827	4095
Yellow	864	883	934	956	3455	3530	3738	3827
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	154	177	106	132	618	708	423	528
Purple	64	154	0	106	256	618	0	423

Table 29: EI 2000 - LogC4 Encoded False Color Zones

## EI 2560

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	903	940	980	1023	3611	3760	3921	4095
Yellow	884	903	957	980	3536	3611	3833	3921
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	157	184	108	140	627	736	434	561
Purple	64	157	0	108	256	627	0	434

Table 30: EI 2560 - LogC4 Encoded False Color Zones

## EI 3200

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	921	940	1001	1023	3684	3760	4007	4095
Yellow	902	921	979	1001	3609	3684	3918	4007
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	159	191	111	149	638	765	446	595
Purple	64	159	0	111	256	638	0	446

Table 31: EI 3200 - LogC4 Encoded False Color Zones

## EI 4000

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	921	940	1001	1023	3684	3760	4007	4095
Yellow	902	921	979	1001	3609	3684	3918	4007
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	163	200	115	158	651	799	461	634
Purple	64	163	0	115	256	651	0	461

Table 32: EI 4000 - LogC4 Encoded False Color Zones



**EI 5120**

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	921	940	1001	1023	3684	3760	4007	4095
Yellow	902	921	979	1001	3609	3684	3918	4007
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	167	210	120	171	668	840	481	683
Purple	64	167	0	120	256	668	0	481

Table 33: EI 5120 - LogC4 Encoded False Color Zones

**EI 6400**

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	921	940	1001	1023	3684	3760	4007	4095
Yellow	902	921	979	1001	3609	3684	3918	4007
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	172	221	126	183	686	882	503	732
Purple	64	172	0	126	256	686	0	503

Table 34: EI 6400 - LogC4 Encoded False Color Zones

## 5.2 ALEXA 265

### 5.2.1 False Color Calculation

Just like other LogC4 encoded False Color Zones, bounds are split into two types, EI dependent and EI independent. EI dependent zones include those which visualize sensor noise or clipping behaviour which scale with the EI gain. Whereas EI independent zones are fixed relative to absolute sensor signal and calculated at a fixed EI of 400. To determine the active zone region, the Lower Bound value is inclusive and the Upper Bound value is exclusive.

Color	Description	Lower Bound ( $E_{sensor}$ )	Upper Bound ( $E_{sensor}$ )
Red	1/3 stop below clipping	51403	—
Yellow	2/3 stops below clipping	40799	51403
Blue	Edge of shadow detail	3	10
Purple	Noise floor	—	3

Table 35: EI Dependent False Color Zones ( $F_D$ )

Color	Description	Lower Bound ( $E_{sensor}$ )	Upper Bound ( $E_{sensor}$ )
Pink	1 stop above 18% middle grey	1446	1768
Green	18% middle grey	723	884

Table 36: EI Independent False Color Zones ( $F_I$ )

The LogC4 encoded False Color Zone bounds can then be determined by using Equation 1 in Section 3.1 of the LogC4 Specification document.

### 5.2.2 Precomputed Bounds

#### EI 160

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	562	940	581	1023	2247	3760	2327	4095
Yellow	543	562	559	581	2172	2247	2239	2327
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	146	148	96	98	584	592	383	392
Purple	64	146	0	96	256	584	0	383

Table 37: EI 160 - LogC4 Encoded False Color Zones

## EI 200

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	580	940	603	1023	2320	3760	2412	4095
Yellow	561	580	581	603	2245	2320	2324	2412
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	146	149	96	99	585	594	384	395
Purple	64	146	0	96	256	585	0	384

Table 38: EI 200 - LogC4 Encoded False Color Zones

## EI 250

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	598	940	624	1023	2393	3760	2497	4095
Yellow	579	598	602	624	2317	2393	2409	2497
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	146	149	96	100	586	598	385	399
Purple	64	146	0	96	256	586	0	385

Table 39: EI 250 - LogC4 Encoded False Color Zones

## EI 320

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	618	940	647	1023	2473	3760	2591	4095
Yellow	599	618	625	647	2398	2473	2503	2591
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	147	150	97	101	587	602	386	404
Purple	64	147	0	97	256	587	0	386

Table 40: EI 320 - LogC4 Encoded False Color Zones

**EI 400**

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	637	940	669	1023	2546	3760	2676	4095
Yellow	618	637	647	669	2471	2546	2588	2676
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	147	152	97	102	588	607	388	410
Purple	64	147	0	97	256	588	0	388

Table 41: EI 400 - LogC4 Encoded False Color Zones

**EI 500**

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	655	940	690	1023	2619	3760	2761	4095
Yellow	636	655	668	690	2543	2619	2673	2761
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	147	153	97	104	590	613	390	417
Purple	64	147	0	97	256	590	0	390

Table 42: EI 500 - LogC4 Encoded False Color Zones

**EI 640**

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	675	940	713	1023	2700	3760	2856	4095
Yellow	656	675	691	713	2624	2700	2768	2856
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	148	155	98	107	592	621	392	427
Purple	64	148	0	98	256	592	0	392

Table 43: EI 640 - LogC4 Encoded False Color Zones

## EI 800

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	693	940	735	1023	2773	3760	2941	4095
Yellow	674	693	713	735	2697	2773	2853	2941
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	149	158	99	109	594	631	395	438
Purple	64	149	0	99	256	594	0	395

Table 44: EI 800 - LogC4 Encoded False Color Zones

## EI 1000

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	711	940	756	1023	2846	3760	3026	4095
Yellow	693	711	734	756	2770	2846	2938	3026
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	149	160	100	113	598	642	399	451
Purple	64	149	0	100	256	598	0	399

Table 45: EI 1000 - LogC4 Encoded False Color Zones

## EI 1280

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	732	940	780	1023	2926	3760	3121	4095
Yellow	713	732	758	780	2851	2926	3032	3121
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	150	164	101	117	602	657	404	468
Purple	64	150	0	101	256	602	0	404

Table 46: EI 1280 - LogC4 Encoded False Color Zones

## EI 1600

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	750	940	801	1023	2999	3760	3206	4095
Yellow	731	750	779	801	2924	2999	3118	3206
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	152	168	102	122	607	673	410	488
Purple	64	152	0	102	256	607	0	410

Table 47: EI 1600 - LogC4 Encoded False Color Zones

## EI 2000

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	768	940	822	1023	3073	3760	3292	4095
Yellow	749	768	800	822	2997	3073	3203	3292
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	153	173	104	128	613	693	417	510
Purple	64	153	0	104	256	613	0	417

Table 48: EI 2000 - LogC4 Encoded False Color Zones

## EI 2560

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	788	940	846	1023	3153	3760	3386	4095
Yellow	769	788	824	846	3078	3153	3298	3386
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	155	180	107	135	621	718	427	540
Purple	64	155	0	107	256	621	0	427

Table 49: EI 2560 - LogC4 Encoded False Color Zones

## EI 3200

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	807	940	867	1023	3226	3760	3471	4095
Yellow	788	807	845	867	3151	3226	3383	3471
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	158	186	109	143	631	745	438	571
Purple	64	158	0	109	256	631	0	438

Table 50: EI 3200 - LogC4 Encoded False Color Zones

## EI 4000

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	807	940	867	1023	3226	3760	3471	4095
Yellow	788	807	845	867	3151	3226	3383	3471
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	160	194	113	152	642	776	451	607
Purple	64	160	0	113	256	642	0	451

Table 51: EI 4000 - LogC4 Encoded False Color Zones

## EI 5120

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	807	940	867	1023	3226	3760	3471	4095
Yellow	788	807	845	867	3151	3226	3383	3471
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	164	204	117	163	657	814	468	652
Purple	64	164	0	117	256	657	0	468

Table 52: EI 5120 - LogC4 Encoded False Color Zones

**EI 6400**

Color	Legal Range (10-bit)		Full Range (10-bit)		Legal Range (12-bit)		Full Range (12-bit)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Red	807	940	867	1023	3226	3760	3471	4095
Yellow	788	807	845	867	3151	3226	3383	3471
Pink	351	366	335	353	1403	1464	1341	1412
Green	300	315	276	293	1202	1259	1106	1172
Blue	168	213	122	174	673	854	488	698
Purple	64	168	0	122	256	673	0	488

Table 53: EI 6400 - LogC4 Encoded False Color Zones



## 6 Contact

In case you have questions or comments, please contact: [arriraw-dev@arri.de](mailto:arriraw-dev@arri.de)