ChromaPure³

Video Calibration Report

Company:	Display Calibrations LLC	**Email:**	tom@chromapure.com
URL:	www.chromapure.com	**Test Pattern Source:**	Disc
Color Analyzer:	None	**Reference Gamut:**	Rec. 709
Calibration Date:	5/29/2018 7:52 PM	**Target Gamma:**	2.2
		Color Intensity:	100%

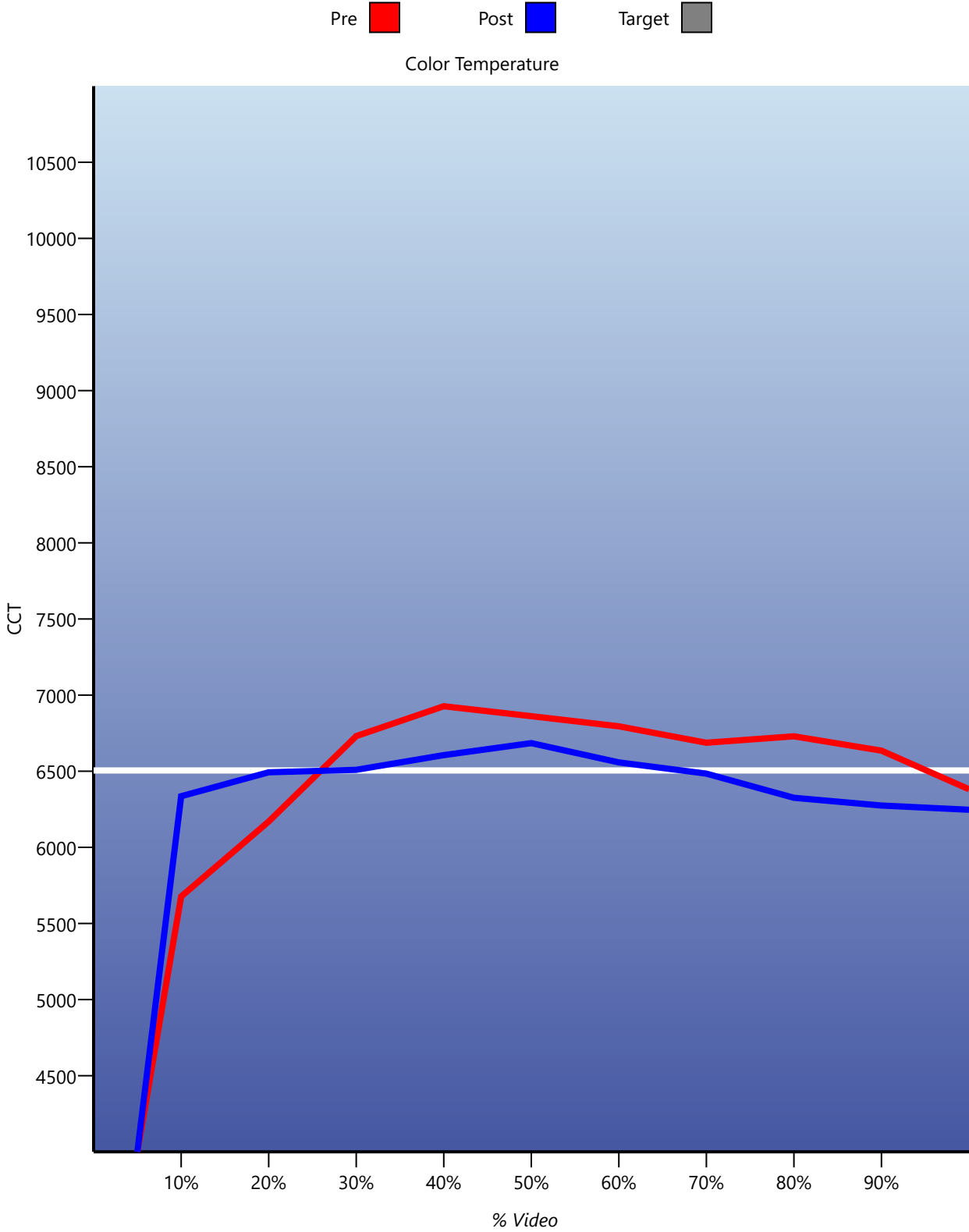## Client Information

Name:

Display:

Address:

Phone:

Email:

Correlated Color Temperature

Correlated Color Temperature (CCT) is a less precise measurement of the color of white. The target is 6505. Higher than 6505 is too blue. Lower is too red.


Color Temperature

Legend: Pre (red), Post (blue), Target (gray)

Y-axis: CCT
X-axis: % Video

CIE Charts

These charts graphically map the accuracy of the display's color saturation and hue relative to the chosen standard
The closer the 'After' symbols are to the reference points, the more accurate the color. There are 2 chromaticity charts,
one showing before/after performance based on the 1931 xy system and another based on the 1976 u'v' system,
which is less well known, but more perceptually uniform.
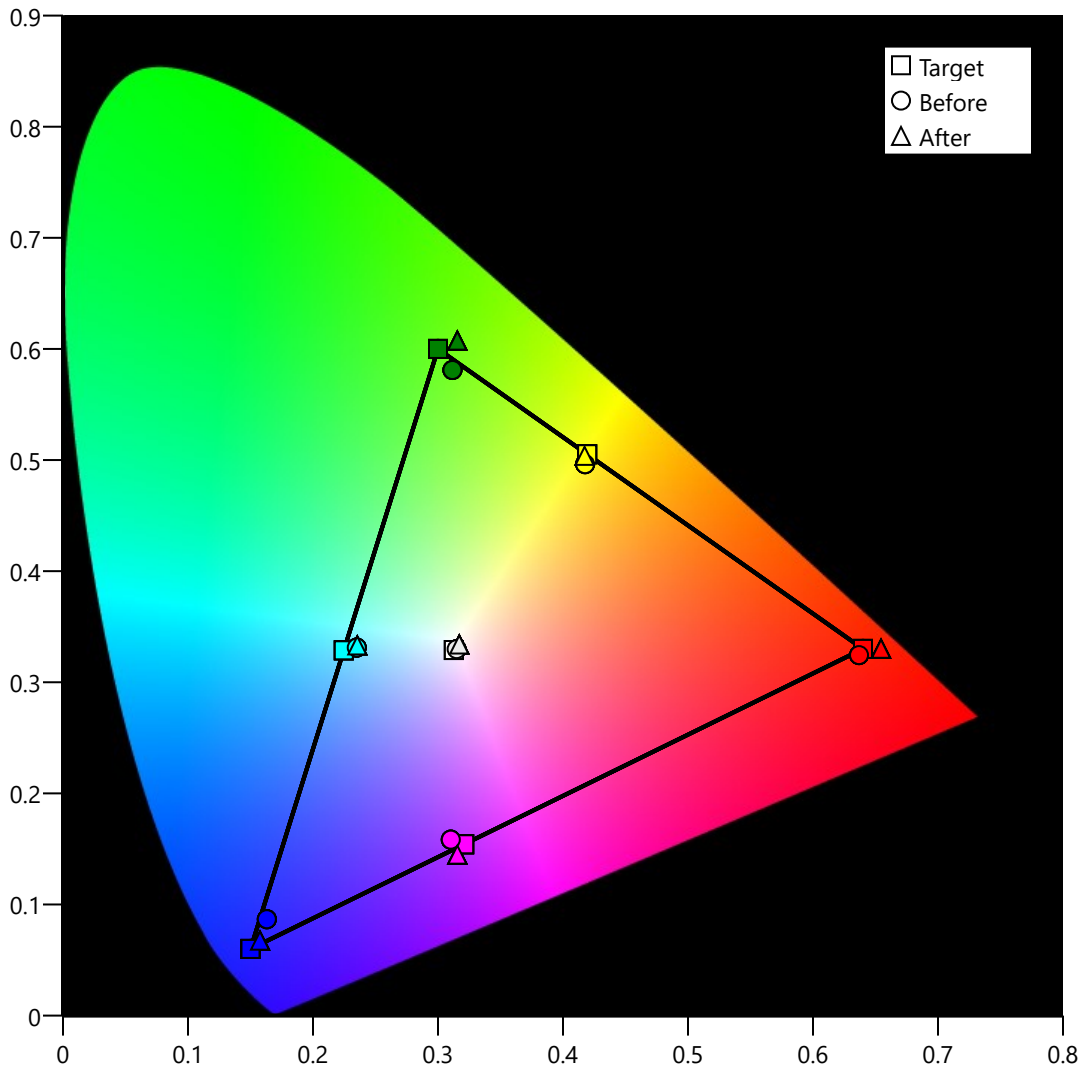
Luminance Error (before)
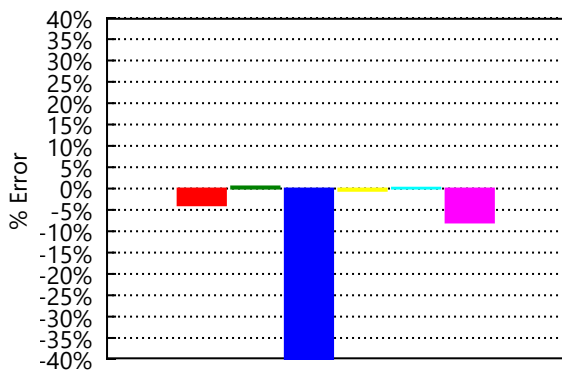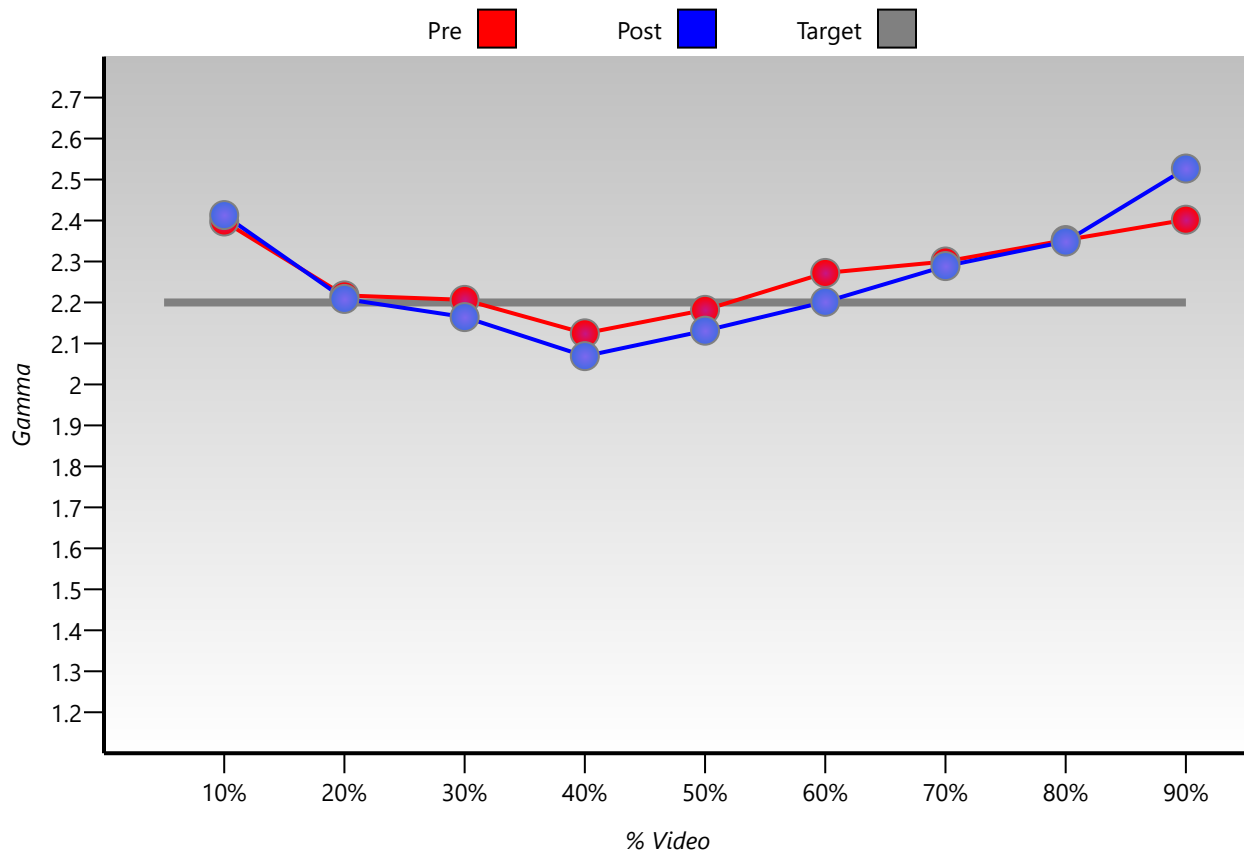

Luminance Error (after)
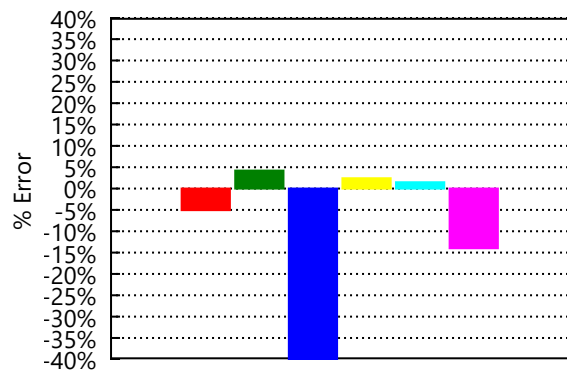
Gamma

Gamma describes the rate at which video output increases with signal input. This is not a a one-to-one relationship. If gamma is too high, the image will darken and shadow detail will suffer. If gamma is too low, contrast and depth suffer.

Luminance: cdm2   Target Gamma: 2.2

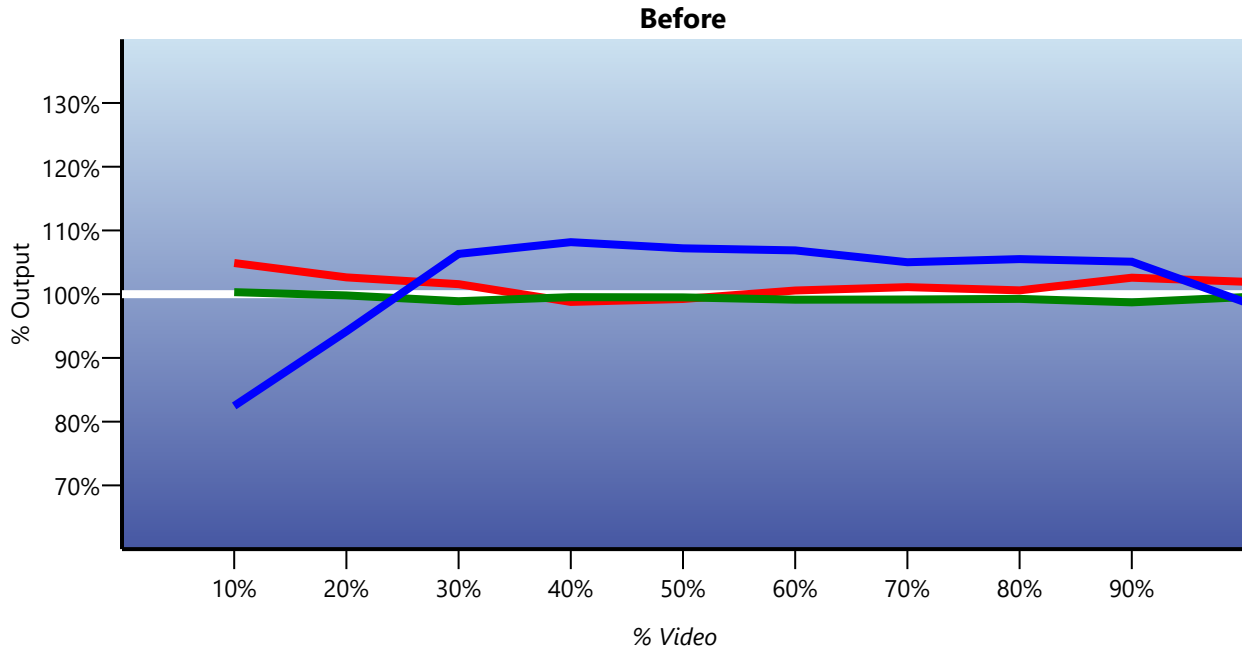|	Before			After		
	Output	**Gamma**	**Video**	**Output**	**Gamma**	**Video**
0%			0			0
10%	0.09 (0.4%)	2.40		0.08 (0.4%)	2.41	
20%	0.60 (2.8%)	2.22		0.59 (2.9%)	2.21	
30%	1.49 (7.0%)	2.21		1.53 (7.4%)	2.16	
40%	3.03 (14.3%)	2.12		3.11 (15.0%)	2.07	
50%	4.68 (22.0%)	2.18		4.73 (22.8%)	2.13	
60%	6.66 (31.3%)	2.27		6.73 (32.5%)	2.20	
70%	9.35 (44.0%)	2.30		9.16 (44.2%)	2.29	
80%	12.57 (59.2%)	2.35		12.27 (59.2%)	2.35	
90%	16.50 (77.6%)	2.40		15.87 (76.6%)	2.53	
100%	21.25 (100.0%)	0	0	20.72 (100.0%)	0	0
	Mean:	**2.27**		**2.26**		
	Contrast:		**0.0**			**0.0**

Grayscale ΔE Chart

This chart displays the color of white across the entire grayscale in raw xy data and Delta-E. White is defined as x0.3127, y0.3290. Delta E (dE or ΔE) measures deviation from a color standard. The smaller the number, the less the deviation from the standard and the more accurate the color. Ideally, ΔE for white should not rise above 2.
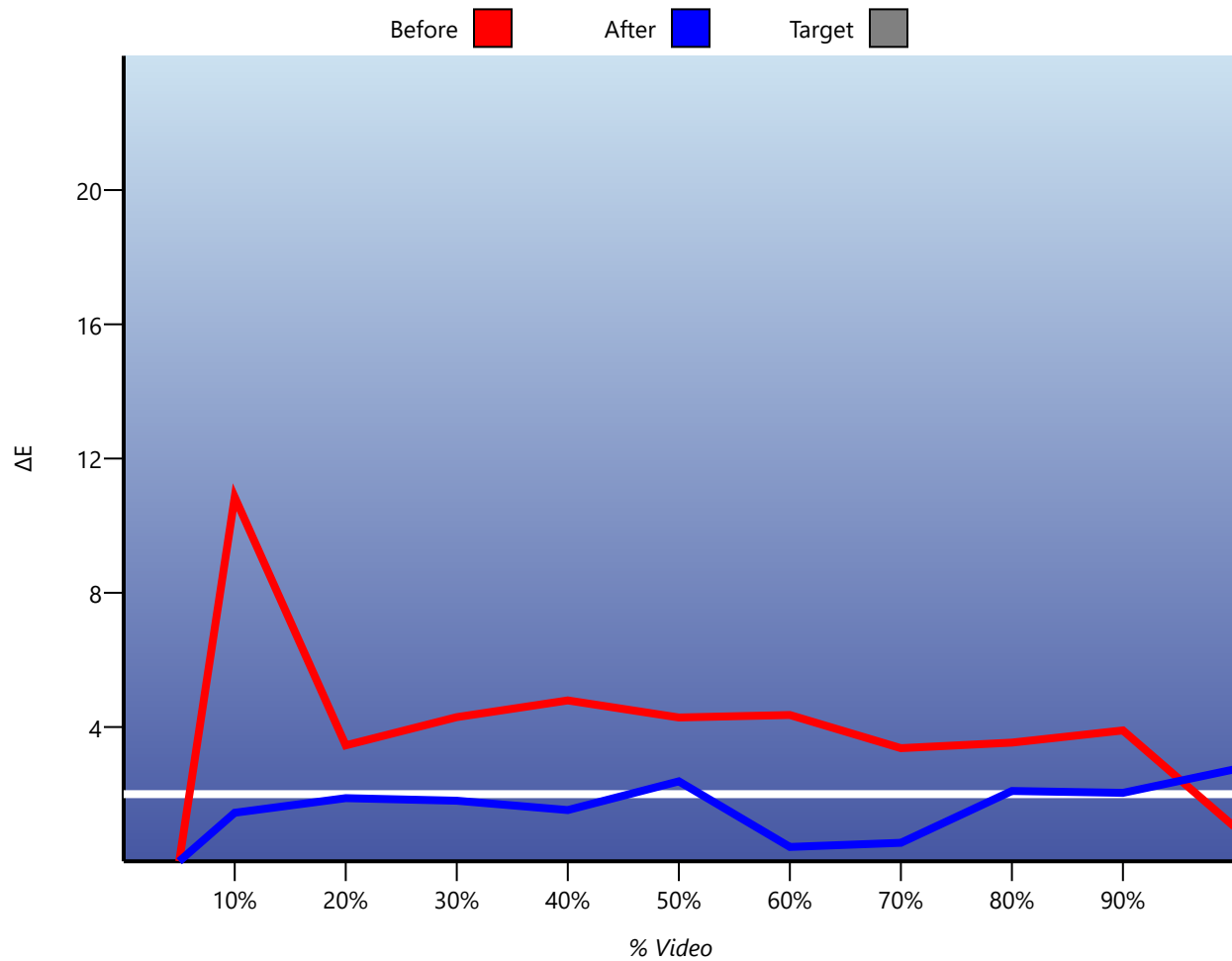

	Before			After		
	x, y	ΔE	CCT	x, y	ΔE	CCT
5%						
10%	0.328, 0.349	10.8	5,677	0.316, 0.330	1.4	6,336
20%	0.318, 0.335	3.5	6,170	0.313, 0.326	1.9	6,493
30%	0.310, 0.321	4.3	6,731	0.313, 0.326	1.8	6,509
40%	0.307, 0.320	4.8	6,927	0.311, 0.326	1.5	6,606
50%	0.308, 0.321	4.3	6,862	0.310, 0.325	2.4	6,685
60%	0.309, 0.321	4.4	6,795	0.312, 0.329	0.4	6,558
70%	0.310, 0.323	3.4	6,687	0.313, 0.330	0.6	6,484
80%	0.310, 0.323	3.5	6,729	0.316, 0.333	2.1	6,326
90%	0.311, 0.322	3.9	6,635	0.317, 0.332	2.0	6,275
100%	0.315, 0.330	1.0	6,382	0.317, 0.334	2.7	6,247
Mean:		4.4	6,559		1.7	6,452

RGB Line Chart

This chart also displays gray scale performance, but breaks out the contributions of red, green, and blue. Ideally, all three colors should be within +- 4% from 100% across the entire range.

Before

	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Mean
R	N/A	104.9%	102.6%	101.6%	98.8%	99.2%	100.6%	101.1%	100.6%	102.6%	102.0%	101.4%
G	N/A	100.3%	99.8%	98.9%	99.5%	99.5%	99.1%	99.2%	99.3%	98.7%	99.5%	102.0%
B	N/A	82.5%	94.2%	106.3%	108.2%	107.2%	106.9%	105.0%	105.5%	105.1%	98.8%	102.0%

After
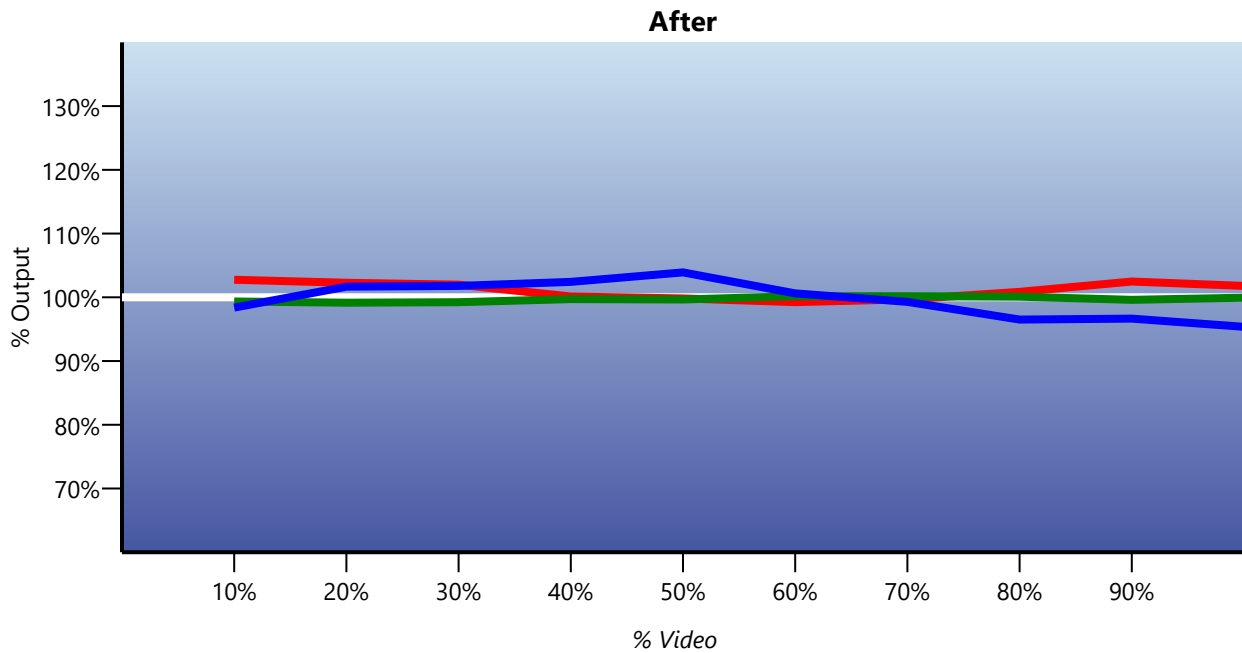
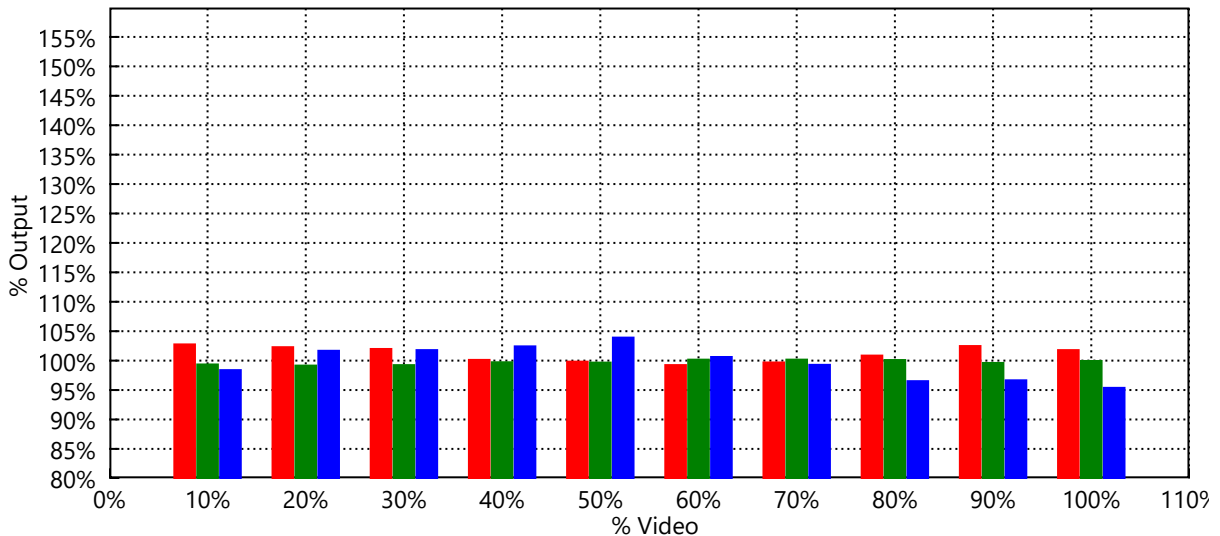|	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Mean
R	N/A	102.8%	102.3%	102.0%	100.1%	99.8%	99.2%	99.7%	100.9%	102.5%	101.8%	101.1%
G	N/A	99.3%	99.2%	99.2%	99.7%	99.7%	100.2%	100.2%	100.1%	99.6%	99.9%	99.7%
B	N/A	98.4%	101.7%	101.8%	102.4%	103.9%	100.6%	99.3%	96.5%	96.7%	95.4%	99.7%

RGB Bar Chart

This chart also displays gray scale performance, but breaks out the contributions of red, green, and blue. Ideally, all three colors should equal at 100% + - 4% across the entire range.

RGB Balance (before)
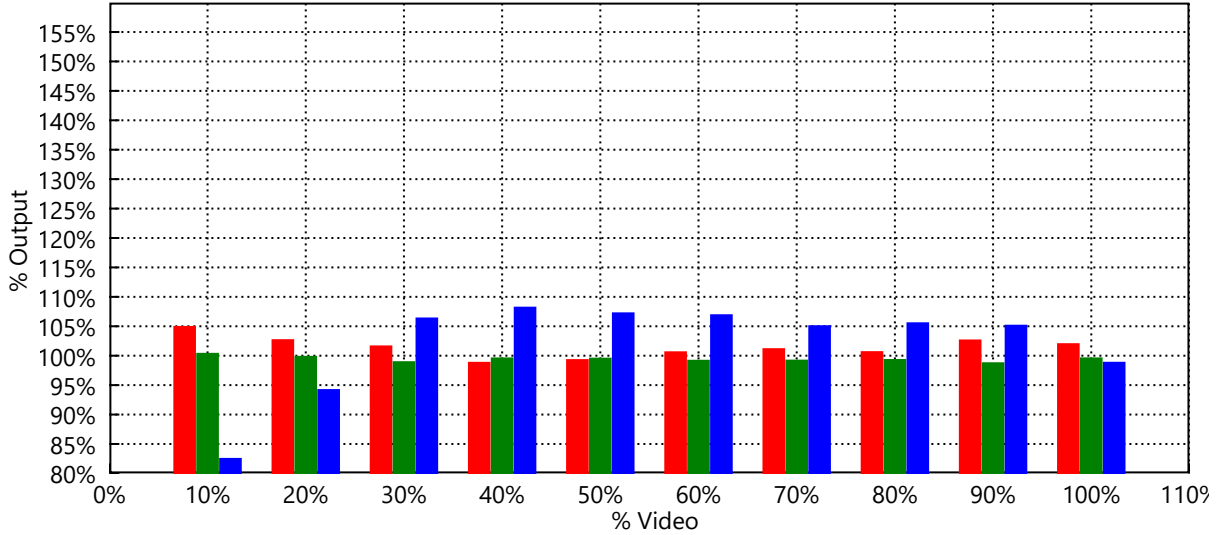
	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Mean
R	N/A	104.9%	102.6%	101.6%	98.8%	99.2%	100.6%	101.1%	100.6%	102.6%	102.0%	101.4%
G	N/A	100.3%	99.8%	98.9%	99.5%	99.5%	99.1%	99.2%	99.3%	98.7%	99.5%	102.0%
B	N/A	82.5%	94.2%	106.3%	108.2%	107.2%	106.9%	105.0%	105.5%	105.1%	98.8%	102.0%

RGB Balance (after)

	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Mean
R	N/A	102.8%	102.3%	102.0%	100.1%	99.8%	99.2%	99.7%	100.9%	102.5%	101.8%	101.1%
G	N/A	99.3%	99.2%	99.2%	99.7%	99.7%	100.2%	100.2%	100.1%	99.6%	99.9%	99.7%
B	N/A	98.4%	101.7%	101.8%	102.4%	103.9%	100.6%	99.3%	96.5%	96.7%	95.4%	99.7%

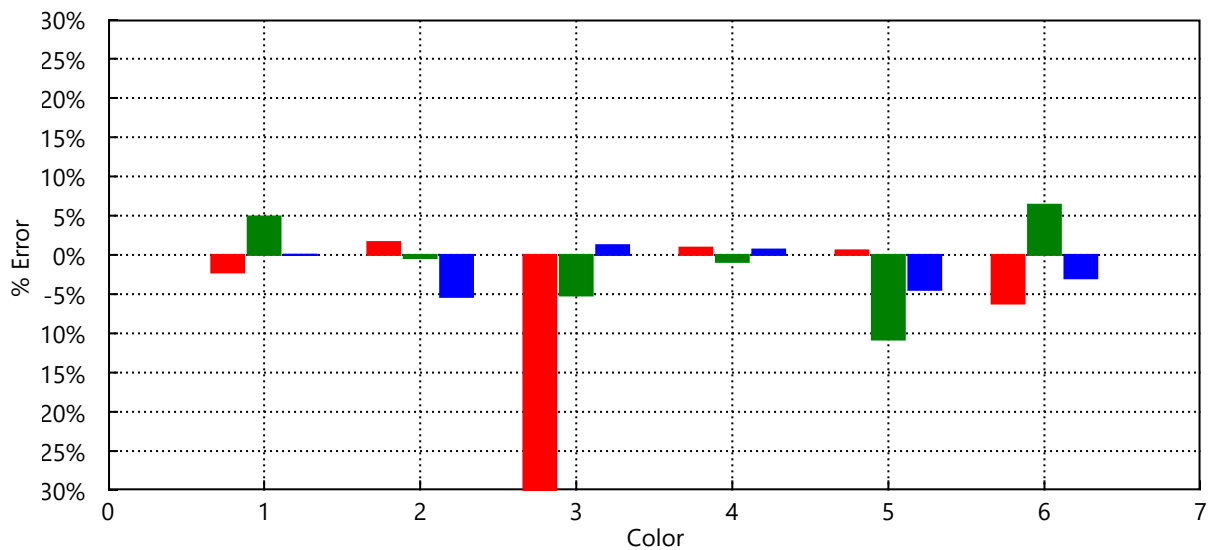## Primary/Secondary Colors Hue, Saturation, and Lightness Error

These charts display the before/after color errors of the primary/secondary colors in terms of the three visible components of color: Hue, Saturation, and Lightness (HSL). Ideally, all primary and secondary colors should have no more than 2% error in any component.

Chromaticity Error (Before)
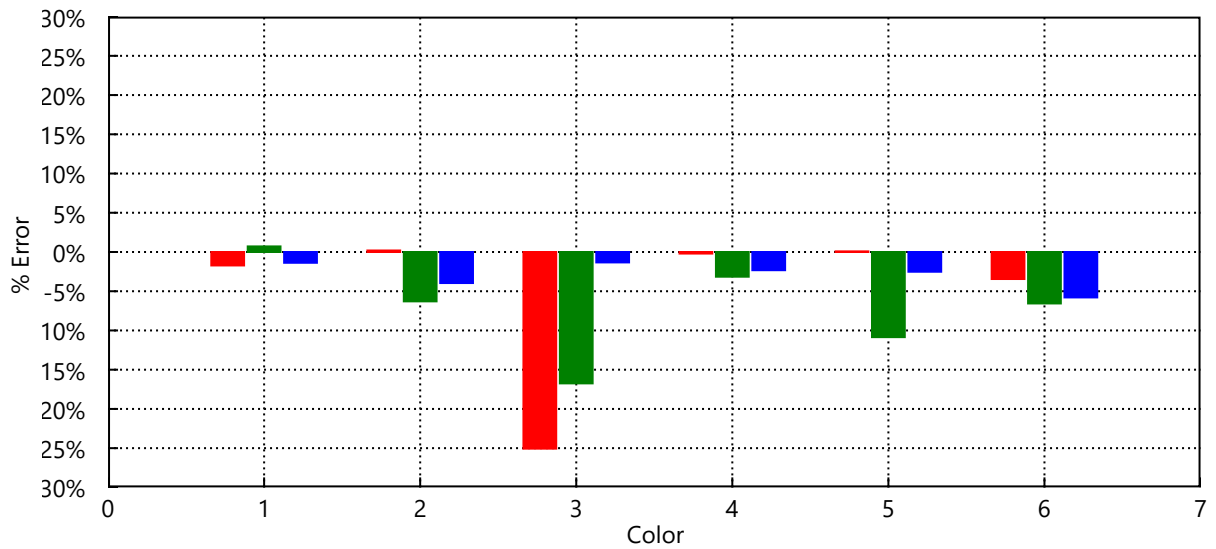
	Red	Green	Blue	Yellow	Cyan	Magenta
Lightness	-1.7%	0.2%	-25.1%	-0.2%	0.1%	-3.4%
Saturation	0.7%	-6.3%	-16.7%	-3.1%	-10.9%	-6.6%
Hue	-1.4%	-4.0%	-1.3%	-2.3%	-2.5%	-5.8%

Chromaticity Error (After)

	Red	Green	Blue	Yellow	Cyan	Magenta
Lightness	-2.2%	1.6%	-39.8%	0.9%	0.6%	-6.2%
Saturation	4.9%	-0.4%	-5.2%	-0.9%	-10.8%	6.4%
Hue	0.0%	-5.3%	1.2%	0.7%	-4.4%	-3.0%

Primary/Secondary Colors dE Performance

The data below below shows the display's ability to accurately reproduce color as defined by the selected color difference model in ΔE units. CIE94 or CIEDE2000 should be 1.5 or less.

ΔE Performance
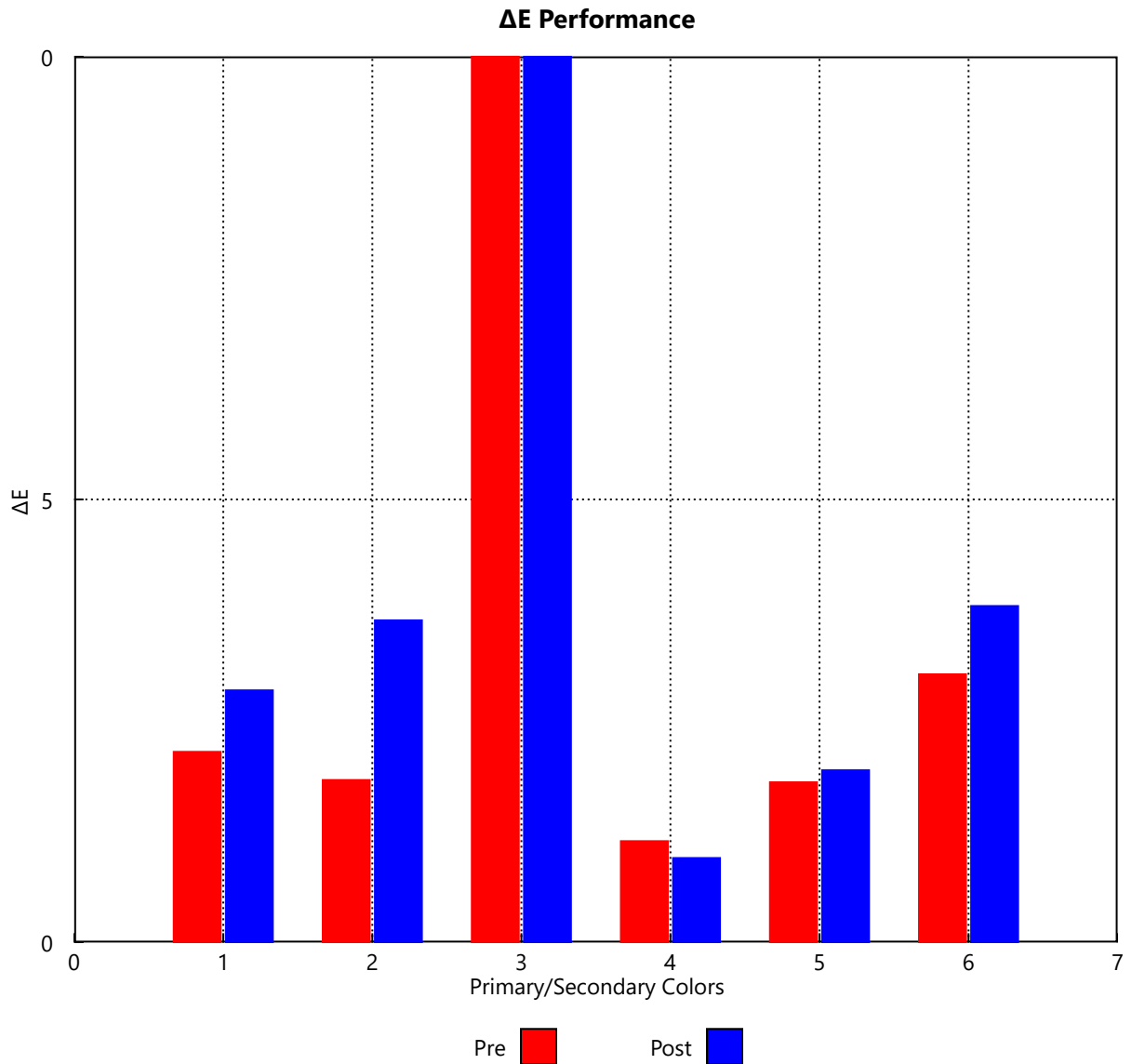
	Reference	Before		After	
	xyY	**xyY**	**ΔE**	**xyY**	**ΔE**
Red	0.6400, 0.3300, 0.2127	0.6368, 0.3245, 0.2044	2.2	0.6544, 0.3301, 0.2019	2.8
Green	0.3000, 0.6000, 0.7152	0.3116, 0.5810, 0.7186	1.8	0.3155, 0.6075, 0.7452	3.6
Blue	0.1500, 0.0600, 0.0722	0.1631, 0.0867, 0.0416	11.2	0.1576, 0.0674, 0.0285	14.3
Yellow	0.4193, 0.5052, 0.9278	0.4177, 0.4963, 0.9231	1.1	0.4173, 0.5038, 0.9502	1.0
Cyan	0.2247, 0.3288, 0.7873	0.2350, 0.3312, 0.7889	1.8	0.2354, 0.3331, 0.7989	1.9
Magenta	0.3209, 0.1542, 0.2848	0.3103, 0.1583, 0.2622	3.0	0.3155, 0.1449, 0.2450	3.8
White	0.3127, 0.3290, 1.0000	0.3149, 0.3298, 21.2474	1.0	0.3170, 0.3340, 20.7170	2.7
			Mean: 3.2		**Mean: 4.3**