

# Welcome to the HT Enthusiast Extended Workflow

v18.2.3

Workflow →  
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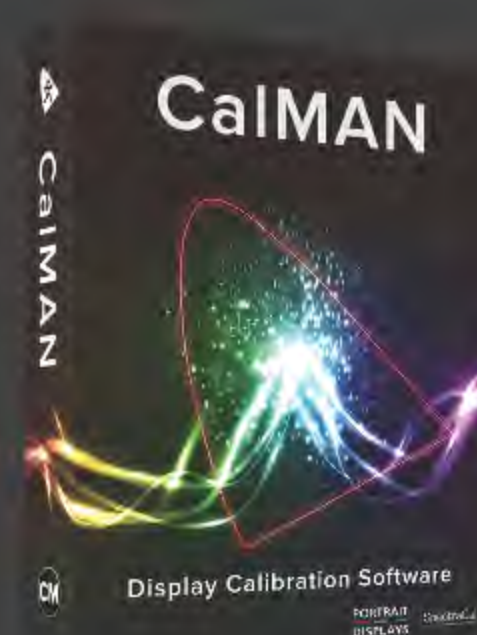
Calibrate

↑

←

Analyze

→



CaIMAN HDR10



## Featuring ...

- ▶ Home layout outlines the workflow structure with full access
- ▶ Comprehensive Notes Management - access button always at bottom right
- ▶ Integrated Session Setup layout with hardware configuration and dynamic range assessment, with access to Meter Profile Analysis, Meter Stability, and Screen Uniformity layouts
- ▶ Single layout takes all desired Pre- or Post-calibration readings
- ▶ Expanded Multi-Point Grayscale calibration, pre/post-cal charts, and datagrid layouts
- ▶ CMS Gamut detailed calibration layout
- ▶ Saturation Sweep detailed calibration, pre/post-cal charts, and datagrid layouts
- ▶ 3D Color Cube LUT calibration, detailed charts, and datagrid layouts
- ▶ Gamut Luminance & Color Check cal assessment, pre/post-cal charts and datagrid layouts
- ▶ Compare Calibrations layout lets you check two calibrations side by side
- ▶ High-count calibration points, HDR friendly with EOTF charts
- ▶ DeltaE is **DEITP: Compensated** is default, **With Luminance Error** if indicated or after the "/"
- ▶ Layout indicators: **I** Calibration **|** Charts **#** Datagrids

## Also featuring navigation for the Mouse Lazy ...

- ▶ Navigation bar on right shows where you are and takes you where you want to go
- ▶ Toggle buttons switch between complementary layouts with one click:
  - between the Calibration layouts and their corresponding Datagrid
  - between the Pre-Calibration Readings and Post-Calibration Readings
  - between corresponding Pre-Calibration and Post-Calibration Details
  - between corresponding Post-Calibration Details and Datagrids

And more!



Show Outline

## WORKFLOW OVERVIEW

The HT Enthusiast Extended Workflow aims at providing all the possible calibration options in an accessible user-friendly manner.

The workflow is divided into four sections or zones with a corresponding color for the three working zones.

- 1) ► **Introduction:** Provides general information about the workflow and its features, and random access to all layouts
- 2) ► **Preparation Zone:** Enter session and device setup information, take pre-calibration readings for reference, plan the dynamic aspects of the session (contrast, brightness, etc.)
- 3) ► **Calibration Zone:** Contains the calibration layouts with matching datagrids, and the post-calibration readings layout for all views except the 2-Point Grayscale and 3D Color Cube LUT
- 4) ► **Analysis Zone:** Has detailed charts and datagrids for all views in the pre- and post-calibration states (except the 3D Color Cube LUT which feeds off the calibration layout) and a final check layout for dynamic range fine-tuning with a session summary

## ACTIVE CALIBRATION VIEWS

- 2-Point Grayscale
- Multi-point Grayscale
- Saturation Sweeps, also used for basic CMS calibration
- Gamut Luminance
- Color Checker with option for Slim Datagrid
- 3D Color Cube LUT with tabs for Full-feature and Minimal
- Use Minimal layout tab where available for hopefully faster AutoCal.
- DeltaE is DE1TP, compensated by default, and with luminance error where indicated or after the "/".
- All active calibration layouts except 2-Point have full-screen datagrids.
- Use the Slim high-content Color Checker datagrid for faster processing of hundreds of colors.

## ANALYSIS CHARTS

Except the 2-Point Grayscale and 3D Color Cube LUT, there are pre-calibration and post-calibration detail chart layouts for each active calibration view.

You can toggle between them by clicking the ↑PreCal or ↑PstCal button in the Nav Bar (they super-impose when the layout switches so just keep clicking to go back and forth). Other ↑ buttons in the Nav Bar perform similar toggling duties.

Unlike in the other color views, the CIE chart in the Color Checker pre- and post-calibration chart layouts is a display option accessible by checking the CIE Chart option.

Supplementing the charts are analysis datagrid layouts with both pre- and post-calibration data for each active calibration view. You can access them using the #Datagrid buttons.

## KEY LAYOUTS

**Home** - has a layout map for getting the lay of the land and a fully loaded navigation matrix for access to all layouts.

**Notes Management** - Comprehensive notes management layout contains all notes for convenient editing, with access button at bottom right of all layouts.

**Session Setup** - Integrates calibration options, initial settings & notes, and hardware/device configuration.

**Pre-Calibration Readings, Post-Calibration Readings** - these identically configured layouts are master controls for the pre- and post-calibration states with combined and selective reading of all views. They feed all the detail charts and datagrids. You can toggle between the pre- and post-cal reading layouts, and between a reading layout and its corresponding detail layouts, in the Nav Bar (↑PreCal and ↑PstCal) and the explicit toolbar buttons.

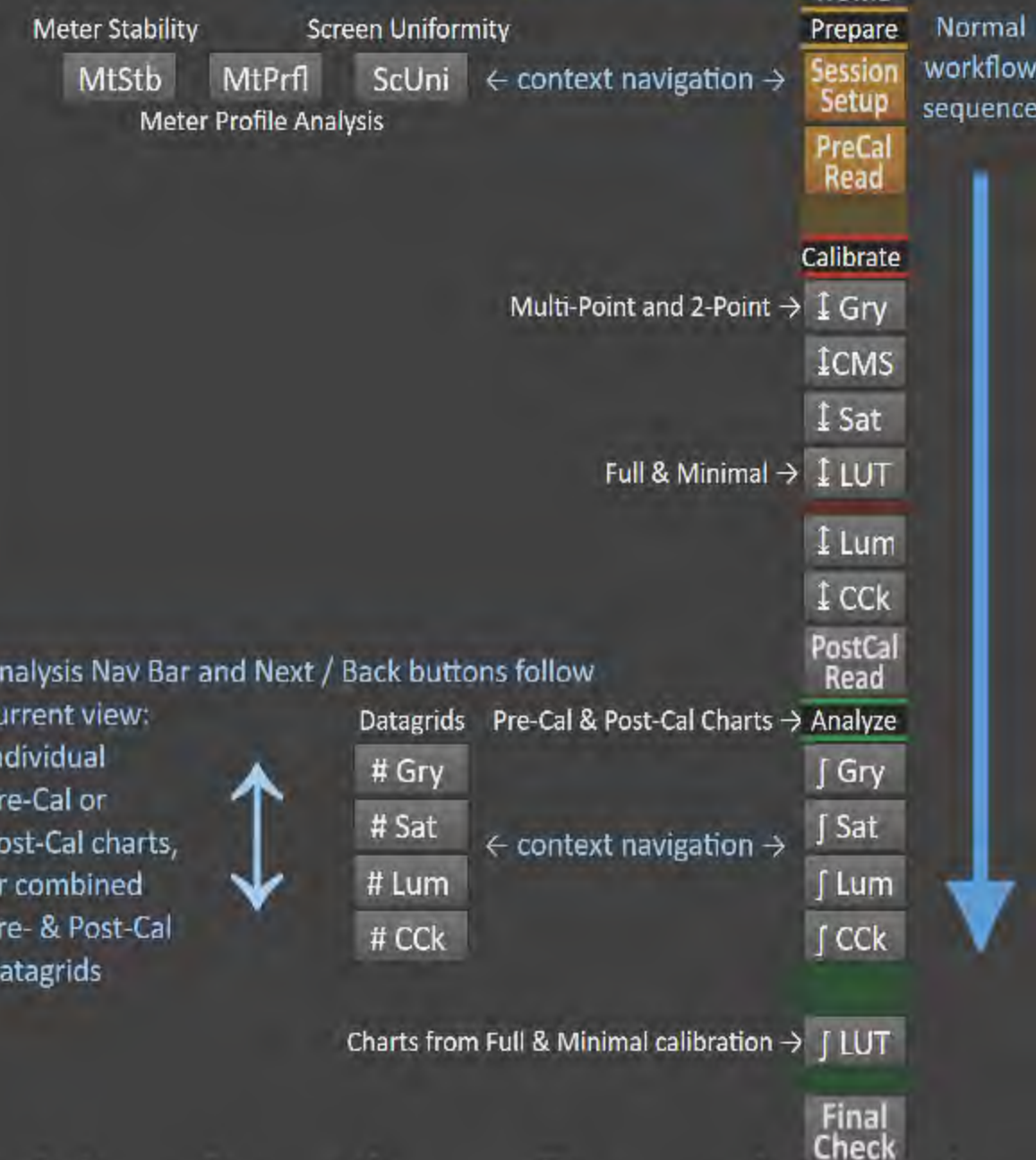
**Final Check** - Analyzes and fine-tunes the dynamic range aspect and provides a comprehensive calibration summary.

## NAVIGATION BAR

Displays the normal layout sequence with instant access across views and zones

**Current Layout Context**  
Next / Back in workflow sequence and / or buttons for navigation to related layouts

Red arrow indicates position in workflow



Layout indicators: ↑ Calibration j Charts # Datagrids

Navigation Bar → ←



✕ Show Outline

## ► Preparation (PRP)

- 1 ► Session Setup → Screen Uniformity → Meter Profile Analysis → Meter Stability
- 2 ► Pre-Calibration Readings

## ► Calibration (CAL)

- 4 ► 2-Point Grayscale Calibration
- 5 ► Multi-Pt Grayscale Calibration → Datagrid
- 6 ► CMS Gamut Calibration → Datagrid
- 7 ► Saturation Sweeps Calibration → Datagrid
- 8 ► 3D Color Cube LUT Calibration
- 9 ► Gamut Luminance Calibration Assessment → Datagrid
- 10 ► Color Checker Calibration Assessment → Datagrid (normal & slim versions)
- 11 ► Post-Calibration Readings

## ► Analysis (ANL)

- 11 ► Multi-Pt Grayscale Post-Cal Charts → Pre-Cal Charts → Datagrids
- 12 ► Saturation Sweeps Post-Cal Charts → Pre-Cal Charts → Datagrids
- 13 ► Gamut Luminance Post-Cal Charts → Pre-Cal Charts → Datagrids
- 14 ► Color Checker Post-Cal Charts → Pre-Cal Charts → Datagrids
- 15 ► 3D Color Cube LUT Calibration Detail Charts (from Full & Minimal calibrations)
- 16 ► Final Check + Summary – Fine Tune the Dynamic Range

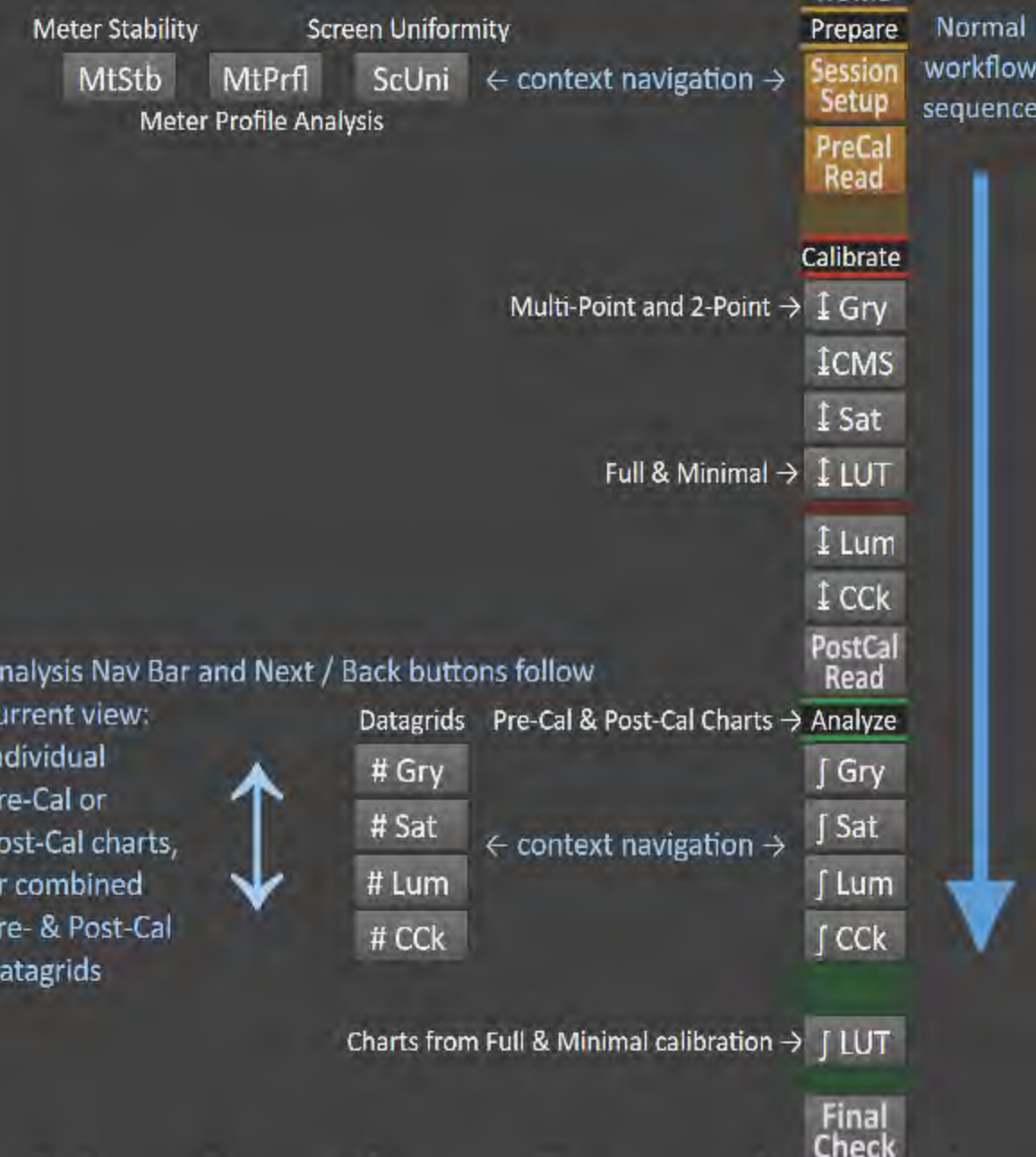
### NAVIGATION BAR

Displays the normal layout sequence with instant access across views and zones

#### Current Layout Context

Next / Back in workflow sequence and / or buttons for navigation to related layouts

Red arrow indicates position in workflow



Analysis Nav Bar and Next / Back buttons follow

current view:

Individual  
Pre-Cal or  
Post-Cal charts,  
or combined  
Pre- & Post-Cal  
Datagrids

Datagrids Pre-Cal & Post-Cal Charts → Analyze

# Gry  
# Sat  
# Lum  
# CCK

Charts from Full & Minimal calibration →

Navigation Bar → ←



CalMAN 2018 CalMAN Home-enthusiast

CalMAN -

2/23/2019 Calibration

?

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↓ Analysis

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StaUn • Meter Stability

StaUn • Screen Uniformity

MtPrfl • Profile Analysis

Calibration

Grayscale

CMS / Saturation Sweeps

3d Color Cube LUT

Gamut Luminance

Color Checker

Gray ⬆ 2-Pt Calibrate

CMS ⬆ Calibrate

LUT ⬆ Calibrate

Lumi ⬆ Cal Assessment

CChk ⬆ Cal Assessment

Gray ⬆ Mult-Pt Calibrate

Satu ⬆ Calibrate

↑ Has Full and Minimal layout tabs ↑  
LUT Full # Cal Data

CChk # Cal Assessment Data

LUT Minimal # Cal Data

CcSlm # Slim Assessmnt Data

↕

Compare Calibrations

↓ PostCal Read ↓

Analysis

Grayscale

Saturation Sweeps / CMS

Gamut Luminance

Color Checker

3d Color Cube LUT

Gray # Pre/Post-Cal Data

Satu # Pre/Post-Cal Data

Lumi # Pre/Post-Cal Data

CChk # Pre/Post-Cal Data

LUT Full ⌋ Cal Charts

Gray ⌋ Pre-Cal Charts

Satu ⌋ Pre-Cal Charts

Lumi ⌋ Pre-Cal Charts

CChk ⌋ Pre-Cal Charts

LUT Minimal ⌋ Cal Charts

Gray ⌋ Post-Cal Charts

Satu ⌋ Post-Cal Charts

Lumi ⌋ Post-Cal Charts

CChk ⌋ Post-Cal Charts

→ Final Check

Notes

Layout indicators: ⬆ Calibration ⌋ Charts # Datagrids

PreCal Read

Notes

Back

Next




## Setup Notes

[illegible]


## Calibration Notes

### Return


### Pre-Calibration Notes




### Calibration Description / Goals



### Color Notes



### Post-Calibration Notes



REF  
Notes

Return



Session Setup

2/23/2019 Calibration

(A) Session Options

Start New Session

Session Info

More Options

Use u'v' CIE Charts

Luminance Unit

cd/m<sup>2</sup>

Input Level

Video (16-235)

Stimulus Unit

Percent

DeltaE Formula

dE ICtCp 720

Colorspace Target

D65, HD BT.709

Gamma Formula

ITU BT.1886

Setup Notes

Calibration Description / Goals

Notes

Display • 75Q9FN

Target Black and White

cd/m2 Blk

3E-05

fl

cd/m2 Wht

100

fl

Target Gamma

1

(B) Display Settings

AV Mode

Cal Night 100 nits

Color Temp

Warm 2

Contrast

40

Sharpness

0

Brightness

1

Color

25

Backlight

20

Tint

0

TV Gamma

0

Cut

Gain

Red

-2

-4

Green

-4

-4

Blue

-2

-4

(C) Hardware Configuration

Meter Stability

Screen Uniformity

Profile Analysis

① Meter

Simulated Meter

Profile

Mode

Simulated

Find →

Kill All

Manage

② Pattern Source

Source

Size

Full 100%

Delay

0.5

Find →

Kill All

Manage

③ Display / Processor

Samsung 2018 QLED

Samsung - 2018 QLED 9600 baud COM 5

DDC

Find →

Kill All

Manage

Display Slot

CAL-DAY

Gray Levels

SDR-Q900/Q9/Q8

(D) Meter Setup

Position the meter as required for the projector or flat panel to insure accurate measurements when taking readings.

Projector

Flat Panel

(E) Dynamic Range

Select a suitable set of gray data points and check the gamma level across the full grayscale based on the current settings, and adjust the display's various level controls to get a suitable lowest and highest value, tweaking available Backlight, Brightness, Contrast and such, and optimize RGB fluctuations.

Select a clipping set of data points to check there is no clipping of the three primaries below and above the White level.

QLED Gamma Check

RGB Chart

DDC

Gamma

White / Black

81.4 / 0

Level

100

Target

Gamma 2.94 2.4

CCT 6624 6503

Y 81.3608 100

7

10.5

24.7

49.8

75.3

100

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Final Check

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# Session Setup

## (A) Session Options

2/23/2019 Calibration

Start New Session

Setup Notes

Calibration Description / Goals

Session Info  
More Options

Use u'v' CIE Charts  
Luminance Unit  
cd/m<sup>2</sup>  
Input Level  
Video (16-235)  
Stimulus Unit  
Percent  
DeltaE Formula  
dE ICtCp 720  
Colorspace Target  
D65, HD BT.709  
Gamma Formula  
ITU BT.1886

Display • 75Q9FN

cd/m2	Blk	fL	cd/m2	Wht	fL	Target Gamma
0.0001	3E-05		100	29.2		1

## (B) Display Settings

AV Mode Cal Night 100 nits

Color Temp	Warm 2	Contrast	40	<table border="1"> <thead> <tr> <th></th> <th>Cut</th> <th>Gain</th> </tr> </thead> <tbody> <tr> <td>Red</td> <td>-2</td> <td>-4</td> </tr> <tr> <td>Green</td> <td>-4</td> <td>-4</td> </tr> <tr> <td>Blue</td> <td>-2</td> <td>-4</td> </tr> </tbody> </table>		Cut	Gain	Red	-2	-4	Green	-4	-4	Blue	-2	-4
	Cut	Gain														
Red	-2	-4														
Green	-4	-4														
Blue	-2	-4														
Sharpness	0	Brightness	1													
Color	25	Backlight	20													
Tint	0	TV Gamma	0													

## Display Controls

Backlight	34
Brightness	0
Contrast	23
Sharpness	0
Color	26
Tint (G/R)	-1
Local Dimming	Low
Color Tone	Warm2
R-Gain	0
G-Gain	0
B-Gain	0
R-Offset	0
G-Offset	-3
B-Offset	0
Gamma	1

Reset Display Slot  
Display Slot  
CAL-DAY  
Gray Levels  
SDR-Q900/Q9/Q8

QLED Gamma Check  
RGB Chart  
DDC



White / Black	cd/m <sup>2</sup>
81.4 / 0	
Level	100
Gamma	2.94 2.4
CCT	6624 6503
Y	81.3608 100

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## Session Setup

2/23/2019 Calibration

## (A) Session Options



Start New Session

Session Info

More Options

Setup Notes

Calibration Description / Goals

Notes

☐ Use u'v' CIE Charts

Luminance Unit

cd/m<sup>2</sup>

Input Level

Video (16-235)

Stimulus Unit

Percent

DeltaE Formula

dE ICtCp 720

Colorspace Target

D65, HD BT.709

Gamma Formula

ITU BT.1886

Display • 75Q9FN

cd/m2 Blk

fL

0.0001

3E-05

Target Black and White

cd/m2 Wht

fL

100

29.2

Target Gamma

1

## (B) Display Settings

AV Mode Cal Night 100 nits

Color Temp Warm 2

Contrast 40

Sharpness 0

Brightness 1

Color 25

Backlight 20

Tint 0

TV Gamma 0

Cut

Gain

Red

-2

-4

Green

-4

-4

Blue

-2

-4

## (C) Hardware Configuration

Meter Stability

Screen Uniformity

Profile Analysis

Create Profile

Meter Settings

Profile

Reference Meter Simulated Meter - 12345678

☐ Advanced Options

Target Meter Simulated Meter - 12345678

☐ Advanced Options[Find more meters](#)

Source

Source - 1

Stimulus Level:

100

☐ Prompt for pattern changes

Profile Information

Current Profile None

Select a profile

Add Profile

Display Type Simulated

	I	X	Y	Z
X	0	1	0	0
Y	0	0	1	0
Z	0	0	0	1

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## Setting Up the Session

## Return

## (A) CalMAN Session Options

Enter the session description & calibration options in the corresponding drop-downs and text boxes

- Click [Session Info] to enter additional information
- Click [More Options] to open the options panel - the red [X] can be used to close it
- Click the checkmark above/below [Big] to expand the note next to it

### (B) Display Settings

Enter the initial display settings to use for the calibration in the corresponding boxes - you can provide alternates in the Pre- and Post-Calibration layouts

### (C) Hardware Configuration

1. To start calibrating your display/processor, first connect your meter.
  - a) Click the meter [Find] button and select your meter.
  - b) Select the Target Display Type.
2. Connect to your reference pattern source generator.
  - a) Click the source [Find] button, and select your Source.
  - b) Select the pattern window size and resolution.
3. Connect to your display/processor.
  - a) Click the display [Find] button and select your display or processor.
  - b) Click [DDC] to show the Direct Display Control panel when appropriate
4. Click the corresponding [Configure] button for more options.
5. Click on Profile to select, edit or create a meter profile.

### (D) Meter Positioning

- 1a. For projectors position the meter facing the projection screen, far enough away from the screen to avoid reading the meter's own shadow (see illustration on the left). Continue to take readings.
- 1b. Press the read continuous button to take measurements of a white window while moving the meter up/down/left/right, until the Y Max reading is largest. When Y Max is highest, click *Stop*.
2. For flat panels position the meter on the center of the screen (see illustration on the right). You do not need to take readings for this placement.
3. You can also read the White level CCT based on the current settings - adjust the display's color temperature to best match the target CCT.

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### (E) Dynamic Range

## Overall Range

Adjust the Backlight control (for LED) to get the desired compromise between black and white levels: less Backlight = deeper black but lower white level, more Backlight = brighter white but higher black level too.

## White Level

**Data Points:** select Clipping or Clipping with Peak White.

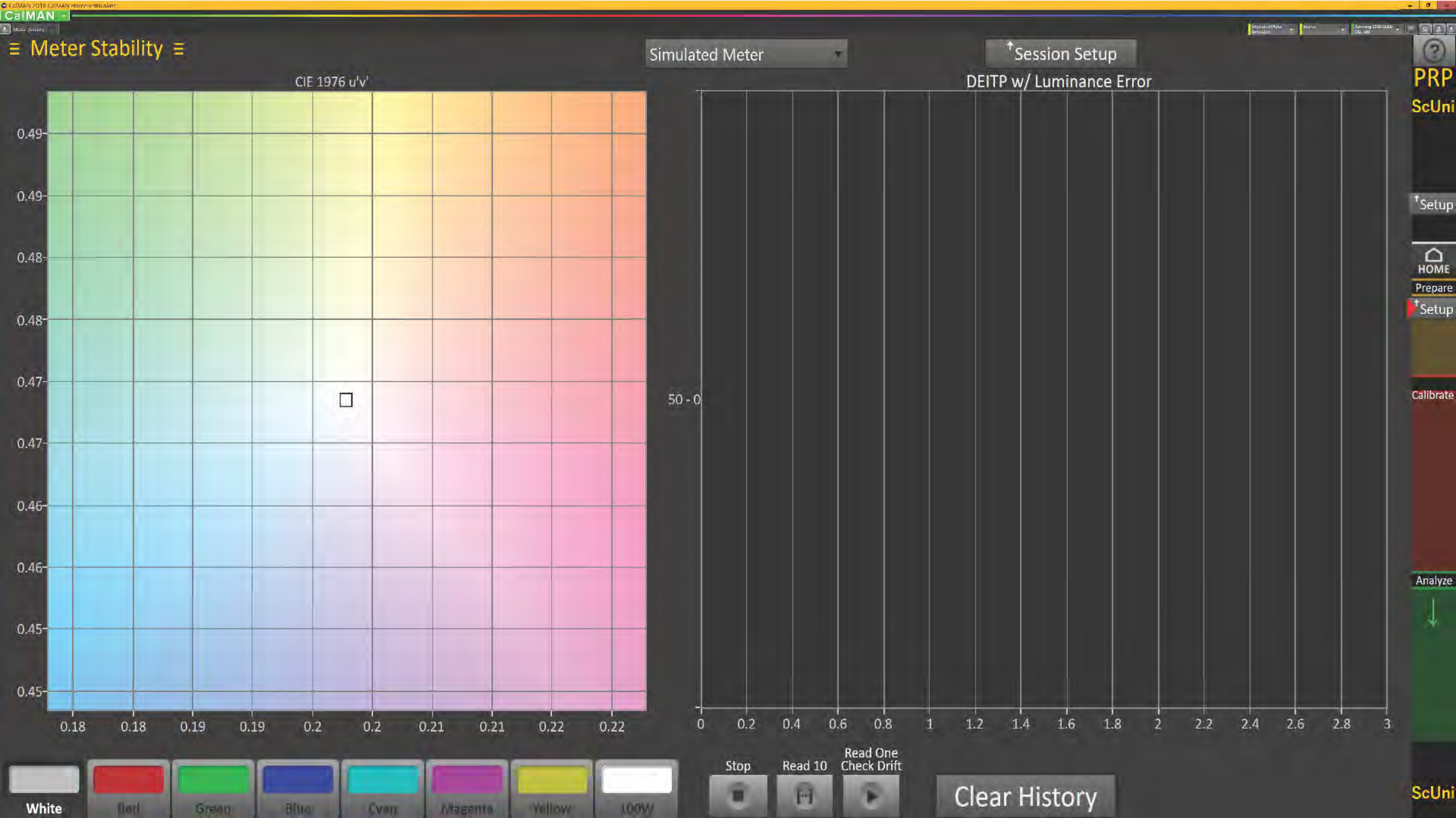
Adjust the Contrast to maximize the white level without clipping any of the three primaries.

### Gamma Level

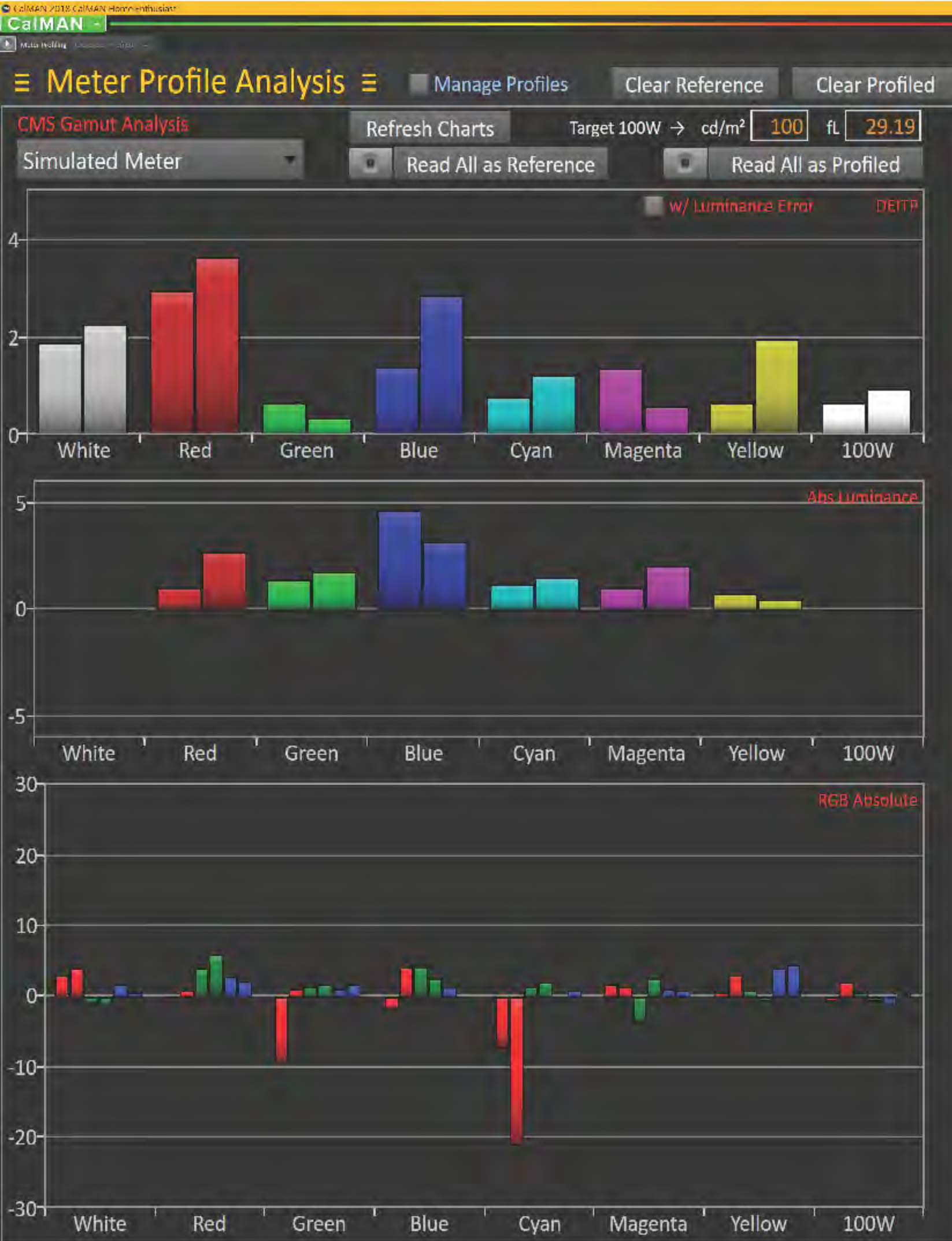
**Data Points:** select a full set of grayscale points for this.

Check the gamma level across the full grayscale based on the current settings, and adjust the display's gamma control to get a good match, tweaking with the Brightness for Black level & Contrast for White.









Select a meter and do the appropriate reference or profiled Read All or a Read Single selected color.  
Select the same color in both CMS sliders to view a specific comparison: Reference is always on left or above.

## Reference Meter CMS



	White	Red	Green	Blue	Cyan	Magenta	Yellow	100W
Y cd/m²	41.5908	8.9345	30.1635	3.1426	33.1259	11.9642	38.8770	82.3198
x: CIE31	0.3139	0.6357	0.2984	0.1501	0.2247	0.3218	0.4186	0.3130
y: CIE31	0.3257	0.3306	0.6007	0.0617	0.3313	0.1537	0.5044	0.3306
RED Linear 0-1	0.4301	0.4149	-0.0034	-0.0007	-0.0027	0.4243	0.4184	0.8176
Green Linear 0-1	0.4109	0.0015	0.4228	0.0015	0.4222	-0.0014	0.4190	0.8259
Blue Linear 0-1	0.4241	0.0010	0.0004	0.4224	0.4142	0.4211	0.0014	0.8133

Read Single as Reference →

Simulated Meter

Read Single as Profiled →

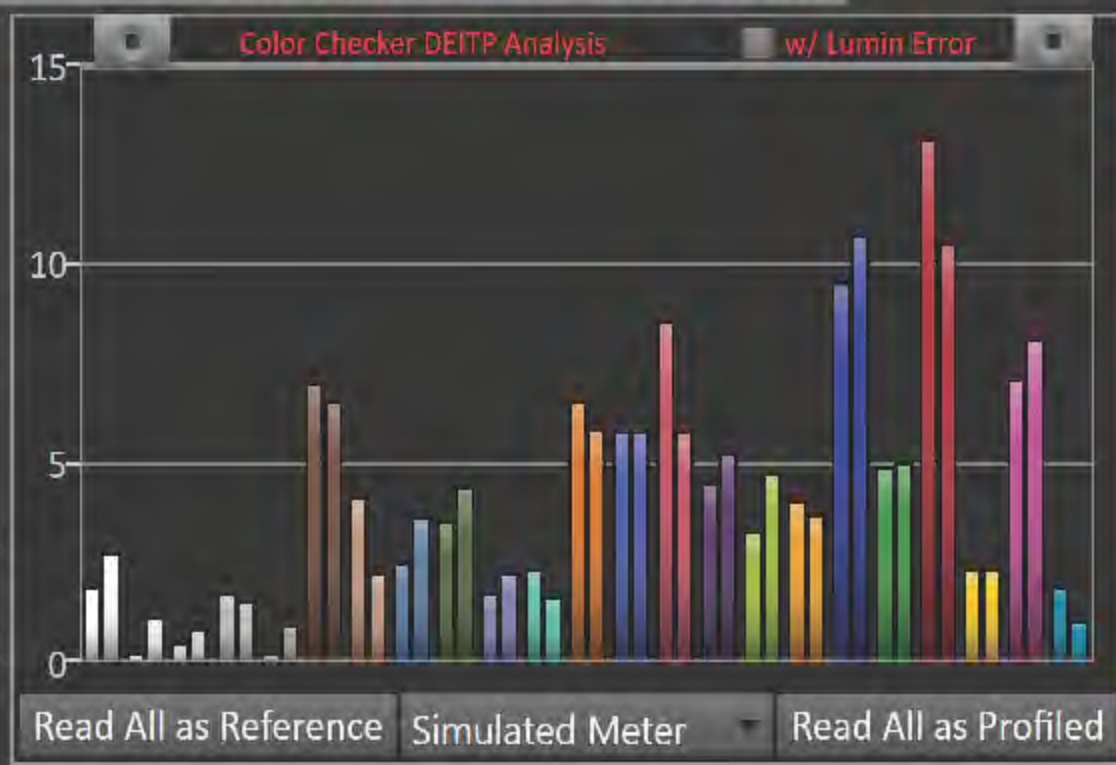
White	Red	Green	Blue	Cyan	Magenta	Yellow	100W
White	Red	Green	Blue	Cyan	Magenta	Yellow	100W
White	Red	Green	Blue	Cyan	Magenta	Yellow	100W

## Profiled Meter CMS



	White	Red	Green	Blue	Cyan	Magenta	Yellow	100W
Y cd/m²	41.5262	9.0678	30.2230	3.0934	33.1769	12.0718	38.6802	81.3127
x: CIE31	0.3154	0.6350	0.3000	0.1513	0.2230	0.3216	0.4219	0.3139
y: CIE31	0.3269	0.3315	0.5991	0.0617	0.3303	0.1552	0.5016	0.3284
RED Linear 0-1	0.4335	0.4189	0.0004	0.0015	-0.0078	0.4222	0.4302	0.8270
Green Linear 0-1	0.4096	0.0021	0.4224	0.0009	0.4239	0.0009	0.4128	0.8089
Blue Linear 0-1	0.4180	0.0008	0.0006	0.4152	0.4190	0.4195	0.0016	0.8139

CMS Detail	Reference	Profiled	Ref Target
Red Linear	0.81757	0.82699	0.8232
Green Linear	0.82586	0.80893	0.8232
Blue Linear	0.81335	0.81386	0.8232
Y cd/m²	82.32	81.313	82.32
x CIE31	0.31299	0.31386	0.31271
y CIE31	0.33063	0.32837	0.32901
DEITP	0.65 / 0.65	0.92 / 0.92	



PRP  
Prfile

Setup

HOME  
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Prfile



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Meta-Tooling | CalMAN 2018 | Home-enthusiast

≡ Meter Profile Analysis ≡

Manage Profiles

Clear Reference

Clear Profiled

Create Profile

Meter Settings

Reference Meter

Simulated Meter - 12345678

Advanced Options

Target Meter

Simulated Meter - 12345678

Advanced Options

Find more meters

Source

Source - 1

Stimulus Level:

100

Select stimulus between 75 - 85 to avoid clipping and better sample the display

Prompt for pattern changes

Profile Information

Current Profile

None

Add Profile

Display Type

Simulated

	I	X	Y	Z
X	0	1	0	0
Y	0	0	1	0
Z	0	0	0	1

Select a meter and do the appropriate reference or profiled Read All or a Read Single selected color.  
Select the same color in both CMS sliders to view a specific comparison: Reference is always on left or above.

Session Setup

PRP Profile

Setup

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Reference Meter CMS



	White	Red	Green	Blue	Cyan	Magenta	Yellow	100W
Y cd/m²	41.5908	8.9345	30.1635	3.1426	33.1259	11.9642	38.8770	82.3198
x: CIE31	0.3139	0.6357	0.2984	0.1501	0.2247	0.3218	0.4186	0.3130
y: CIE31	0.3257	0.3306	0.6007	0.0617	0.3313	0.1537	0.5044	0.3306
RED Linear 0-1	0.4301	0.4149	-0.0034	-0.0007	-0.0027	0.4243	0.4184	0.8176
Green Linear 0-1	0.4109	0.0015	0.4228	0.0015	0.4222	-0.0014	0.4190	0.8259
Blue Linear 0-1	0.4241	0.0010	0.0004	0.4224	0.4142	0.4211	0.0014	0.8133

Read Single as Reference →

Simulated Meter

Read Single as Profiled →

White

Red

Green

Blue

Cyan

Magenta

Yellow

100W

White

Red

Green

Blue


Cyan

Magenta

Yellow

100W

Profiled Meter CMS



	White	Red	Green	Blue	Cyan	Magenta	Yellow	100W
Y cd/m²	41.5262	9.0678	30.2230	3.0934	33.1769	12.0718	38.6802	81.3127
x: CIE31	0.3154	0.6350	0.3000	0.1513	0.2230	0.3216	0.4219	0.3139
y: CIE31	0.3269	0.3315	0.5991	0.0617	0.3303	0.1552	0.5016	0.3284
RED Linear 0-1	0.4335	0.4189	0.0004	0.0015	-0.0078	0.4222	0.4302	0.8270
Green Linear 0-1	0.4096	0.0021	0.4224	0.0009	0.4239	0.0009	0.4128	0.8089
Blue Linear 0-1	0.4180	0.0008	0.0006	0.4152	0.4190	0.4195	0.0016	0.8139

CMS Detail

Reference

Profiled

Ref Target

Red Linear

0.81757

0.82699

0.8232

Green Linear

0.82586

0.80893

0.8232

Blue Linear

0.81335

0.81386

0.8232

Y cd/m²

82.32

81.313

82.32

x CIE31

0.31299

0.31386

0.31271

y CIE31

0.33063

0.32837

0.32901

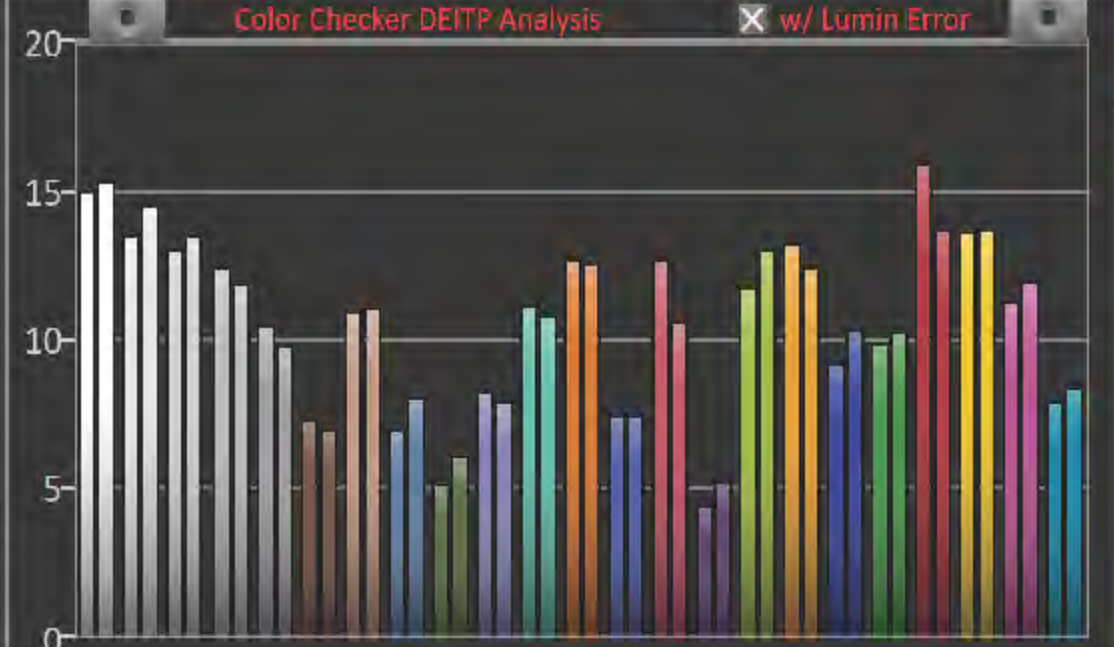
DEITP

0.65 / 0.65

0.92 / 0.92

Color Checker DEITP Analysis

w/ Lumin Error



Read All as Reference

Simulated Meter

Read All as Profiled



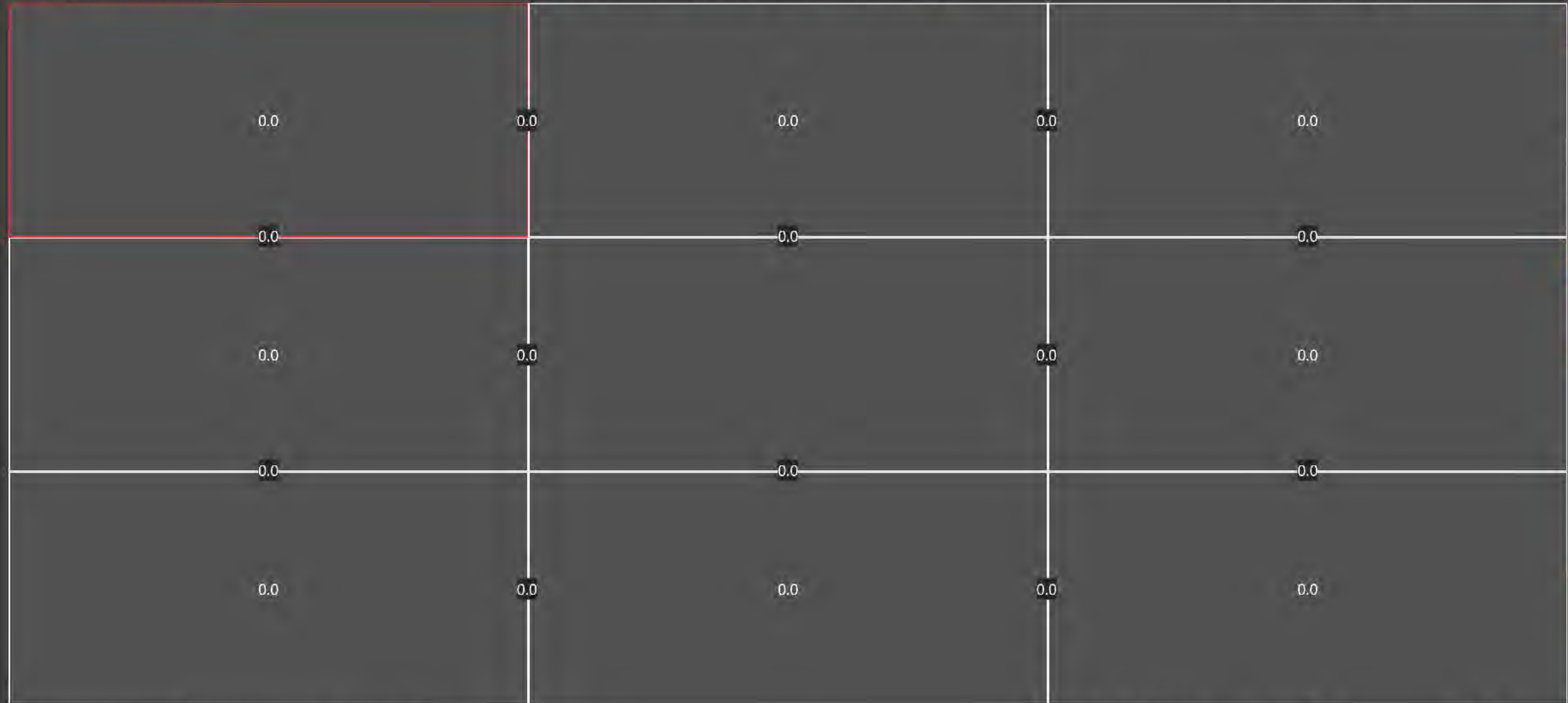
# Screen Uniformity

Rows 3

Columns 3

Left to right

Session Setup



Gray Levels Only 4 Point 25% step 25-100%

Target Y 3.7118

Read 0

$\Delta E$  0



Type Grayscale

PRP  
ScUni

Setup

HOME

Prepare

Setup

Calibrate

Analyze

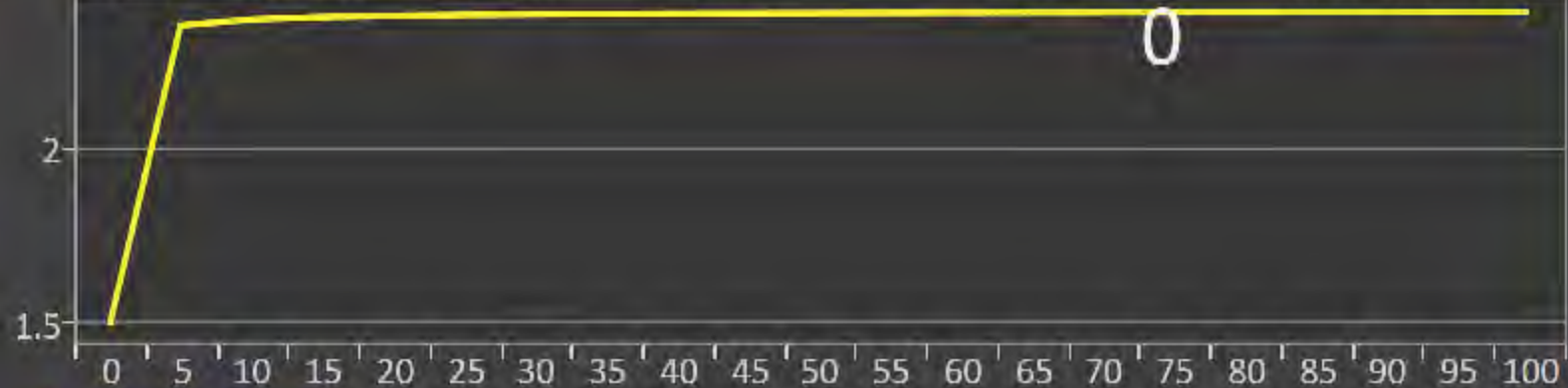
ScUni



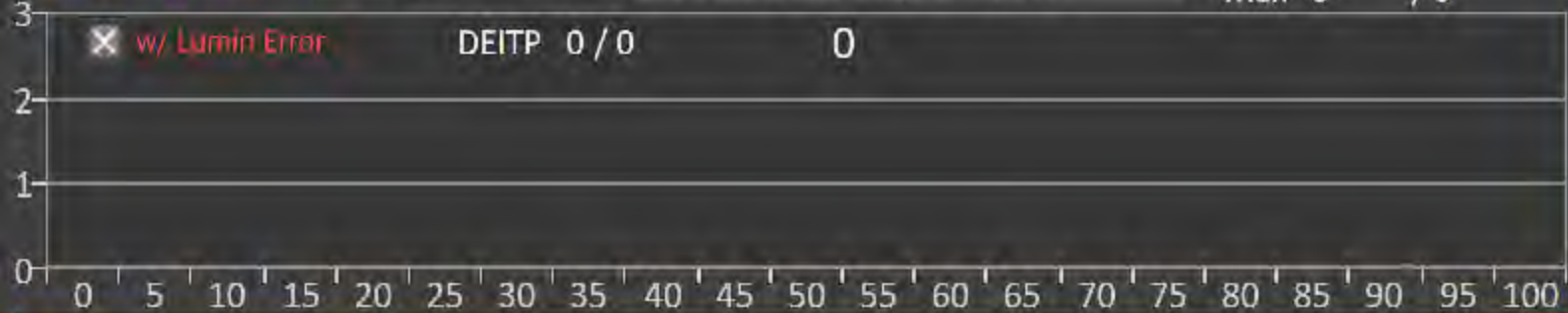
# Pre-Calibration Readings

2/23/2019 Calibration

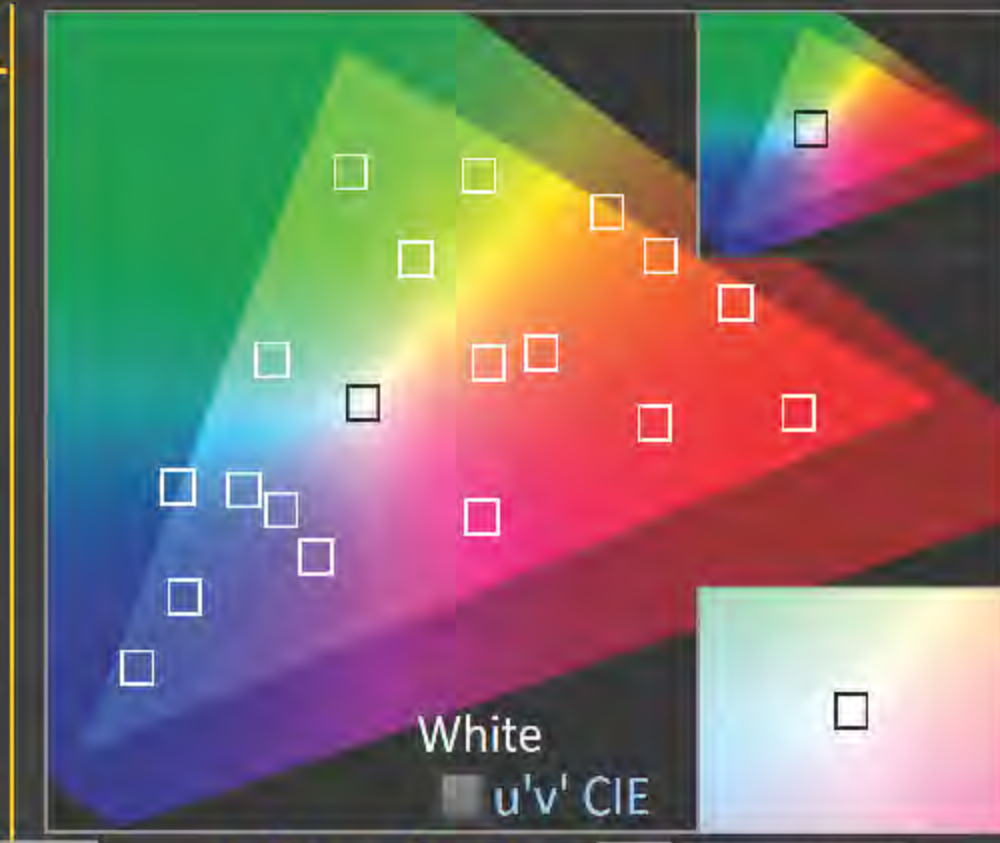
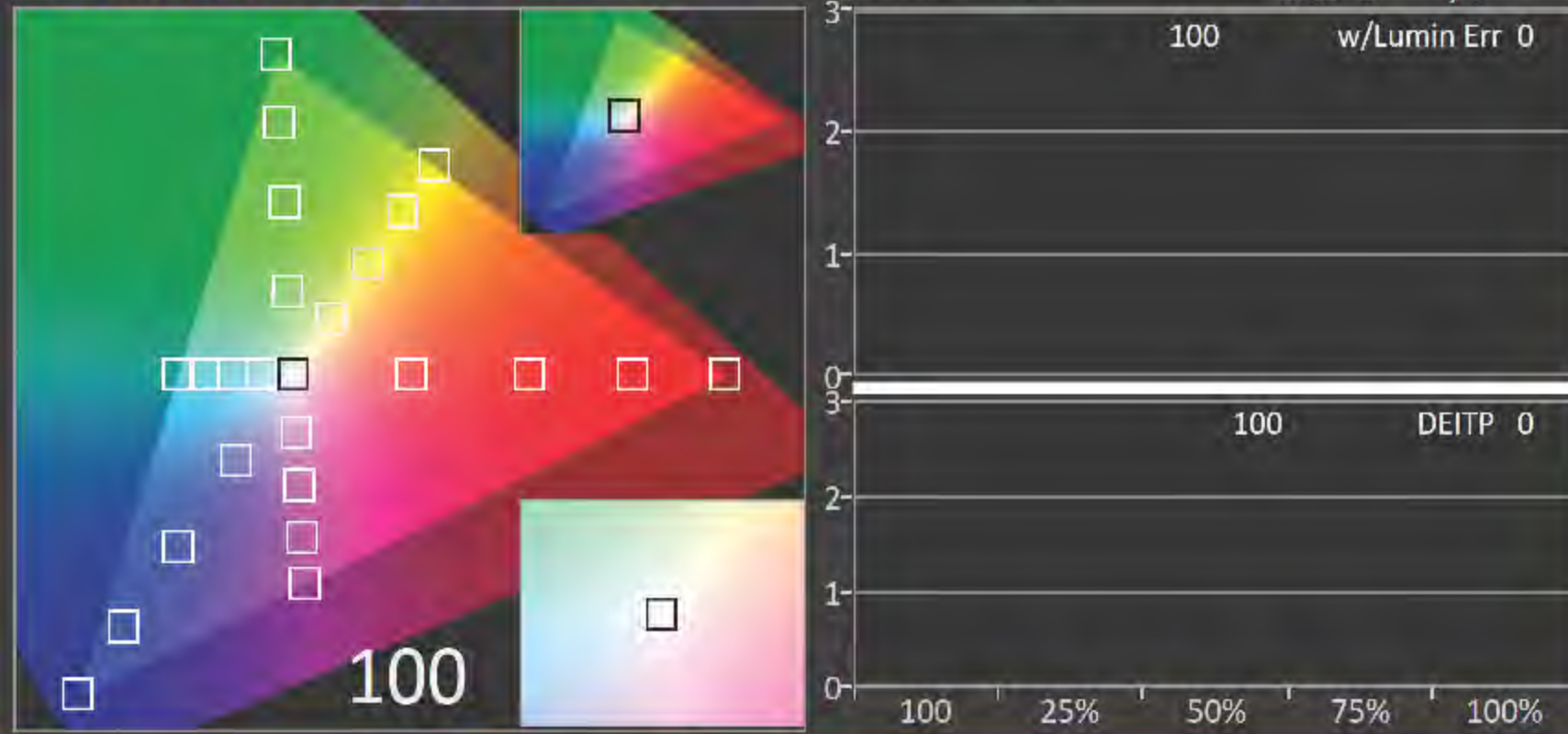
Gamma Breakout Tot 2.39 Contrast 0 Black 0 White 100 cd/m<sup>2</sup>



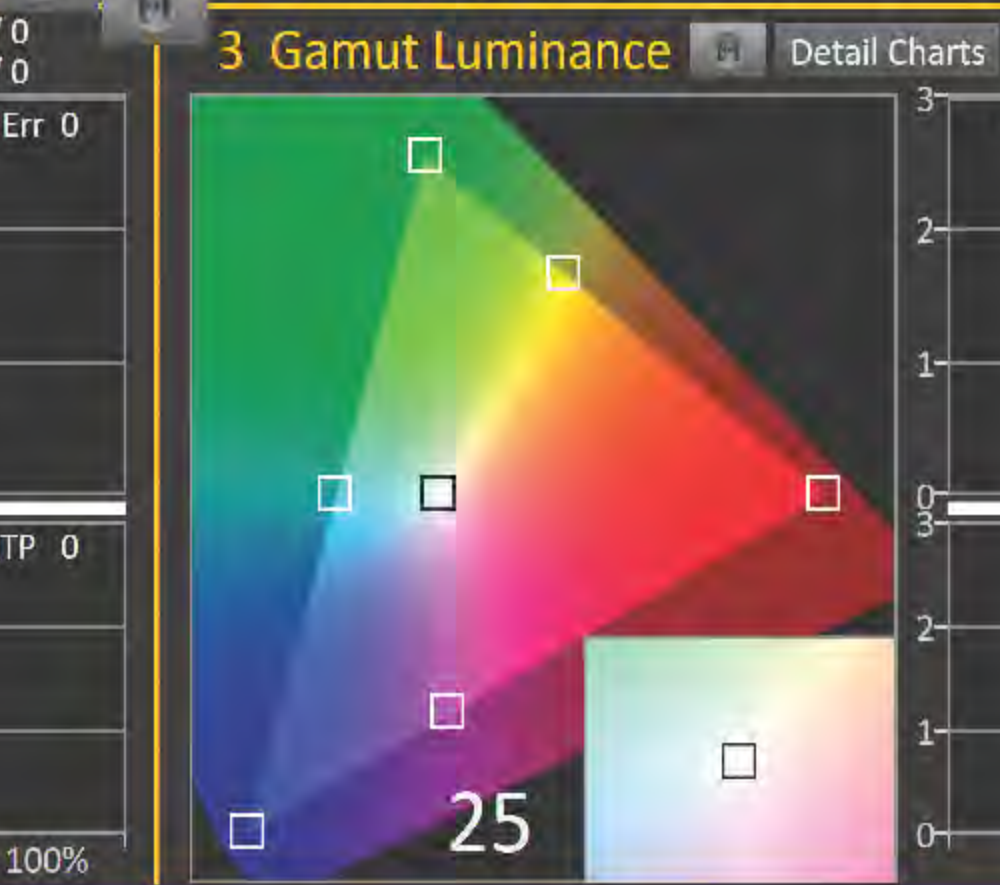
## 1 Grayscale



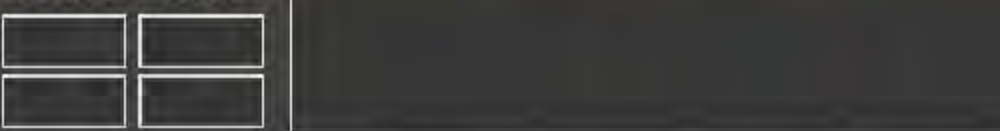
## 2 Saturation Sweeps



## 4 Color Checker



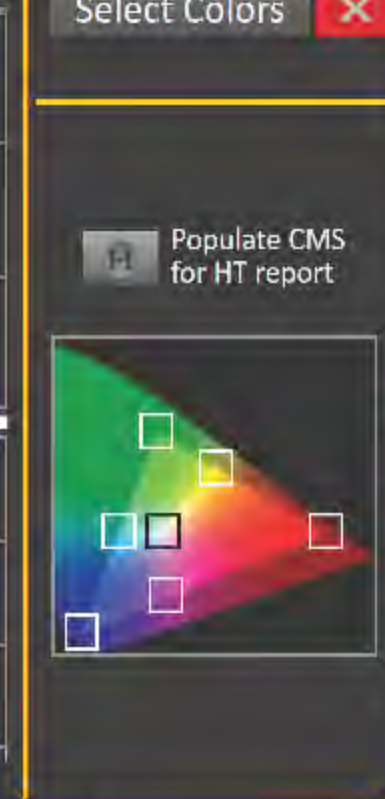
## 3 Gamut Luminance



## 4 Color Checker



## 4 Color Checker



Cal Night 100 nits

Pre-Cal Readings

Contrast  
Brightness  
Backlight

TV Gamma  
Color  
Tint

Red Green Blue  
Gain  
Cut

Notes CAL-DAY

Use [...] mid-screen or below to read all series or select one from the individual series above

PRP  
PreCal  
Read  
Back  
Next  
PostCal  
Read  
HOME  
Prepare  
Session  
Setup  
PostCal  
Read  
Calibrate  
Gry  
CMS  
Sat  
LUT  
Lum  
CCK  
PostCal  
Read  
Analyze  
Gry  
Sat  
Lum  
CCK  
LUT  
Final  
Check  
PreCal



# ≡ 2-Point Grayscale Calibration ≡

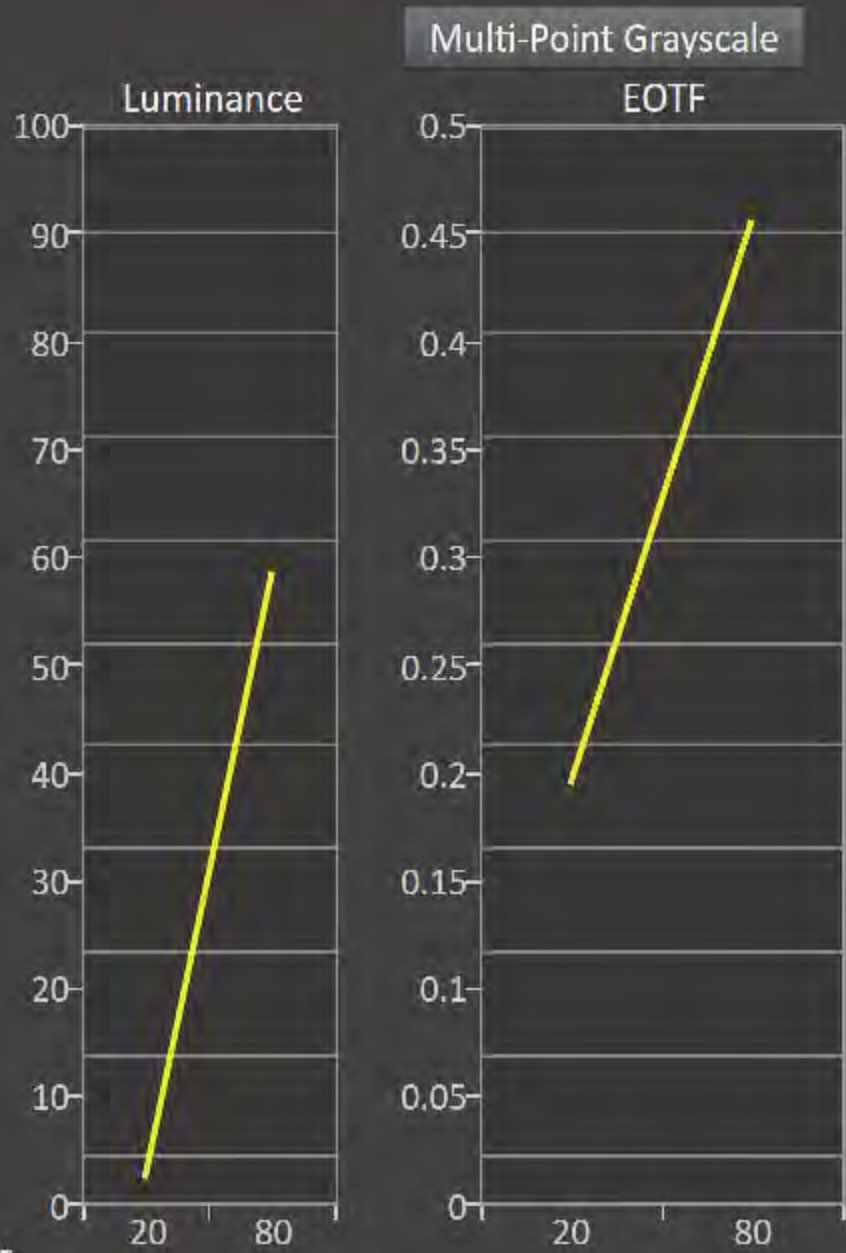
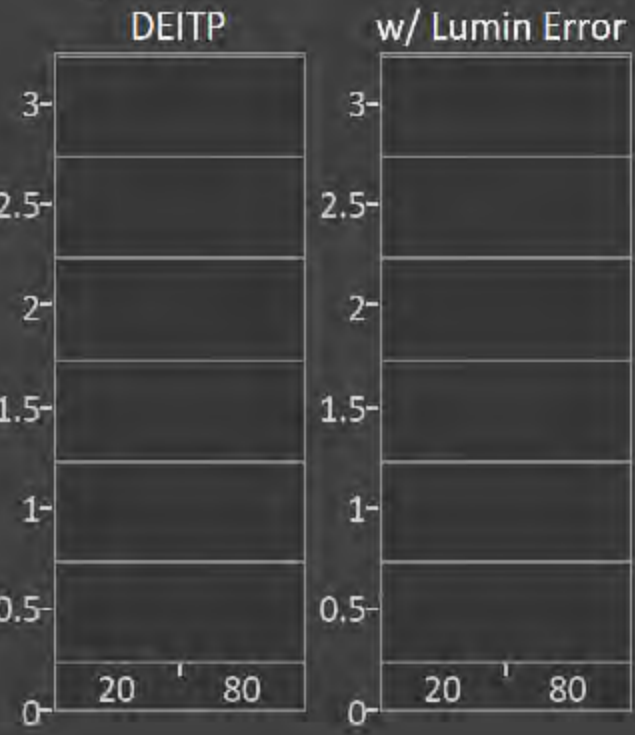
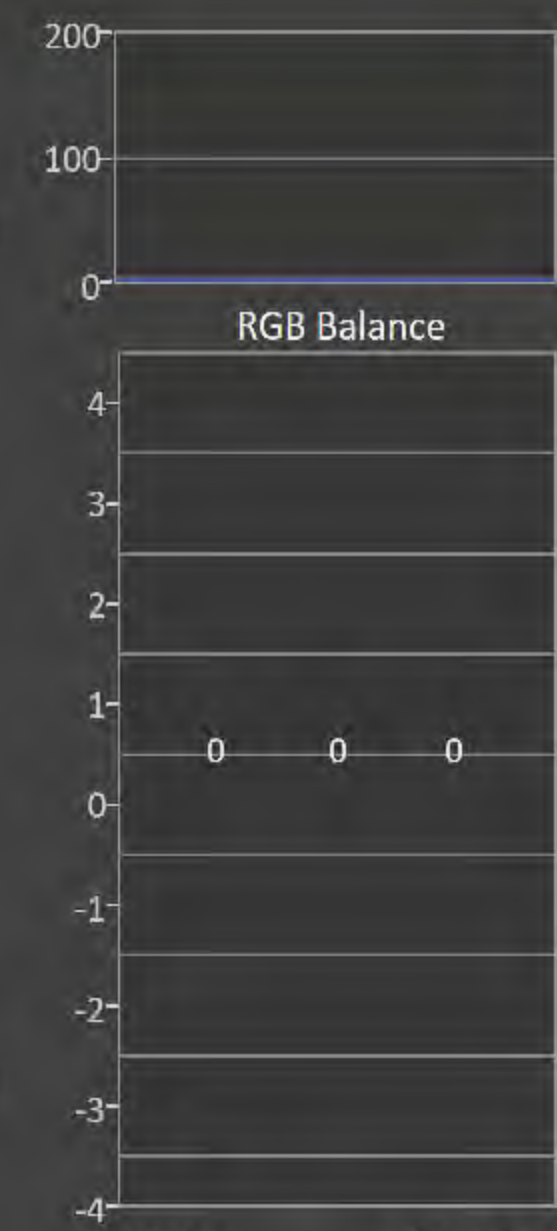
## Grayscale 2-Point Adjust

1. Reduce the Red, Green, and/or Blue (RGB) High controls to the lowest measured R, G, or B after the initial measurement of bright grayscale pattern. Continue doing this until you balance RGB to a deltaE of 3 or below (chart below).
2. Balance the RGB Low controls (if provided), while measuring a dark grayscale pattern.
3. Re-measure both bright grayscale and dark grayscale until both RGB High and RGB Low are balanced and DeltaE is under 3.

### Selecting Points:

- **30% and 80%:** Use these levels if you only have access to a two point grayscale adjustment
- **30% and 100%:** Use these levels if you will be completing a multipoint adjustment afterwards and do not have access to a Peak White pattern.
- **30% and Peak White:** Use these levels if your display does not clip and you will be completing a multipoint calibration and want the best possible results.

	20	80
RGB Triplet	60, 60, 60	191, 191, 191
Red index	60.0000	191.0000
Green index	60.0000	191.0000
Blue index	60.0000	191.0000
X	0.0000	0.0000
Y cd/m²	0.0000	0.0000
Z	0.0000	0.0000
Xn 0-1	0.0000	0.0000
Yn 0-1	0.0000	0.0000
Zn 0-1	0.0000	0.0000
Stimulus Percent	0.2009	0.7991
RED Stim%:0-1	0.2009	0.7991
GRN Stim%:0-1	0.2009	0.7991
BLU Stim%:0-1	0.2009	0.7991



20

CCT 0 6503 Target

Gamma 0 2.38 Target

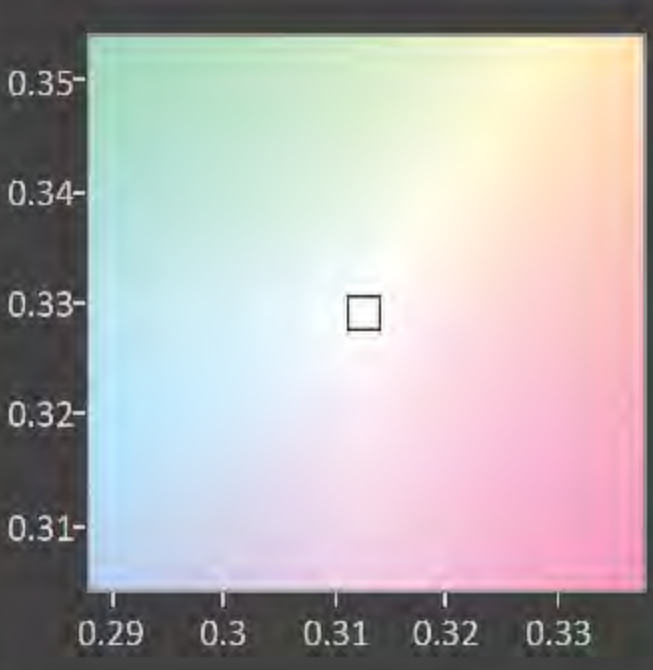
DEITP 0 / 0 w/ Lumin Error

Read → 0 0 0

Target → 2.18901 0.3127 0.329

DDC 2 Point 20%, 80%

Triplet 60, 60, 60



?

CAL

Gray

2-Pnt

Back

Next

↑IM-Pt

HOME

Prepare

Session Setup

PreCal Read

Calibrate

↑IM-Pt

↑CMS

↑Sat

↓LUT

↑Lum

↓CCK

PostCal Read

Analyze

↓Post

Comp

Final Check

2-Pnt

↑IM-Pt

Notes

Back

Next



# 2-Point Grayscale Calibration

## Display Controls

Backlight 34

Brightness 0

Contrast 23

Sharpness 0

Color 26

Tint (G/R) -1

Color Tone Warm2

R-Gain 0

G-Gain 0

B-Gain 0

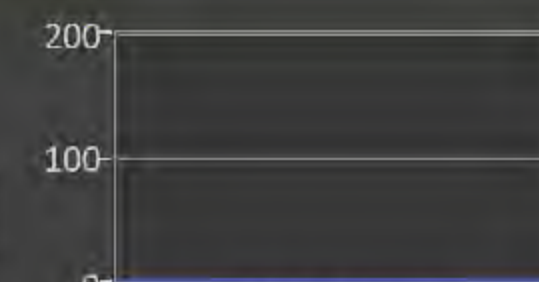
R-Offset 0

G-Offset -3

B-Offset 0

Gamma 1

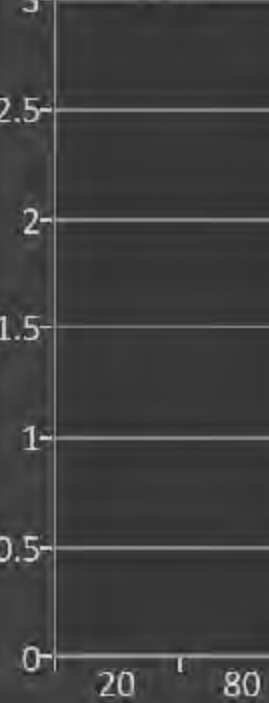
HDMI Black Level Low



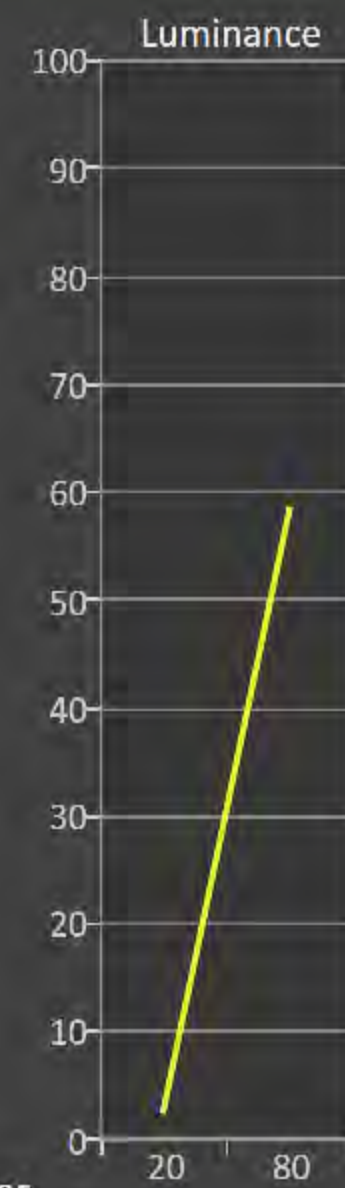
RGB Balance



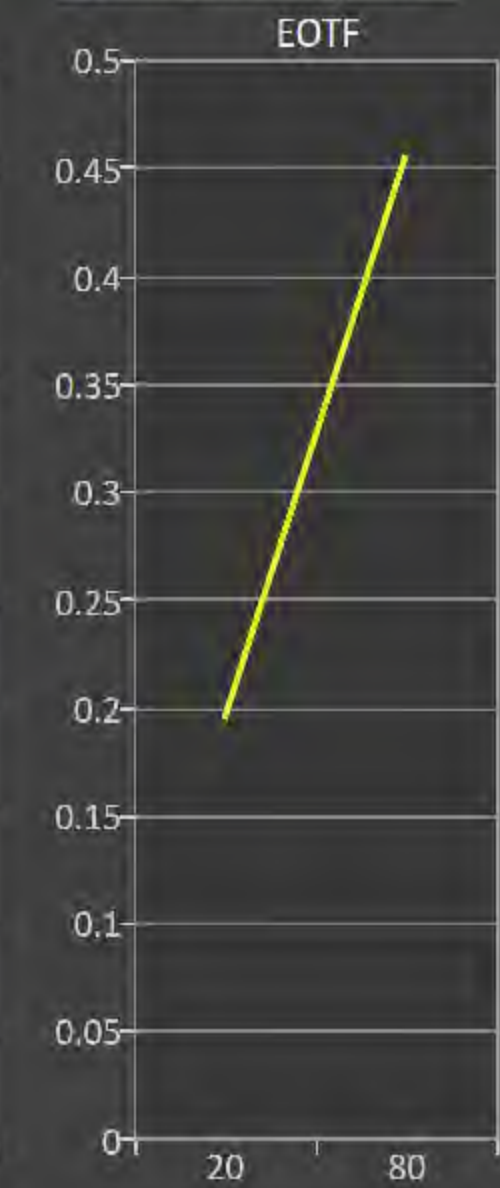
DEITP



w/ Lumin Error



Luminance



EOTF



Gamma

20 0 2.39 Total

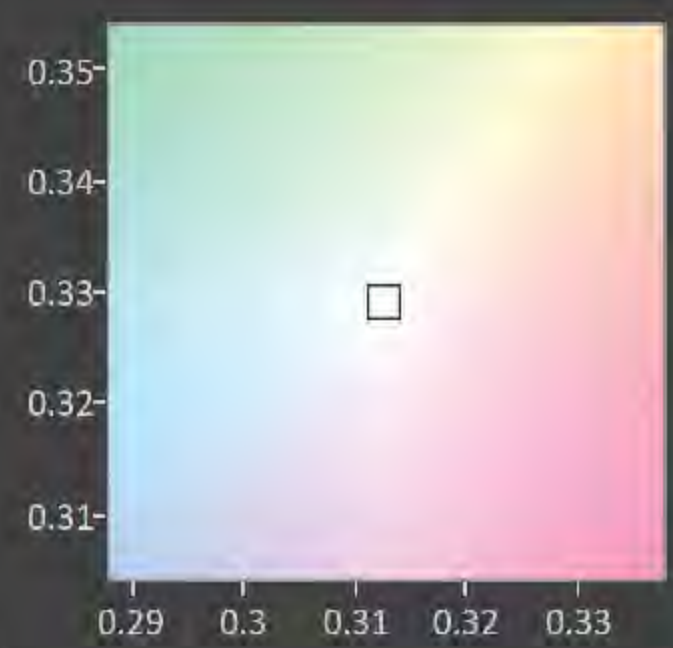
20

CCT	0	6503	Target
Gamma	0	2.38	Target
DEITP	0	/ 0	w/ Lumin Error
Read →	Y cd/m²	X	Y
Target →	2.18901	0.3127	0.329

DDC

2 Point 20%, 80%

Triplet 60, 60, 60



CalMAN 2018

Gray 2-Pnt

Back

Next

IM-Pt

HOME

Prepare

Session Setup

PreCal Read

Calibrate

IM-P

CMS

Sat

LUT

Lum

CCK

PostCal Read

Analyze

Post

Comp

Final Check

2-Pnt

IM-Pt

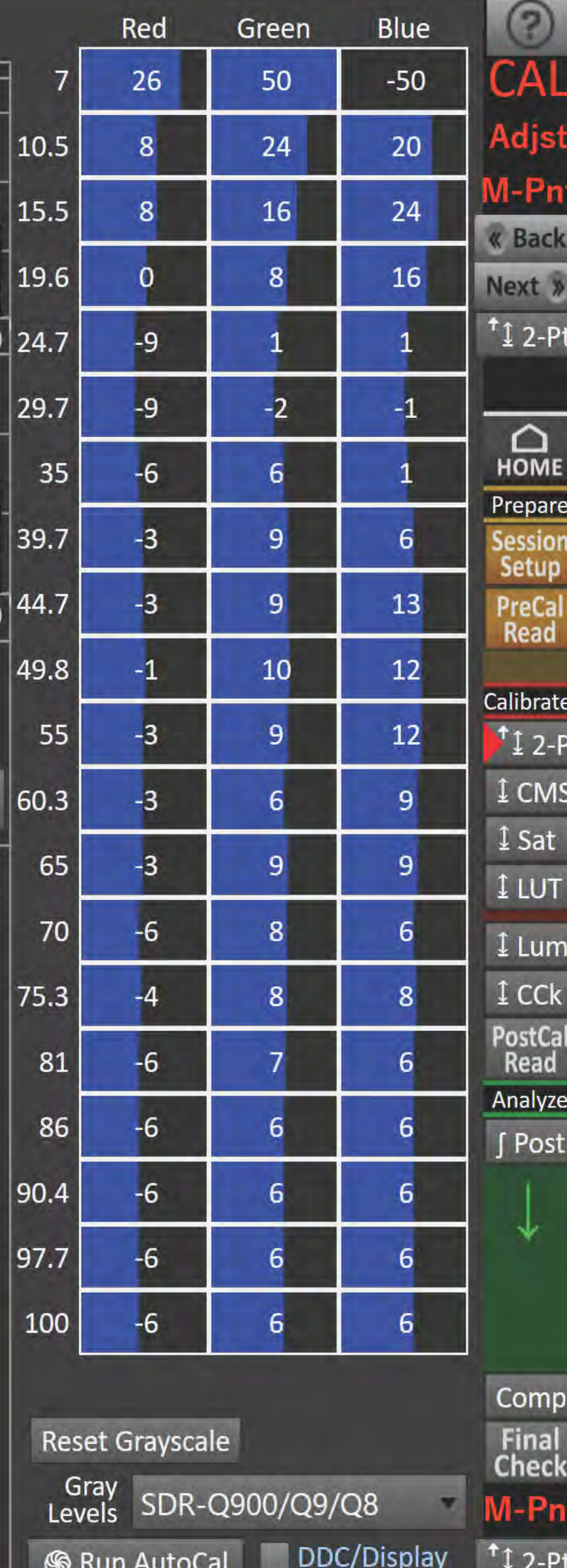
Notes

Back

Next



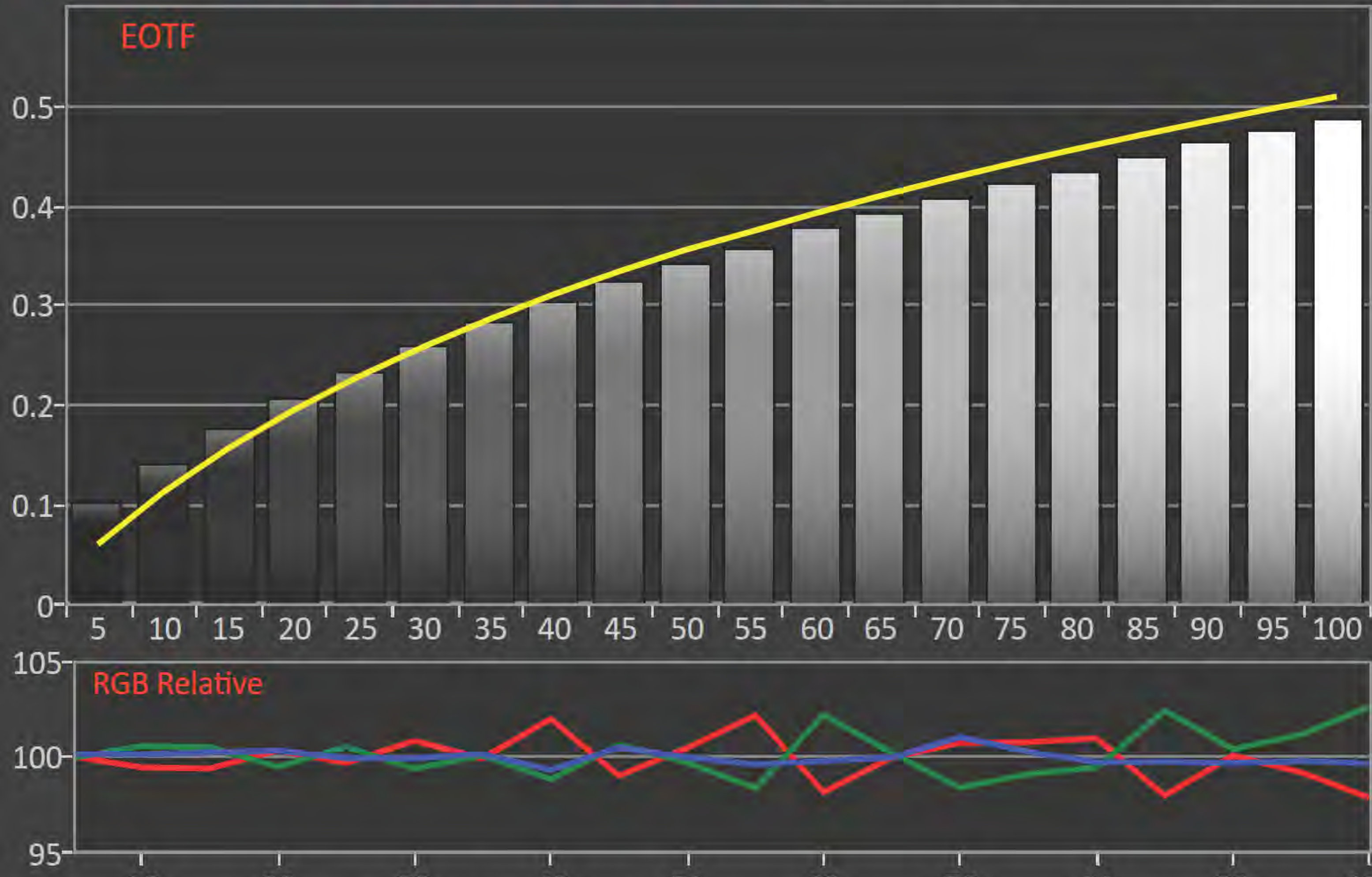
## Datagrid



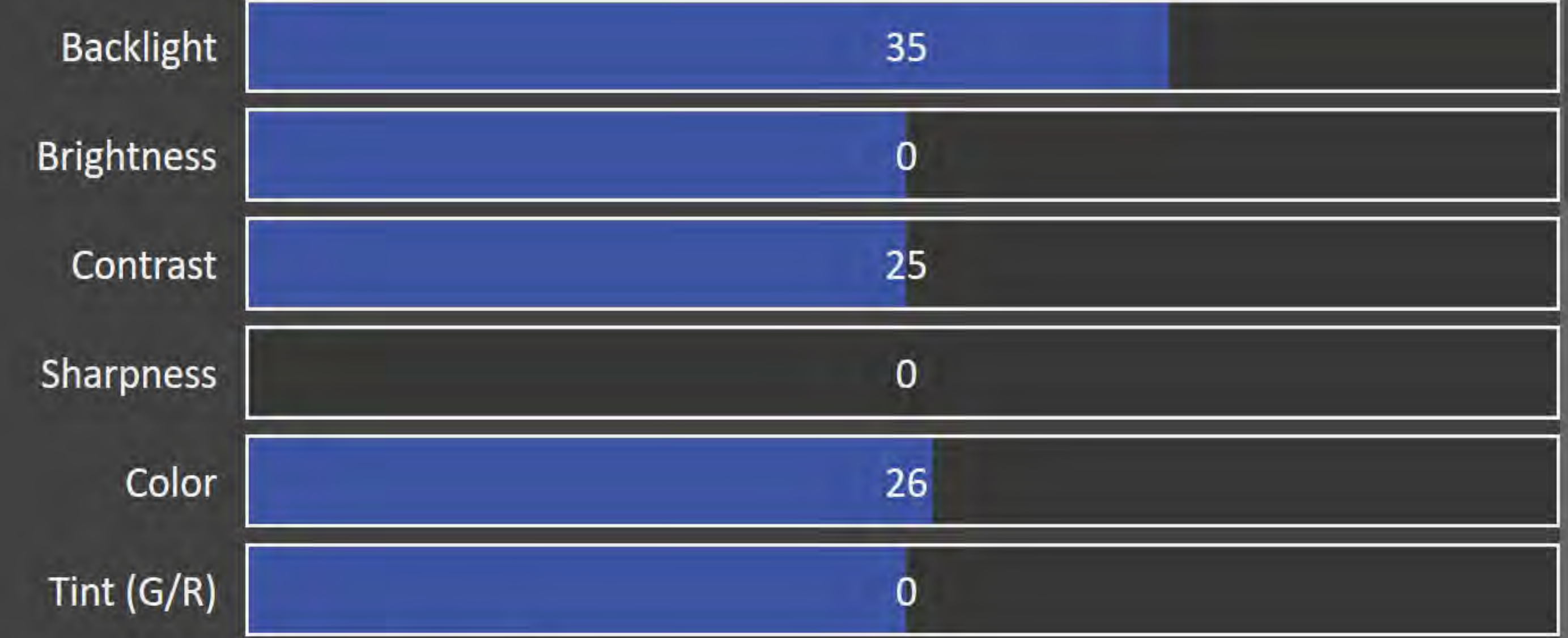


# Multi-Point Grayscale Calibration

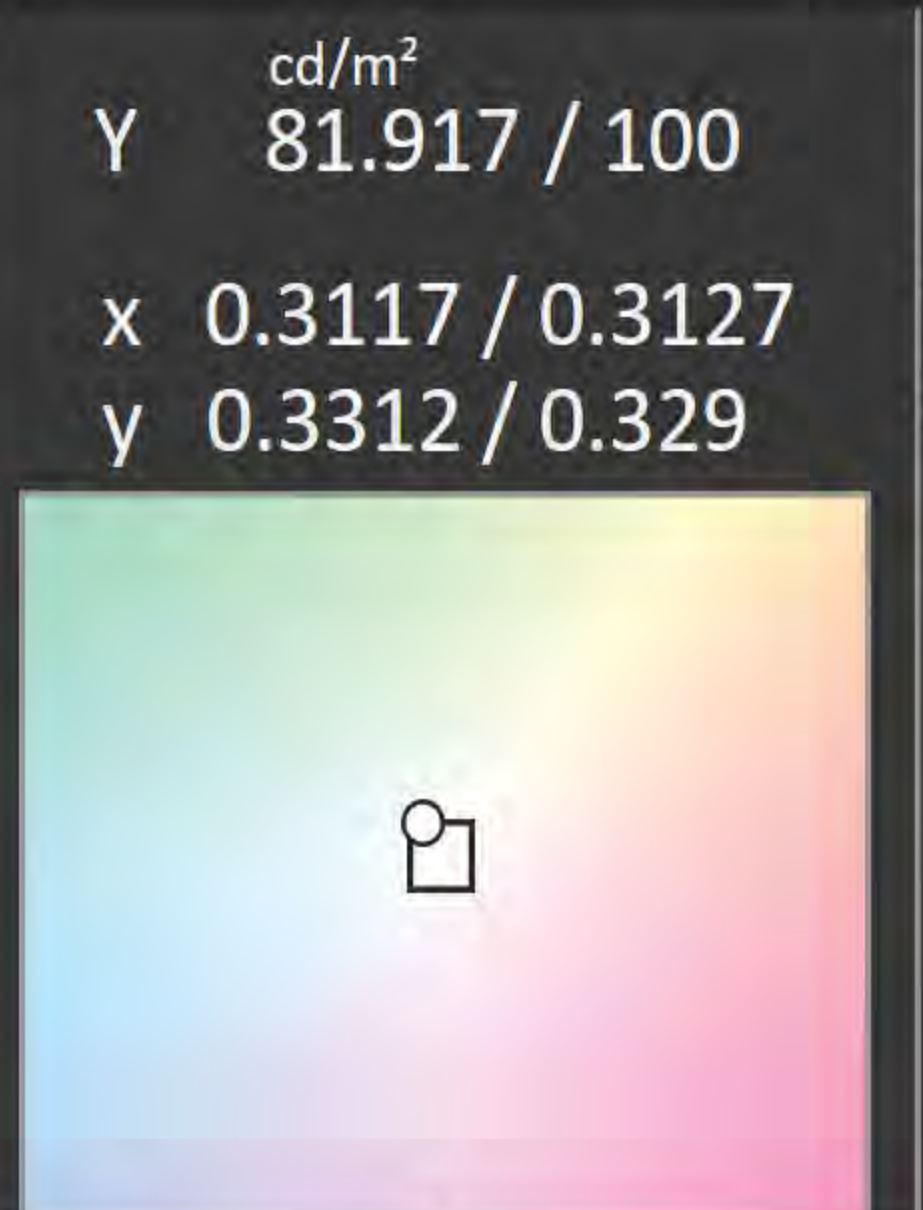
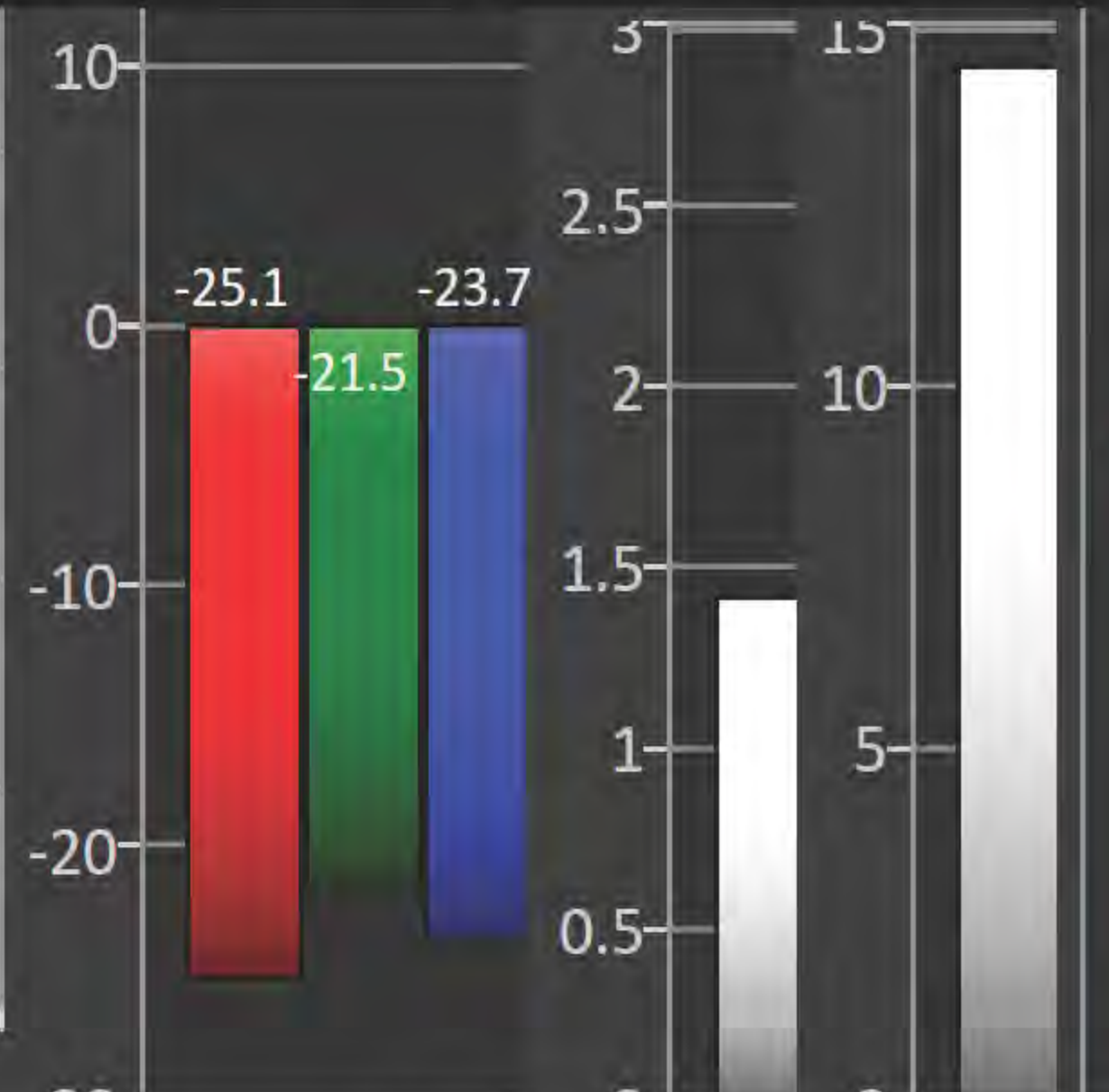
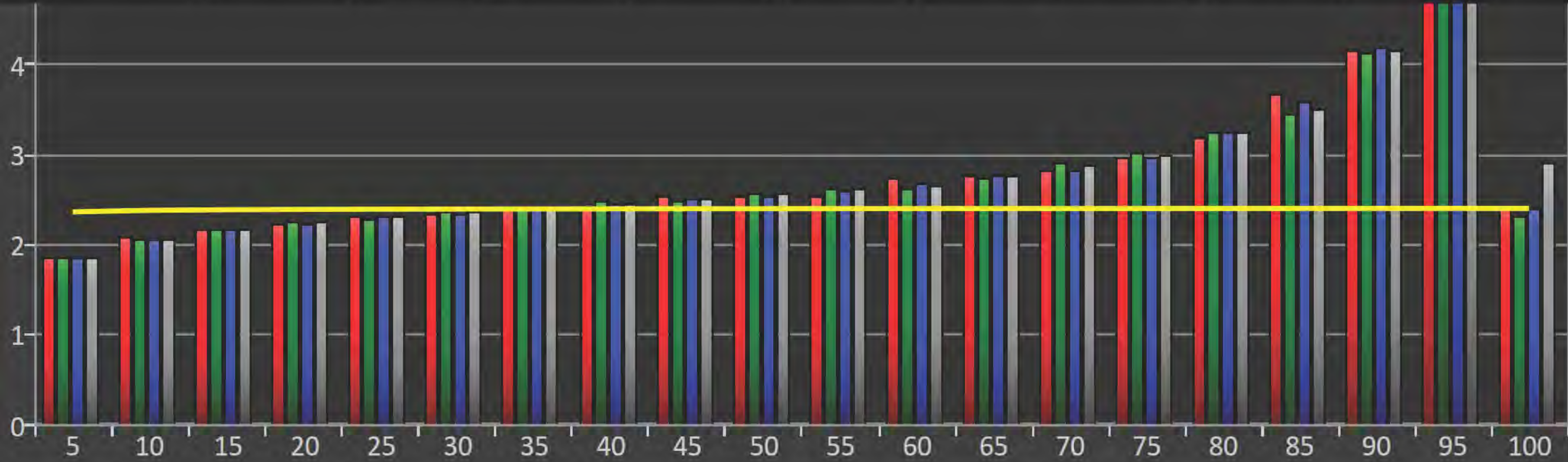
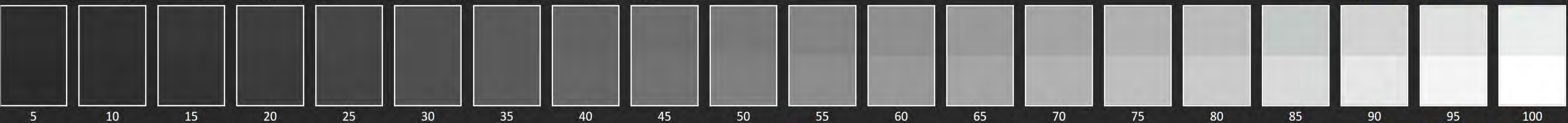
CCT EOTF Luminance Chart Mode DDC/Display Comparator 2-Pt Grayscale Datagrid



Picture Size 16x9  
Fit to Screen On



Apply Picture Settings All Sources  
Digital Clean View Off



	Red	Green	Blue
7	26	50	-50
10.5	8	24	20
15.5	8	16	24
19.6	0	8	16
24.7	-9	1	1
29.7	-9	-2	-1
35	-6	6	1
39.7	-3	9	6
44.7	-3	9	13
49.8	-1	10	12
55	-3	9	12
60.3	-3	6	9

Y 81.917 / 100  
x 0.3117 / 0.3127  
y 0.3312 / 0.329

Reset Grayscale  
Gray Levels SDR-Q900/Q9/Q8  
Run AutoCal DDC/Display

Navigation and utility panel on the right side of the interface. It includes buttons for 'Back', 'Next', 'HOME', 'Prepare Session Setup', 'PreCal Read', 'Calibrate', 'Analyze', 'Post', 'Comp', 'Final Check', and 'M-Pnt'. It also features a '2-Pt' button and a 'Notes' button.



## ≡ Multi-Point Grayscale Calibration ≡

CCT

Luminance

Display DDC

## Comparator

2-Pt Grayscale

☒ Datagrid

Click grid to select it then  
click Configure to select data

Configure

[illegible]

CAL

Adjst

M-Pnt

« Back

Next »

 $\uparrow \uparrow$  2-Pt

10

---

**HOME**

## Prepare

## Session Setup

PreCal

Read

## Calibrate

↑↓ 2-P

↑ CMS

↑ Sat

↑ LUT

↑ 1. [Learn](#)

↓ Lum

↓ CCK

## PostCard Read

## Analyze

Post



Comp

Final

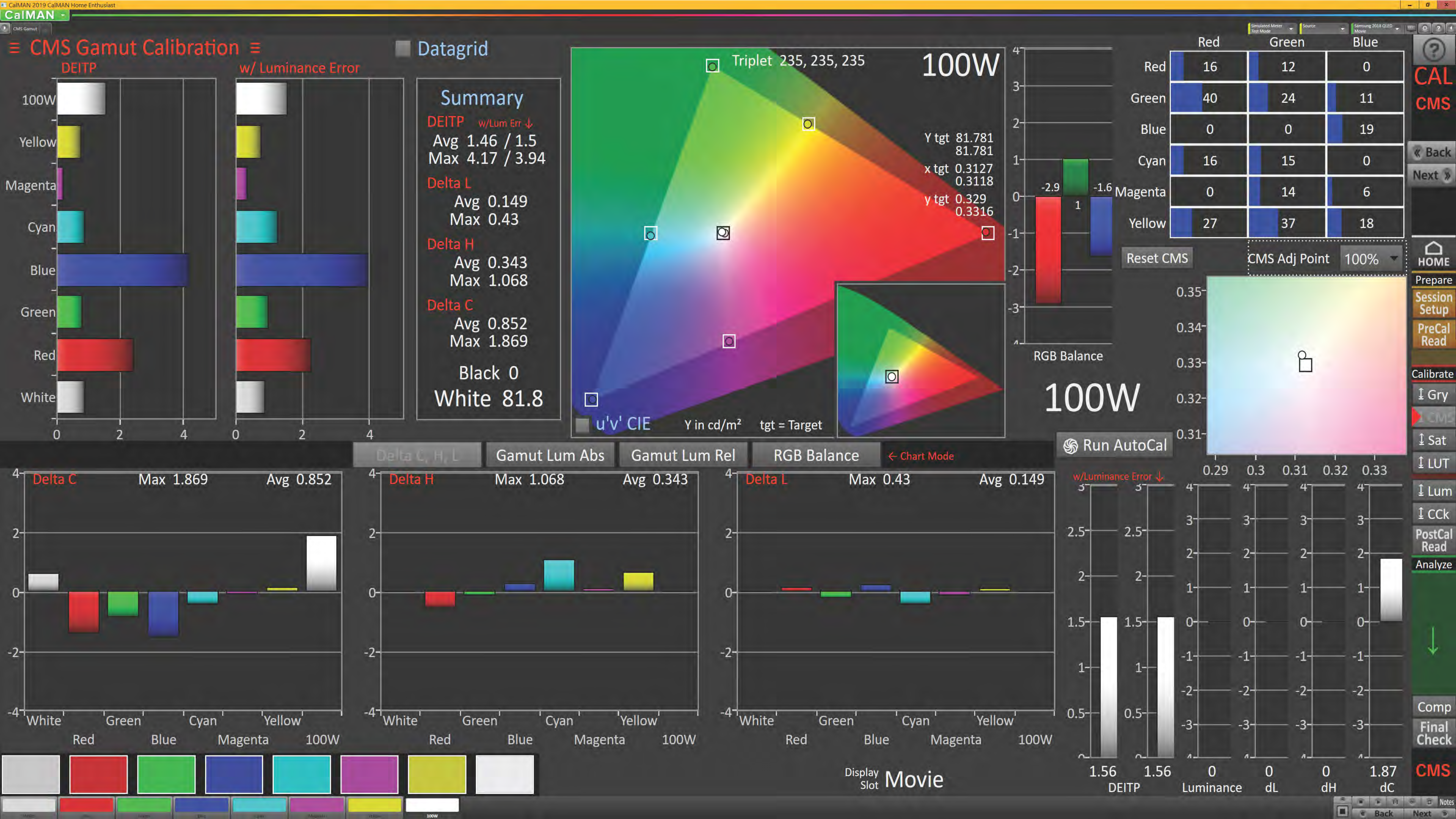
Check

M-Pn

↑↓ 2-Pt

Next

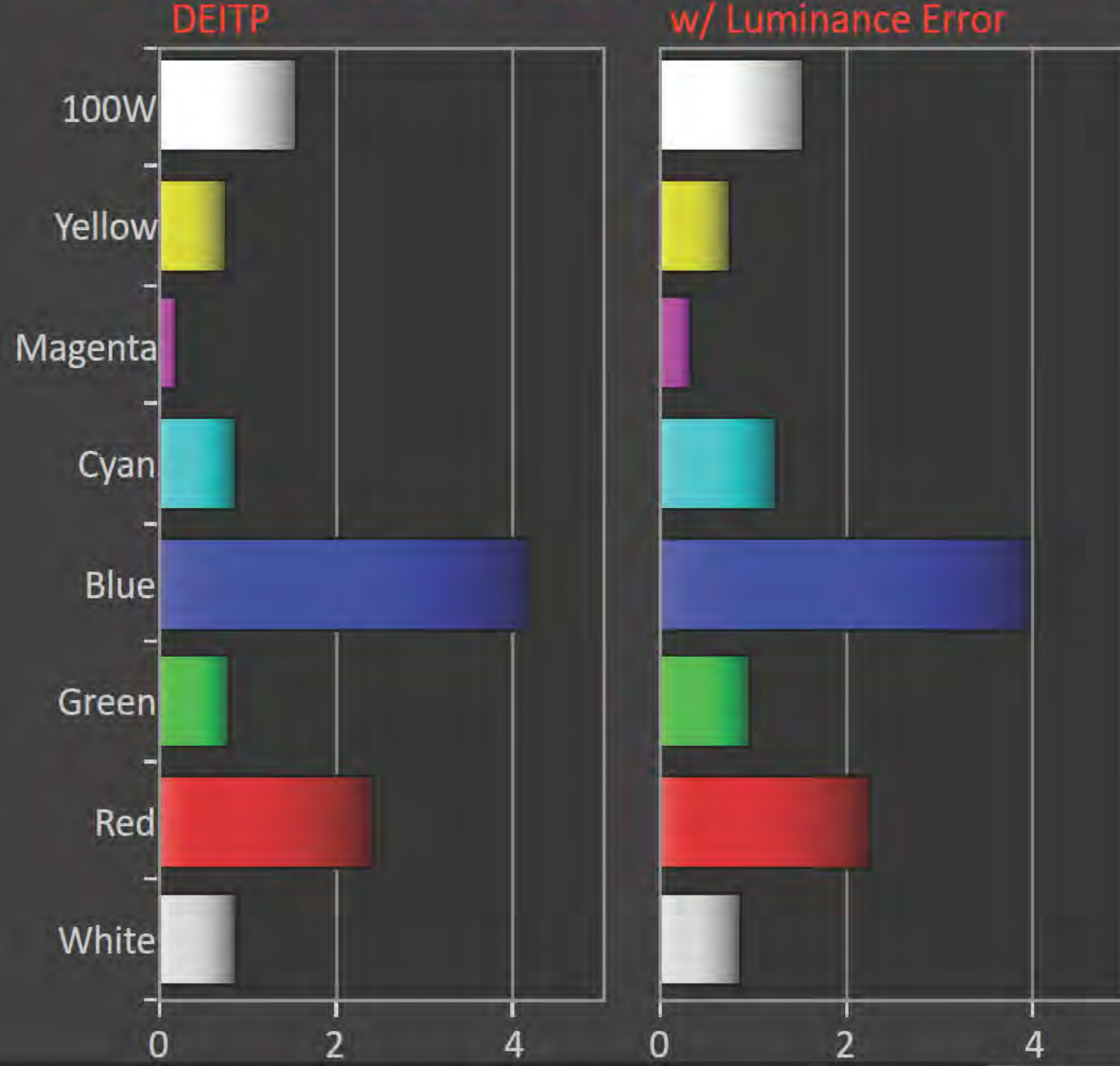






# CMS Gamut Calibration

Datagrid



### Summary

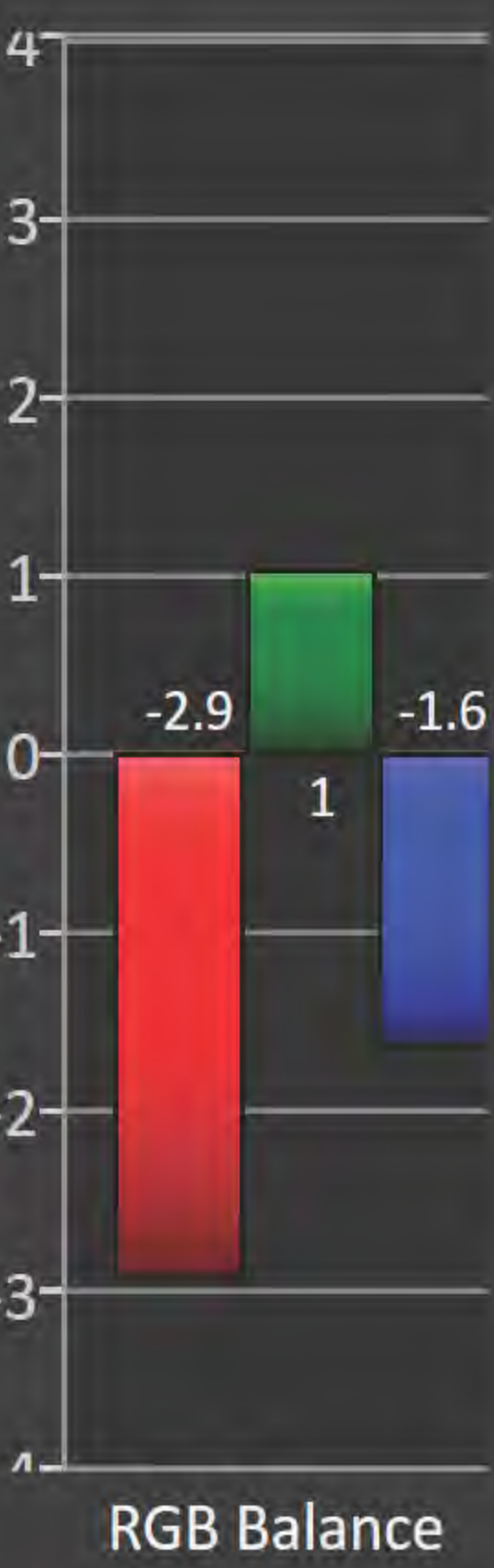
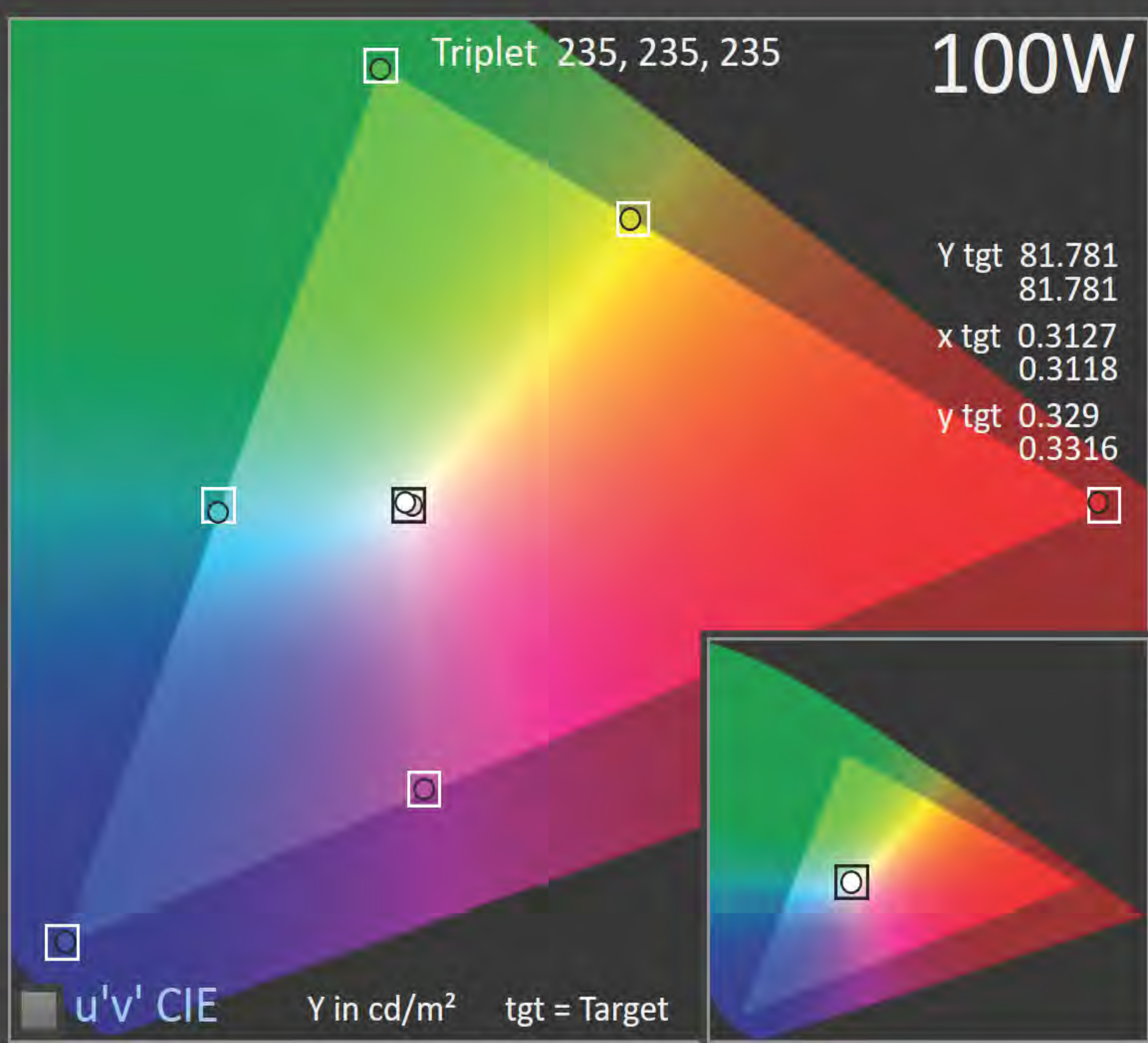
DEITP w/Lum Err ↓  
Avg 1.46 / 1.5  
Max 4.17 / 3.94

Delta L  
Avg 0.149  
Max 0.43

Delta H  
Avg 0.343  
Max 1.068

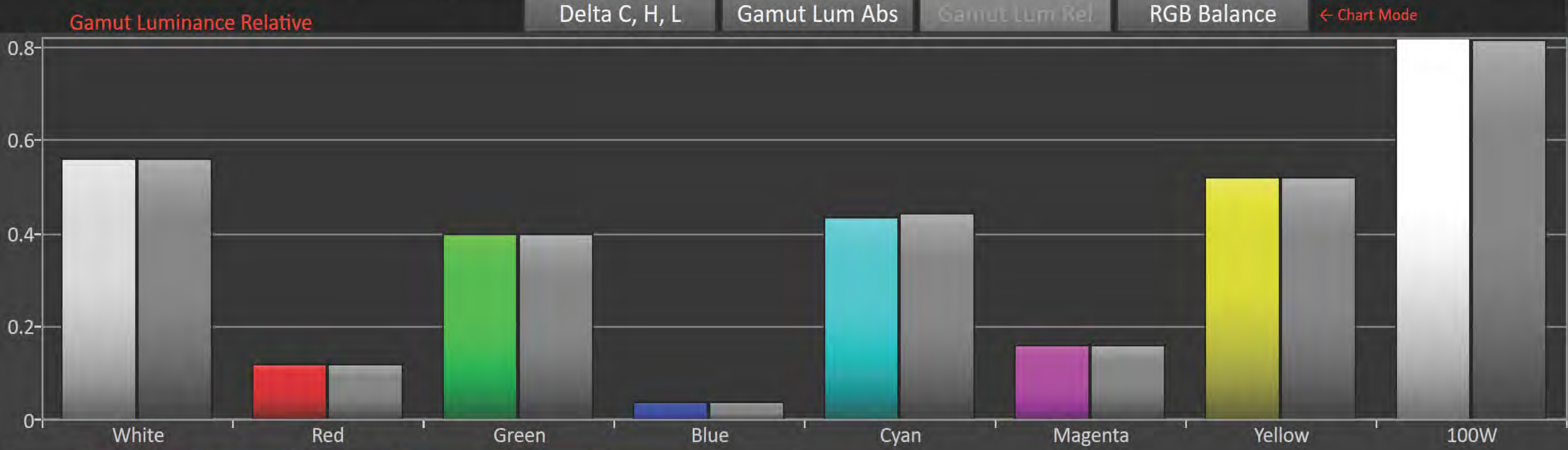
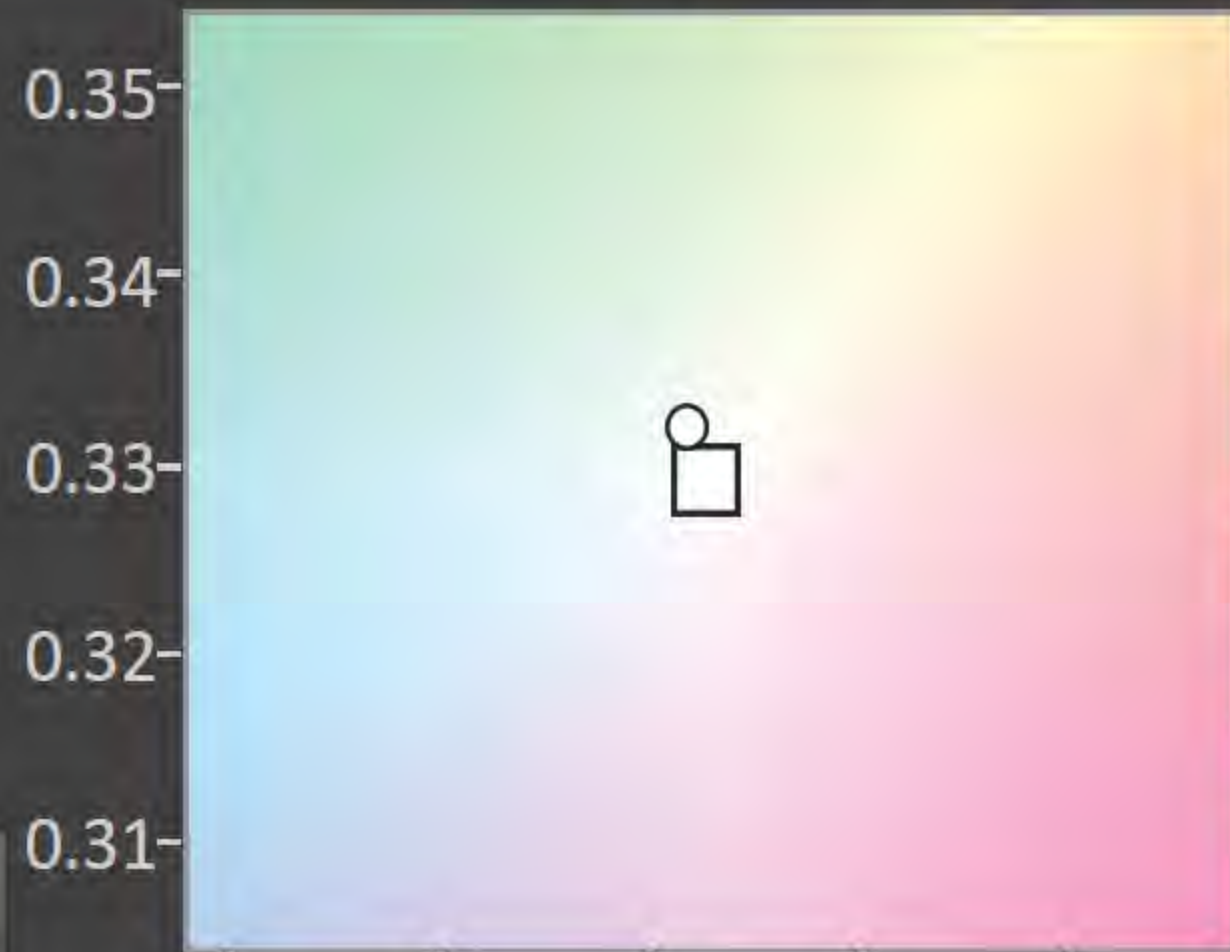
Delta C  
Avg 0.852  
Max 1.869

Black 0  
White 81.8

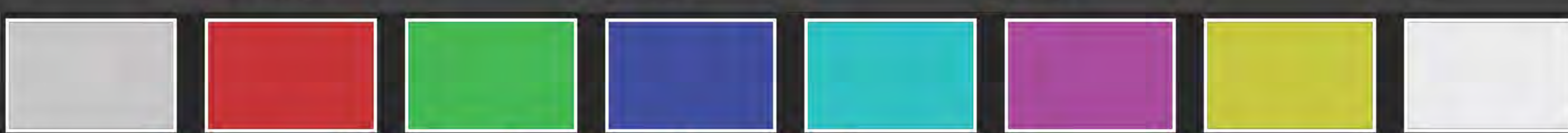
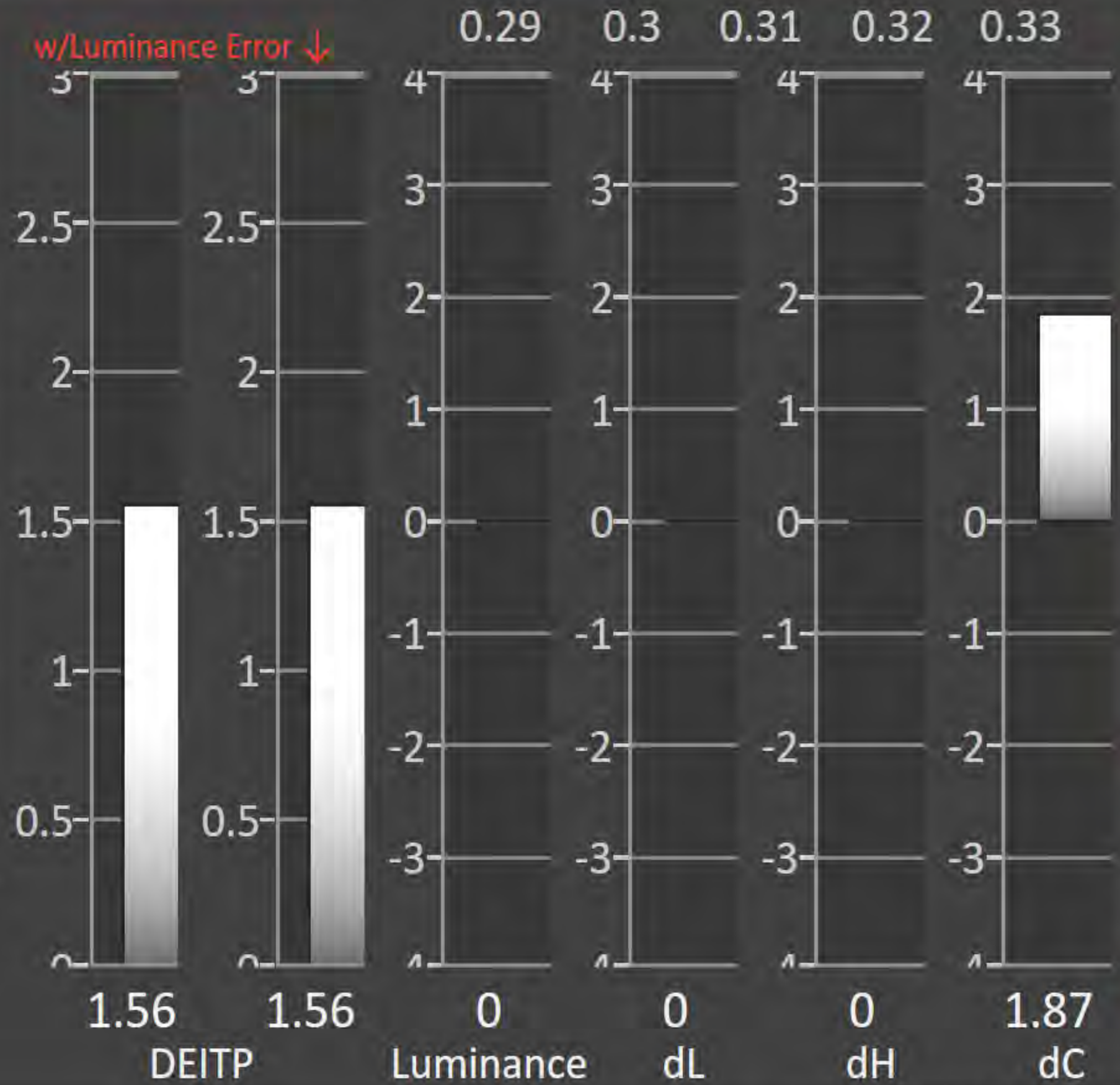


	Red	Green	Blue
Red	16	12	0
Green	40	24	11
Blue	0	0	19
Cyan	16	15	0
Magenta	0	14	6
Yellow	27	37	18

Reset CMS CMS Adj Point 100%



Run AutoCal



Display Slot Movie

CAL CMS

Back Next

HOME

Prepare Session Setup PreCal Read Calibrate Gry Sat LUT Lum CCK PostCal Read Analyze

Comp Final Check CMS

Notes

Back Next







# CMS Gamut Calibration

**Datagrid**

Click grid to select it then  
click Configure to select data

**Configure**

	White	Red	Green	Blue	Cyan	Magenta	Yellow	100W
RGB Triplet	202, 202, 202	202, 16, 16	16, 202, 16	16, 16, 202	16, 202, 202	202, 16, 202	202, 202, 16	235, 235, 235
Target Y cd/m <sup>2</sup>	67.6628	14.3890	48.3896	4.8844	53.2739	19.2732	62.7785	100.0000
Y cd/m <sup>2</sup>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target x:CIE31	0.3127	0.6400	0.3000	0.1500	0.2247	0.3209	0.4193	0.3127
x: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target y:CIE31	0.3290	0.3300	0.6000	0.0600	0.3287	0.1542	0.5053	0.3290
y: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target CCT	6503.4440	3096.5526	6066.4399	1848.1332	12863.1837	3545.8311	3910.0233	6503.4440
CCT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000



**CAL**

**CMS**

« Back

Next »

HOME

Prepare

Session Setup

PreCal Read

Calibrate

↑ Gry

↓ LMS

↑ Sat

↓ LUT

↑ Lum

↓ CCK

PostCal Read

Analyze



Comp

Final Check

**CMS**

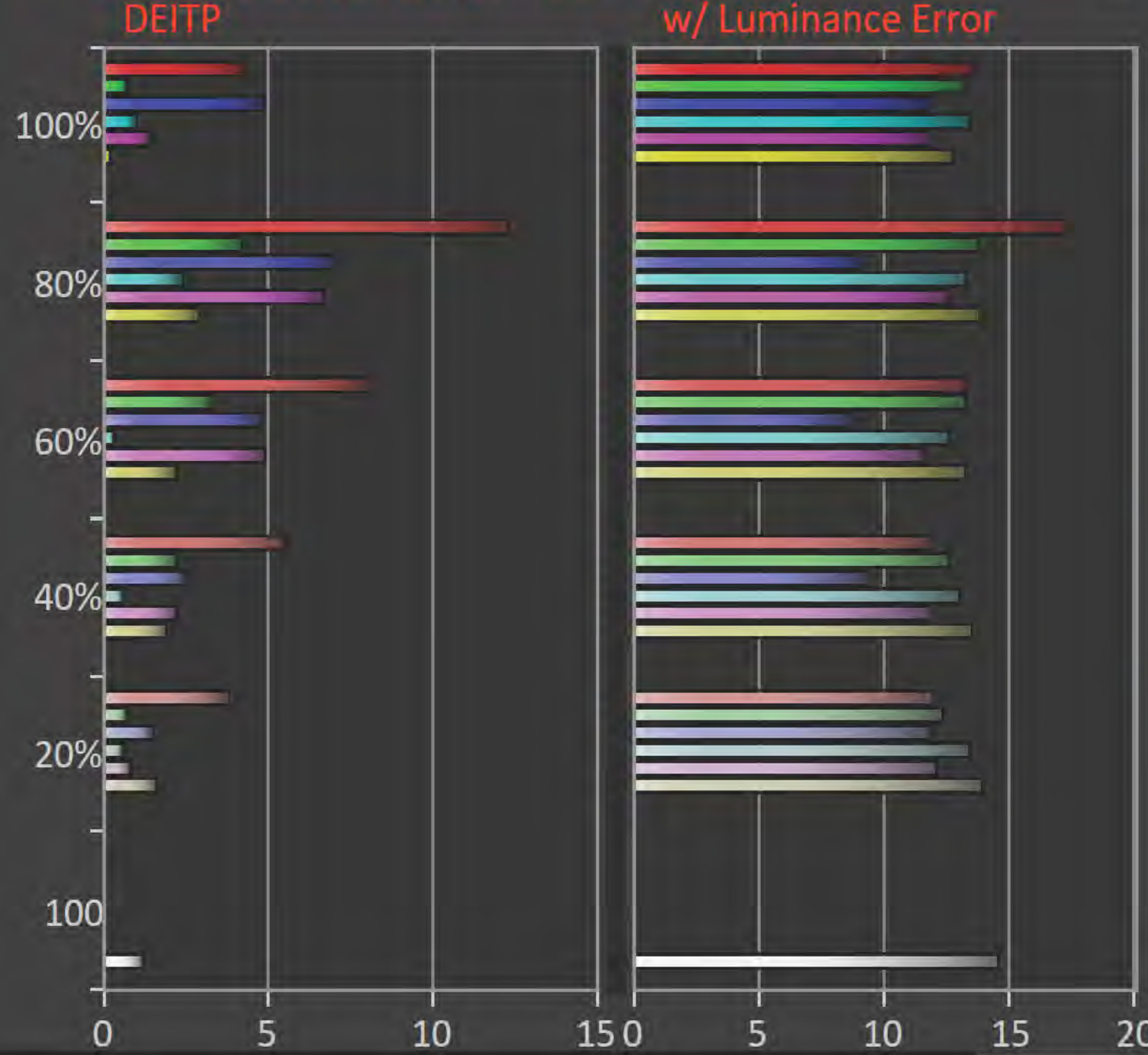
Notes

Back

Next



# Gamut Saturation Calibration



## Datagrid

**Summary**

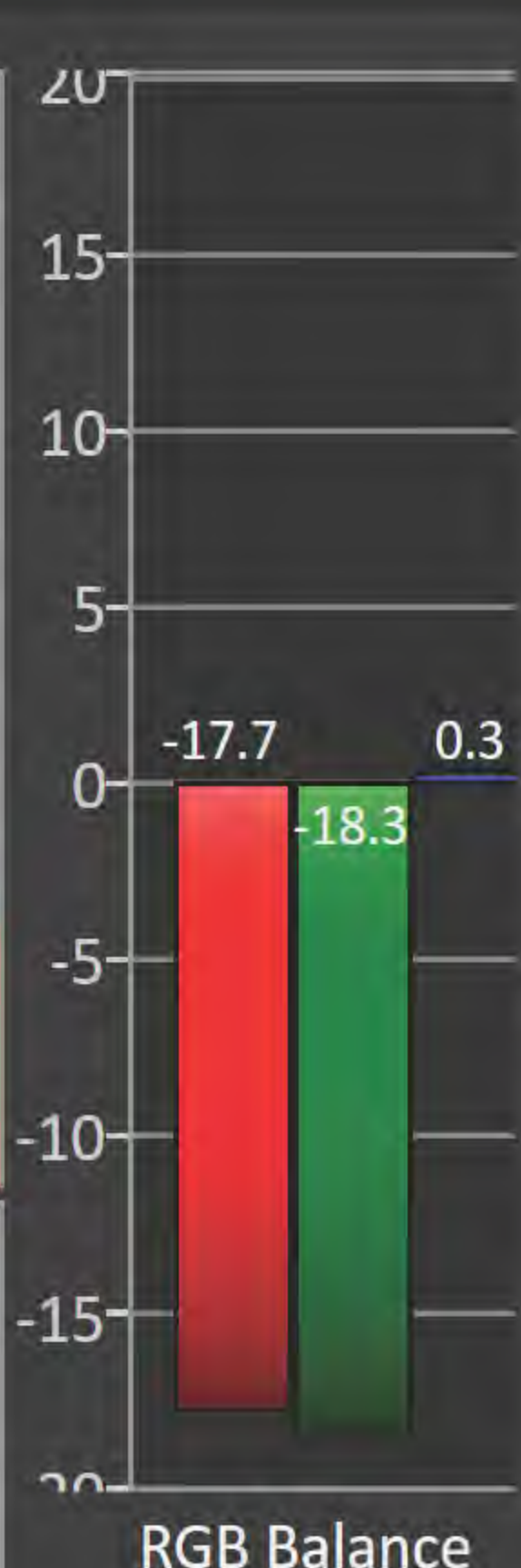
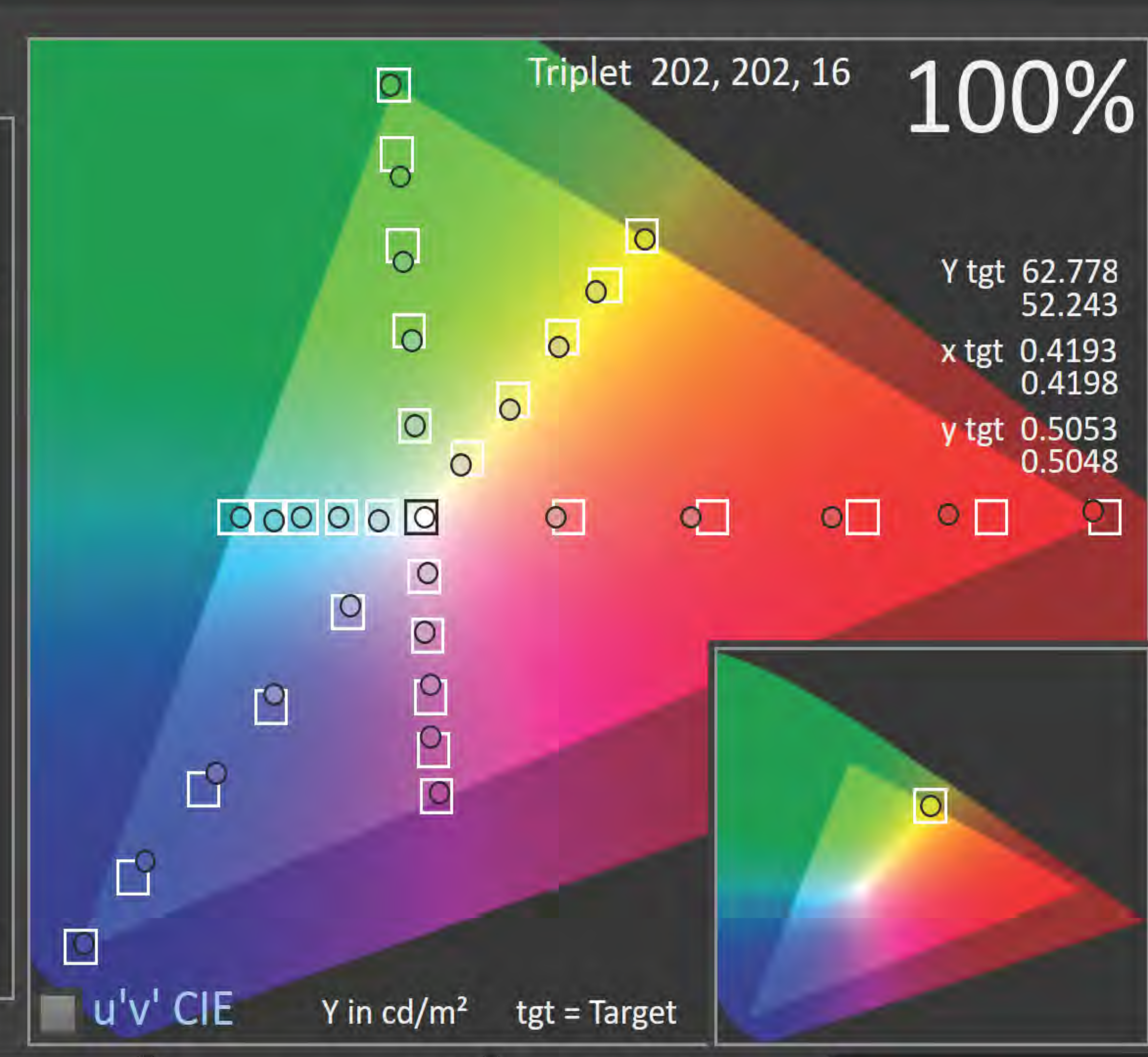
DEITP w/Lum Err ↓  
Avg 3.16 / 12.63  
Max 12.33/ 17.2

Delta L  
Avg 4.792  
Max 7.547

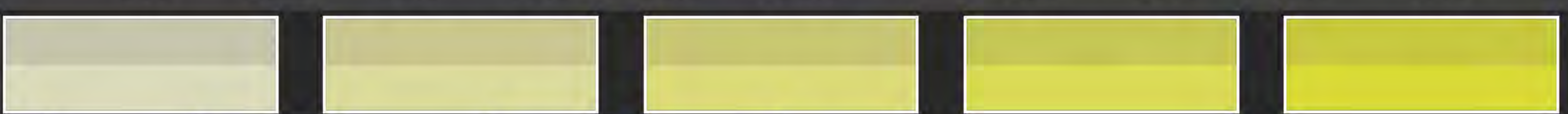
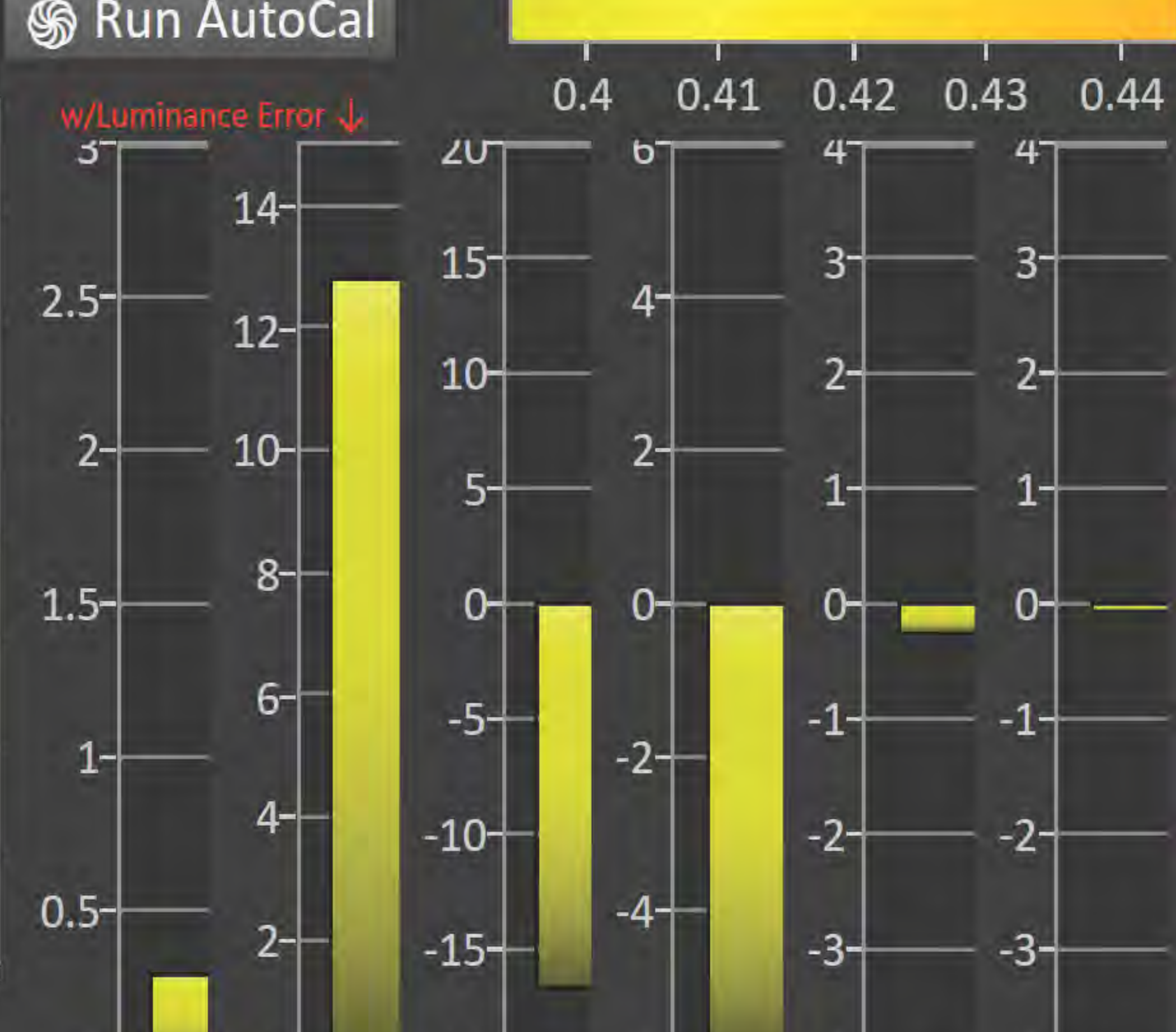
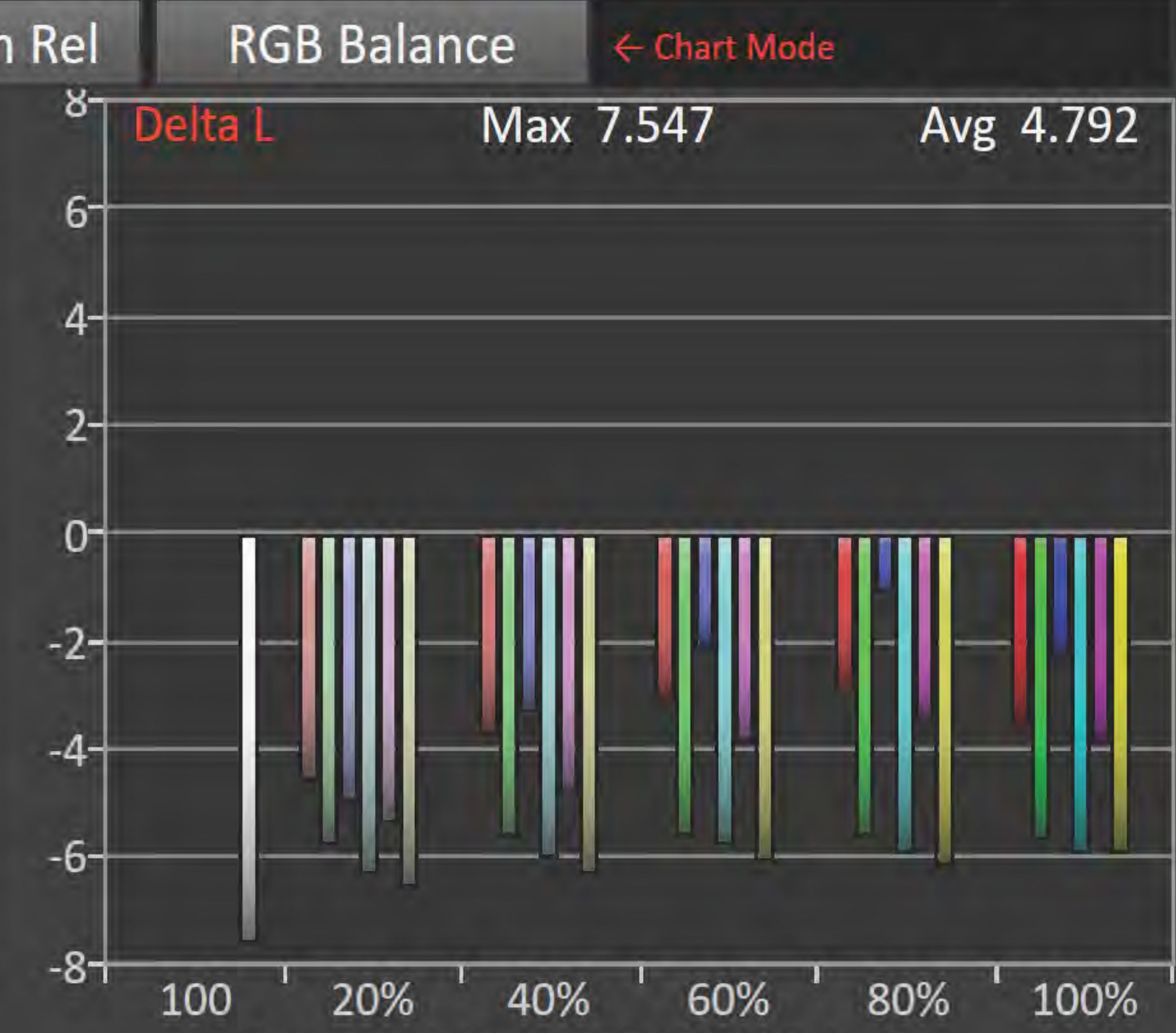
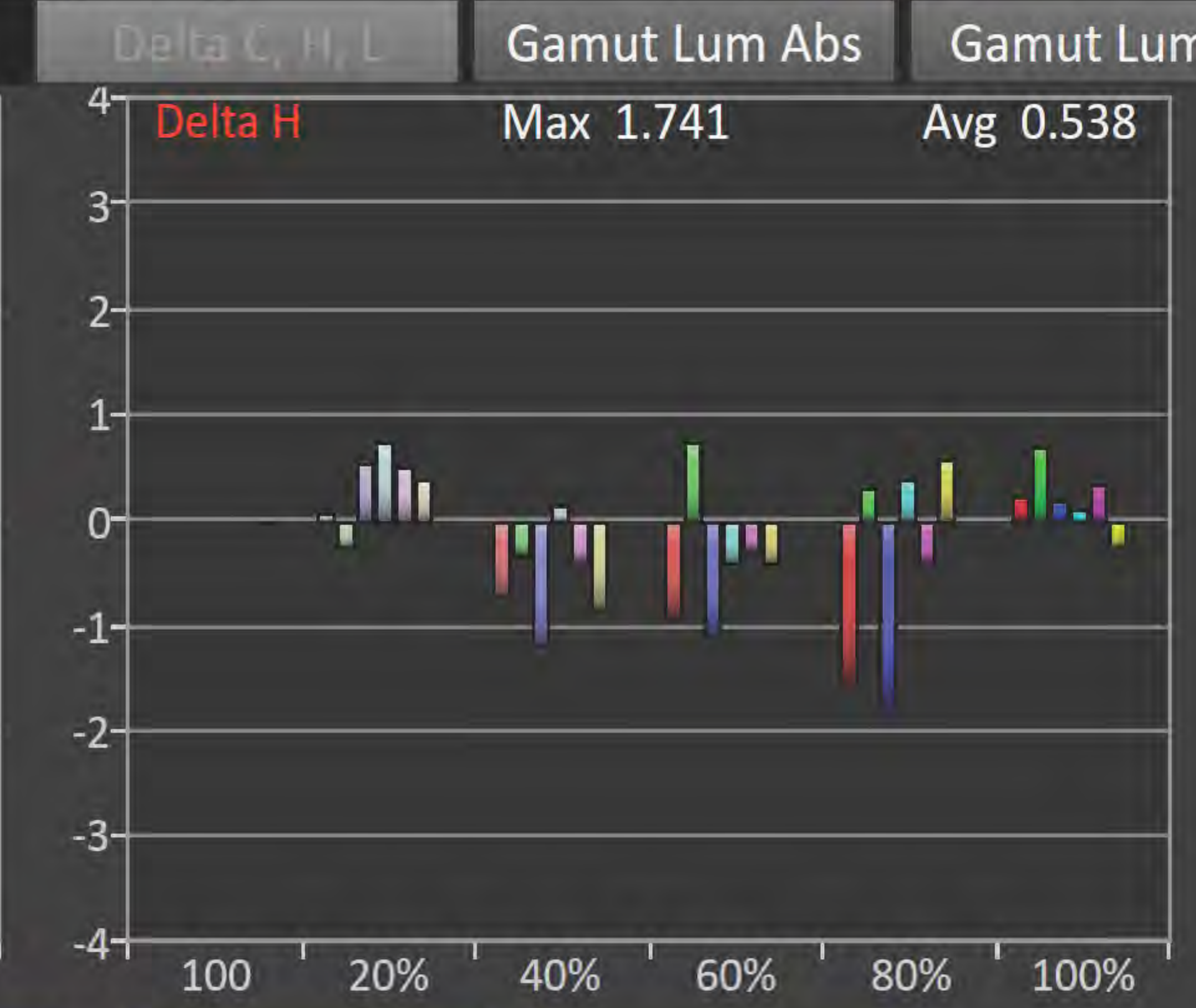
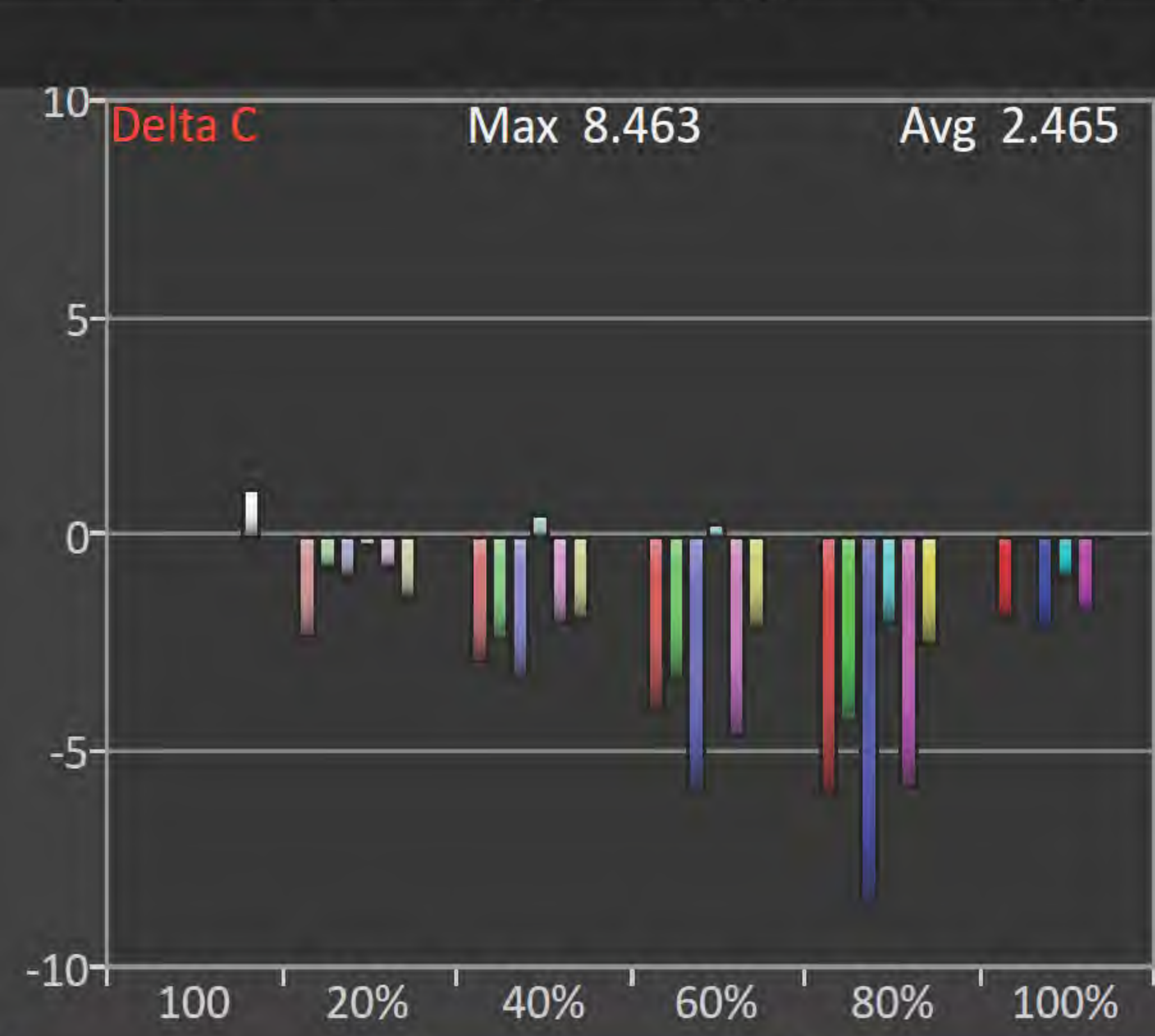
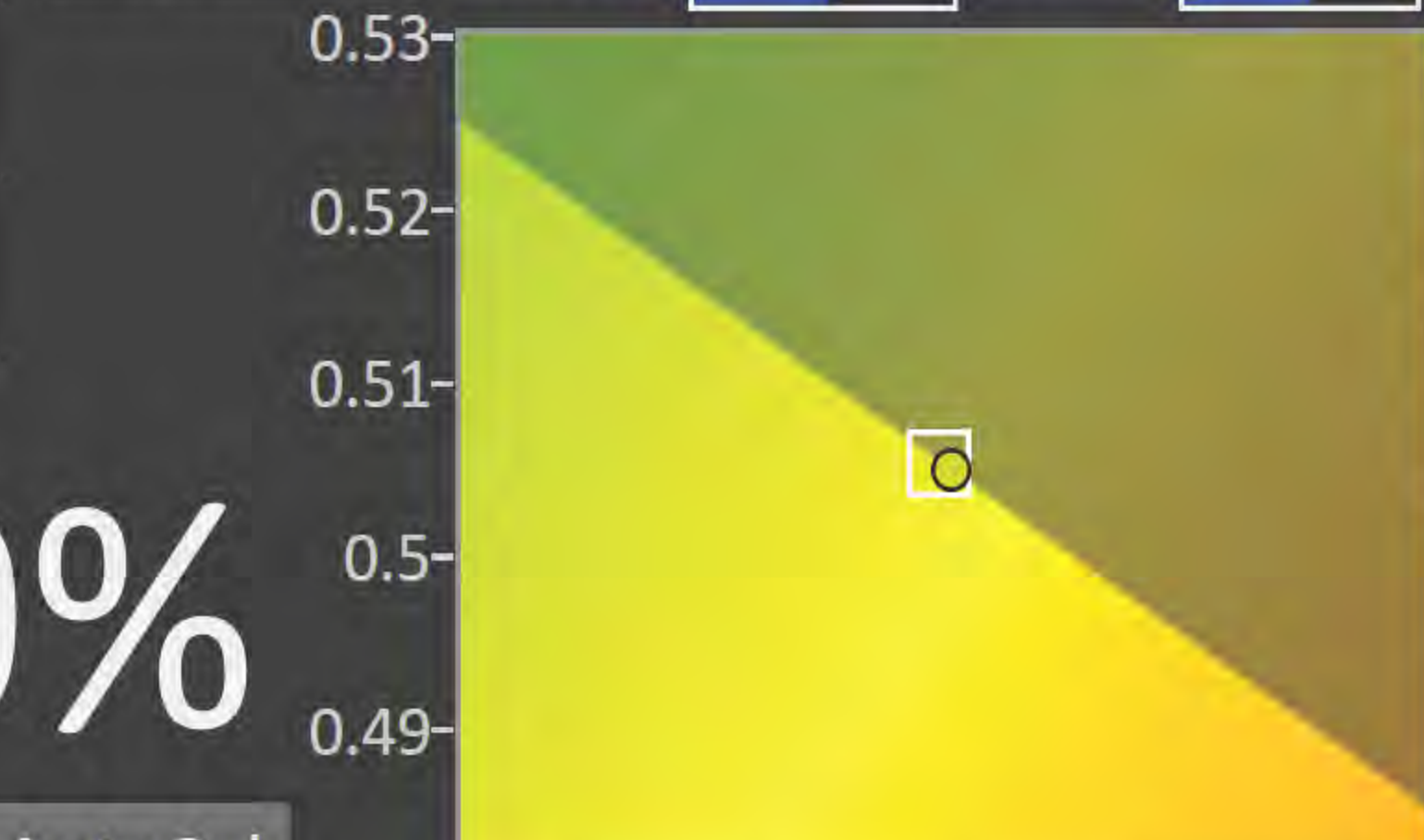
Delta H  
Avg 0.538  
Max 1.741

Delta C  
Avg 2.4652  
Max 8.463

Black 0  
White 81.72



	Red	Green	Blue
Red	16	12	0
Green	40	24	11
Blue	0	0	19
Cyan	16	15	0
Magenta	0	14	6
Yellow	27	37	18



Movie

For classic CMS set to 75%/100% Only ↓

Sweep Level BT.709 20% Sweeps

Run AutoCal

Cal Satur

Back Next

HOME

Prepare Session Setup PreCal Read

Calibrate

↓ Gry

↓ CMS

↓ Lut

↓ Lum

↓ Cck

PostCal Read

Analyze

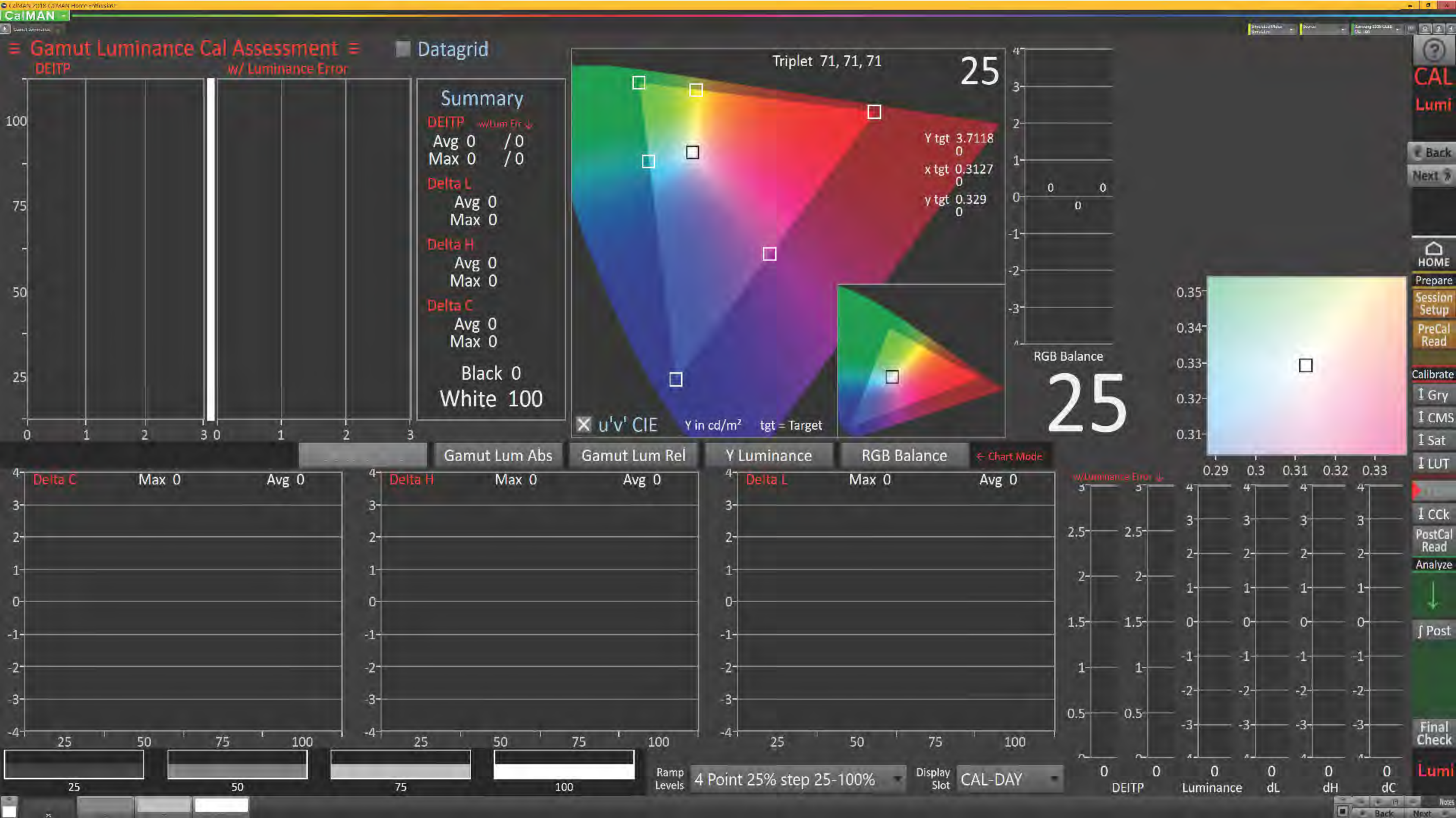
↓ Post

Comp

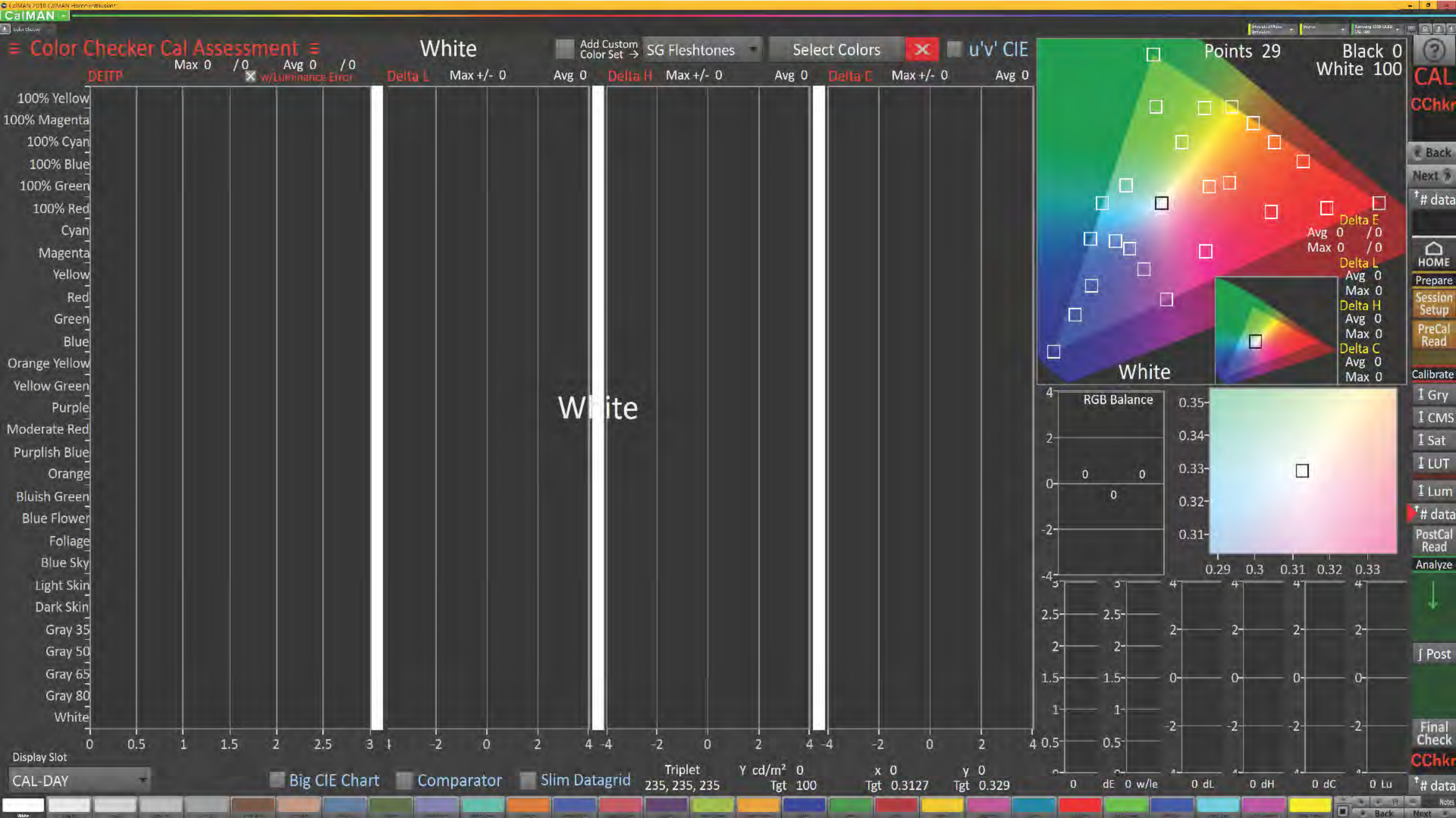
Final Check

Satur

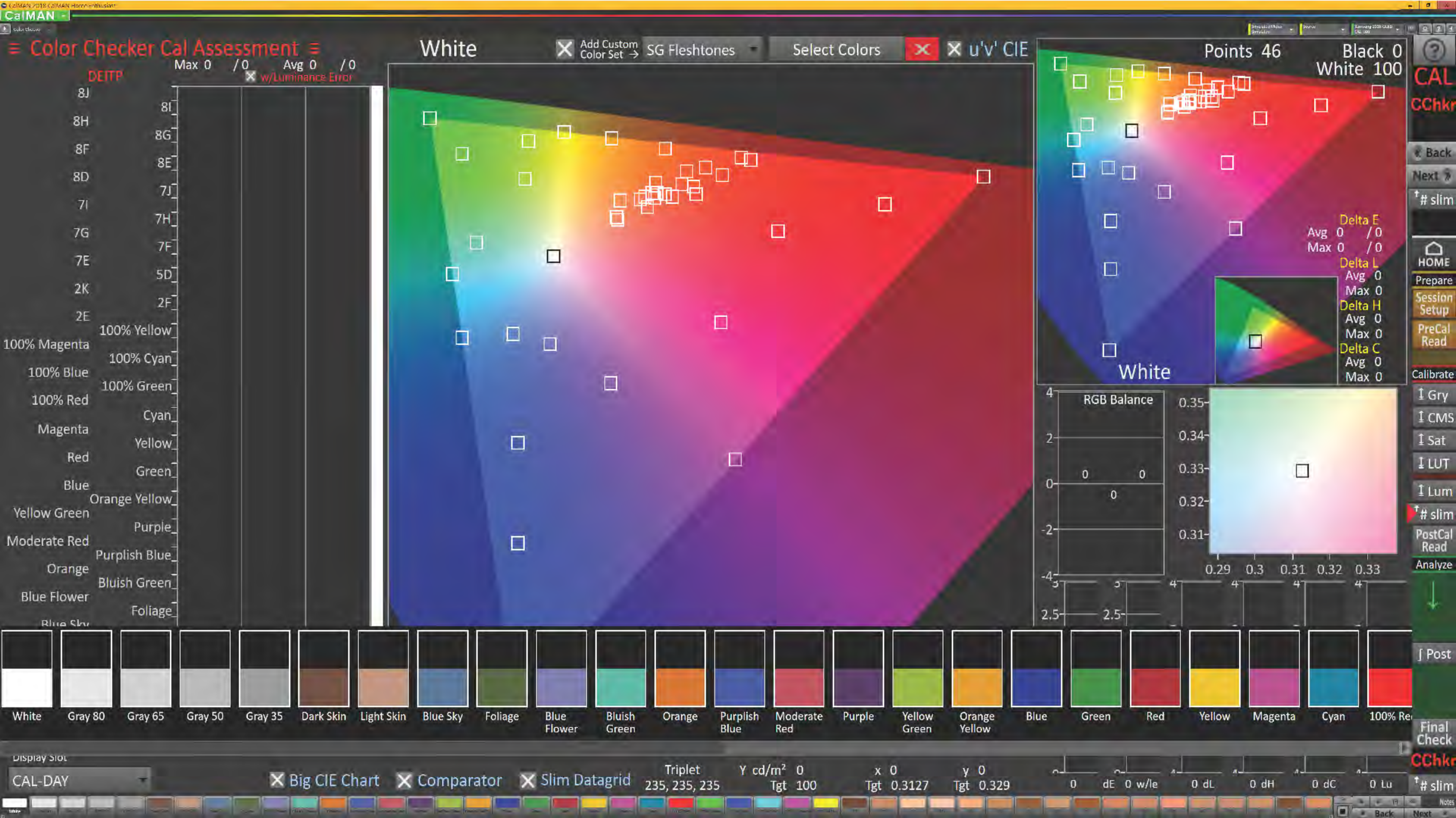














CalMAN 2018 CalMAN Home enthusiast

CalMAN -

Color Checker Assessment Data

Color Notes

Post-Cal Notes

	White	Gray 80	Gray 65	Gray 50	Gray 35	Dark Skin	Light Skin	Blue Sky	Foliage	Blue Flower	Bluish Green	Orange	Purplish Blue	Moderate Red	Purple	Yellow G
RGB Triplet	235, 235, 235	213, 213, 213	196, 196, 196	176, 176, 176	152, 152, 152	115, 86, 73	182, 145, 128	97, 121, 150	93, 108, 73	128, 126, 167	101, 178, 161	202, 119, 51	80, 95, 156	182, 88, 99	95, 69, 108	152, 176
Target Y cd/m²	100.0000	77.6285	62.5608	47.2103	32.0212	8.1891	32.6031	16.5635	11.0615	21.0539	39.6941	26.2802	9.8808	16.7058	5.2067	40.8403
Y cd/m²	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target x:CIE31	0.3127	0.3127	0.3127	0.3127	0.3127	0.4144	0.3841	0.2445	0.3428	0.2648	0.2594	0.5252	0.2089	0.4779	0.2858	0.3780
x: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target y:CIE31	0.3290	0.3290	0.3290	0.3290	0.3290	0.3660	0.3579	0.2597	0.4389	0.2464	0.3622	0.4055	0.1791	0.3124	0.2094	0.5019
y: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target CCT	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	3103.9968	3767.4359	19367.0915	5231.6803	18108.1855	8967.3264	1997.5908	-1622057.9567	1758.3237	36071.7775	4598.05
CCT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Red PQ Diff	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Green PQ Diff	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Blue PQ Diff	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
dE94 L LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
dE94 C LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
dE94 H LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Signed dE94 L LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Signed dE94 C LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Signed dE94 H LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Asmt

HOME

Prepare

Calibrate

Asmt

Analyze

DTA

Asmt

Notes



CalMAN

Color Checker Assessment Data Slim 1

Color Notes

Post-Cal Notes

	White	Gray 80	Gray 65	Gray 50	Gray 35	Dark Skin	Light Skin	Blue Sky	Foliage	Blue Flower	Bluish Green	Orange	Purplish Blue	Moderate Red	Purple	Yellow Green	Orange Yellow	Blue
RGB Triplet	235, 235, 235	213, 213, 213	196, 196, 196	176, 176, 176	152, 152, 152	115, 86, 73	182, 145, 128	97, 121, 150	93, 108, 73	128, 126, 167	101, 178, 161	202, 119, 51	80, 95, 156	182, 88, 99	95, 69, 108	152, 176, 71	213, 154, 55	60, 100, 100
Target Y cd/m²	100.0000	77.6285	62.5608	47.2103	32.0212	8.1891	32.6031	16.5635	11.0615	21.0539	39.6941	26.2802	9.8808	16.7058	5.2067	40.8403	40.3396	4.9310
Y cd/m²	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target x:CIE31	0.3127	0.3127	0.3127	0.3127	0.3127	0.4144	0.3841	0.2445	0.3428	0.2648	0.2594	0.5252	0.2089	0.4779	0.2858	0.3780	0.4826	0.1812
x: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target y:CIE31	0.3290	0.3290	0.3290	0.3290	0.3290	0.3660	0.3579	0.2597	0.4389	0.2464	0.3622	0.4055	0.1791	0.3124	0.2094	0.5019	0.4407	0.1212
y: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target CCT	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	3103.9968	3767.4359	19367.0915	5231.6803	18108.1855	8967.3264	1997.5908	-1622057.9567	1758.3237	36071.7775	4598.0587	2648.4636	399.0100
CCT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AsmtData2AnalyzeDTA



# Color Checker Assessment Data Slim 2

Color Notes

Post-Cal Notes

	White	Gray 80	Gray 65	Gray 50	Gray 35	Dark Skin	Light Skin	Blue Sky	Foliage	Blue Flower	Bluish Green	Orange	Purplish Blue	Moderate Red	Purple	Yellow Green	Orange Yellow	Blue	Green	Red	Yellow	Magenta	Cya
Red PQ Diff	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Green PQ Diff	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Blue PQ Diff	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ΔE 1994 L*:±	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ΔE 1994 Sat:±	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ΔE 1994 Hue:±	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Signed dE94 L LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Signed dE94 C LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Signed dE94 H LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

CAL

Asmt

HOME

Prepare

Calibrate

Asmt

Data1

Analyze



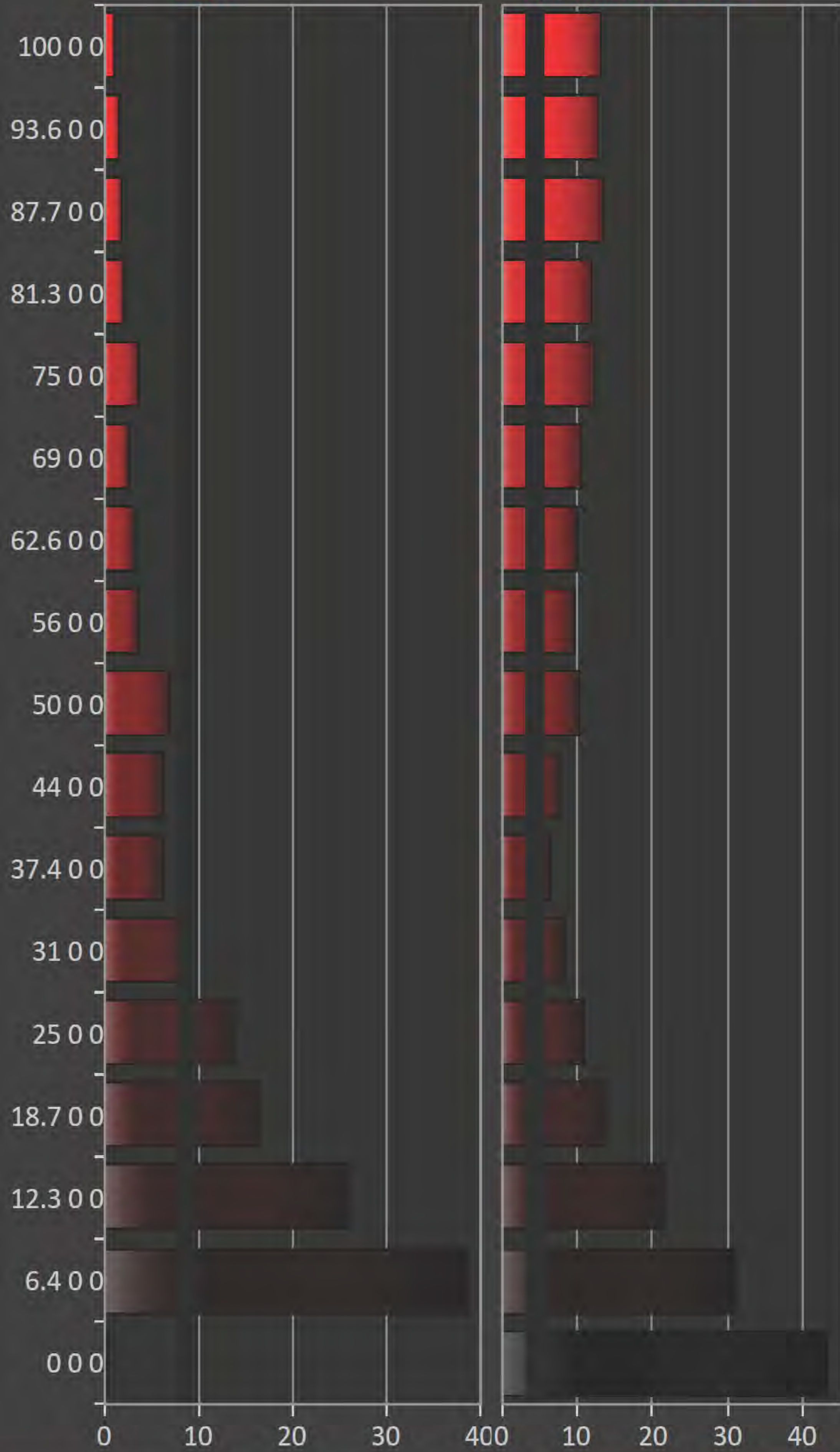
DTA

Asmt



# 3D Color Cube LUT Calibration - Full

DEITP w/Luminance Error



Go to Minimal 3D LUT

Datagrid

## Summary

Delta C 1.91 Avg 4.32 Max

Delta H 0.76 Avg 1.79 Max

Delta L 2.15 Avg 4.42 Max

DEITP Avg 9.05 / 12.85  
Max 38.76 / 31.03

## RGB Balance

DEITP Triplet 235, 16, 16

Y 17.45048  
Tgt 21.26567

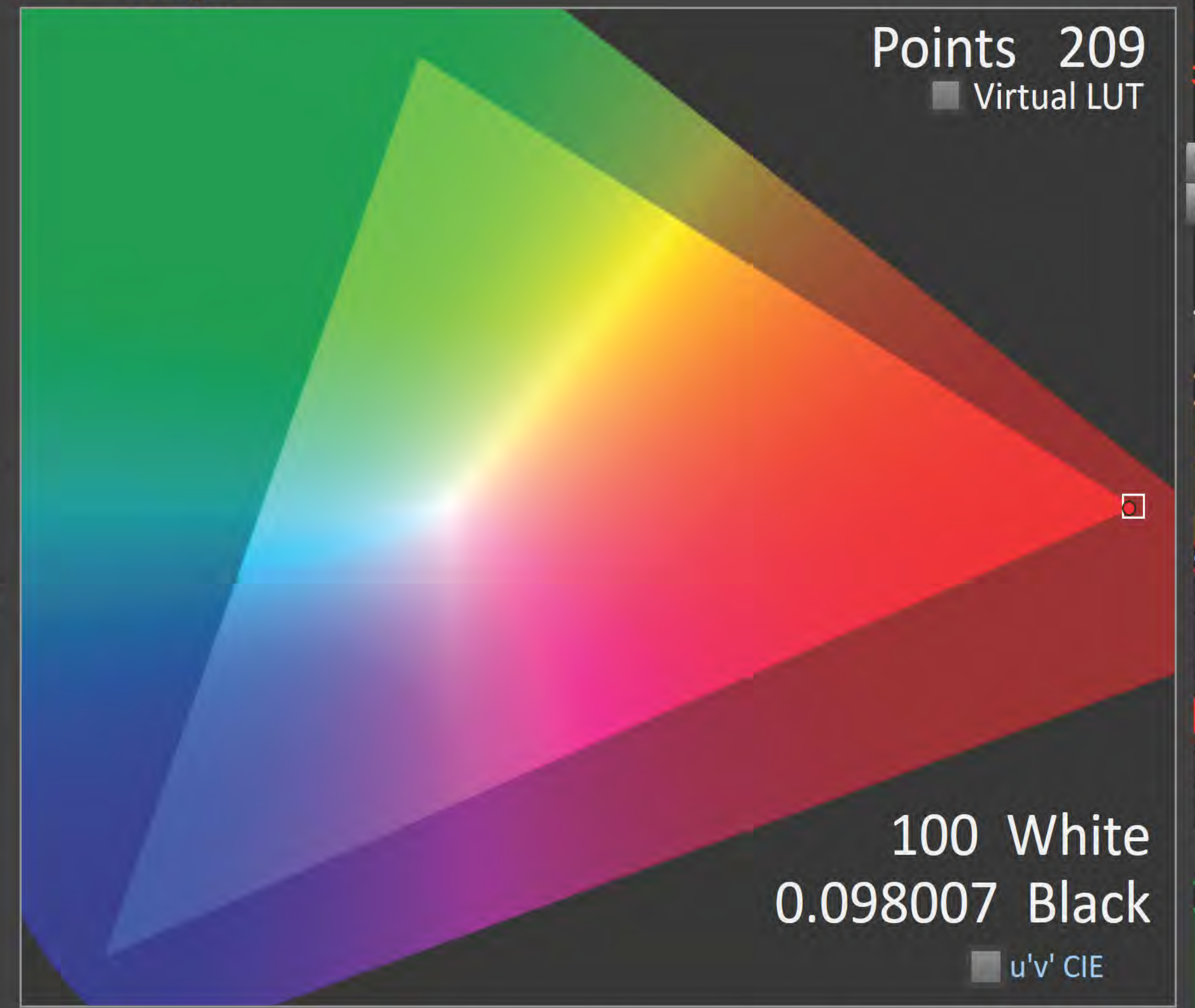
x 0.63879  
Tgt 0.64

y 0.32927  
Tgt 0.33

dC -7.32  
dH -0.87  
dL -4.42

dE 1.2 / 13.37

100 0 0



Color Bars

Big Comparator

Inner Data Points

Luminance Level Points

17 Points per side, SMPTE (0-100), 6.25% steps

Display Slot

Movie

Selected LUT

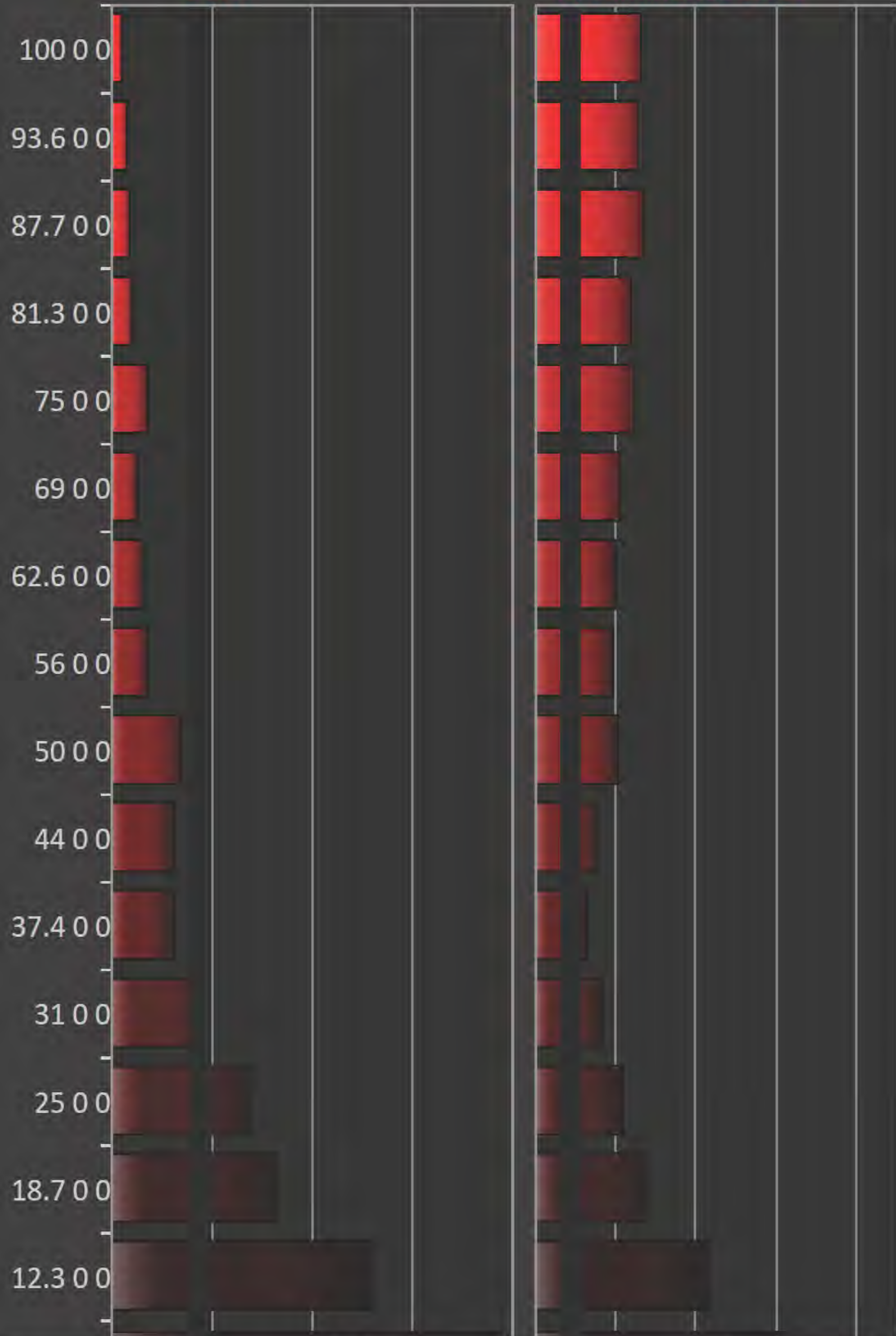
Run AutoCal





# 3D Color Cube LUT Calibration - Full

DEITP w/Luminance Error



Go to Minimal 3D LUT

Datagrid

### Summary

Delta C: 1.91 Avg 4.32 Max

Delta H: 0.76 Avg 1.79 Max

Delta L: 2.15 Avg 4.42 Max

DEITP: Avg 9.05 / 12.85  
Max 38.76 / 31.03

w/Luminance Error

### RGB Balance

Triplet: 235, 16, 16

Y: 17.45048  
Tgt: 21.26567

x: 0.63879  
Tgt: 0.64

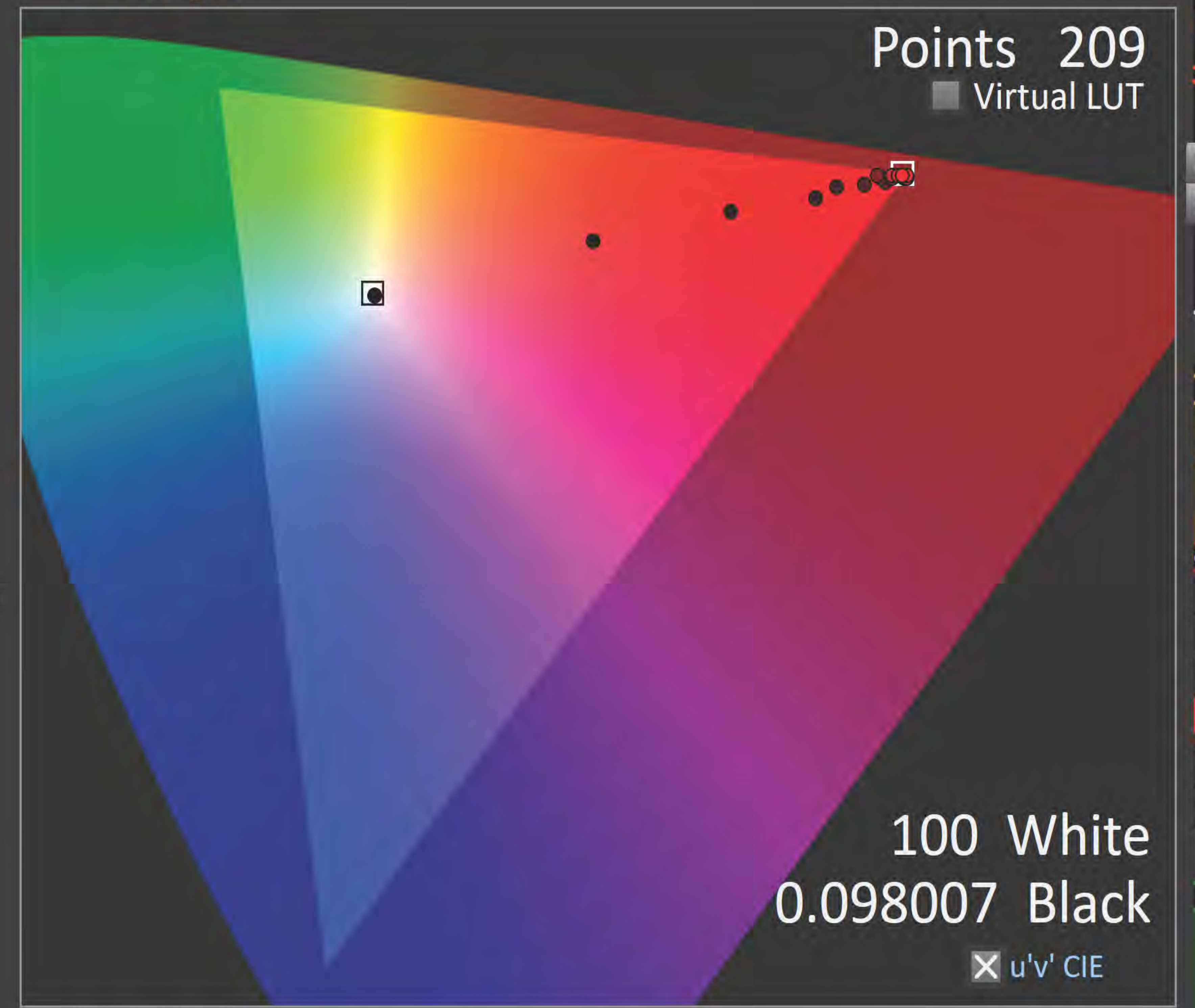
y: 0.32927  
Tgt: 0.33

dC: -7.32  
dH: -0.87  
dL: -4.42

dE: 1.2 / 13.37

### DEITP

100 0 0



☒ Color Bars

☒ Big Comparator

Inner Data Points Luminance Level Points

Ramp



CalMAN 3dLUT Full

Back Next

HOME

Prepare Session Setup PreCal Read

Calibrate

↓ Gry ↓ CMS ↓ Sat

↓ LUT

↓ Lum ↓ CCK

PostCal Read

Analyze

↓

f Chrts

Comp Final Check

3dLUT









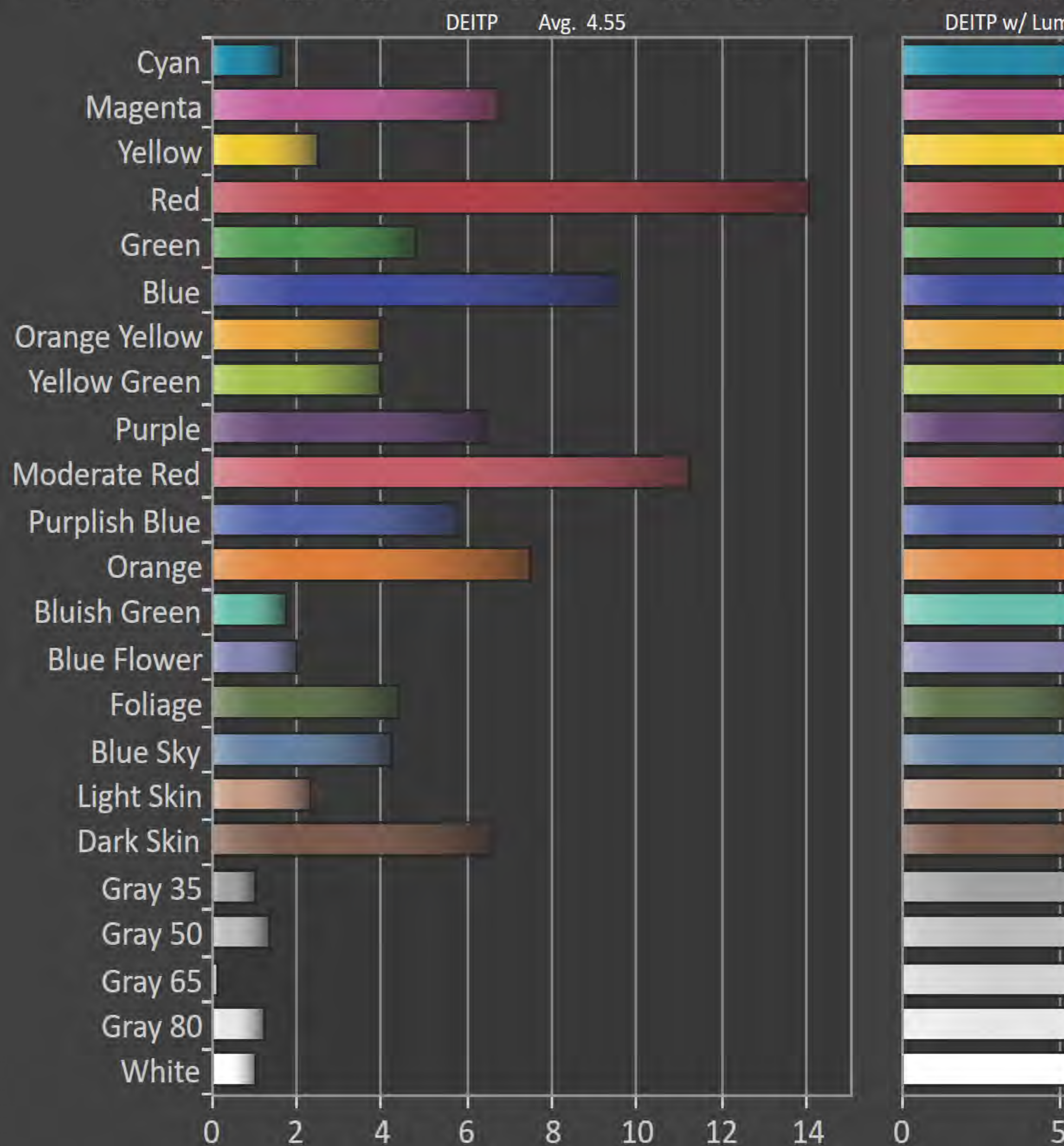
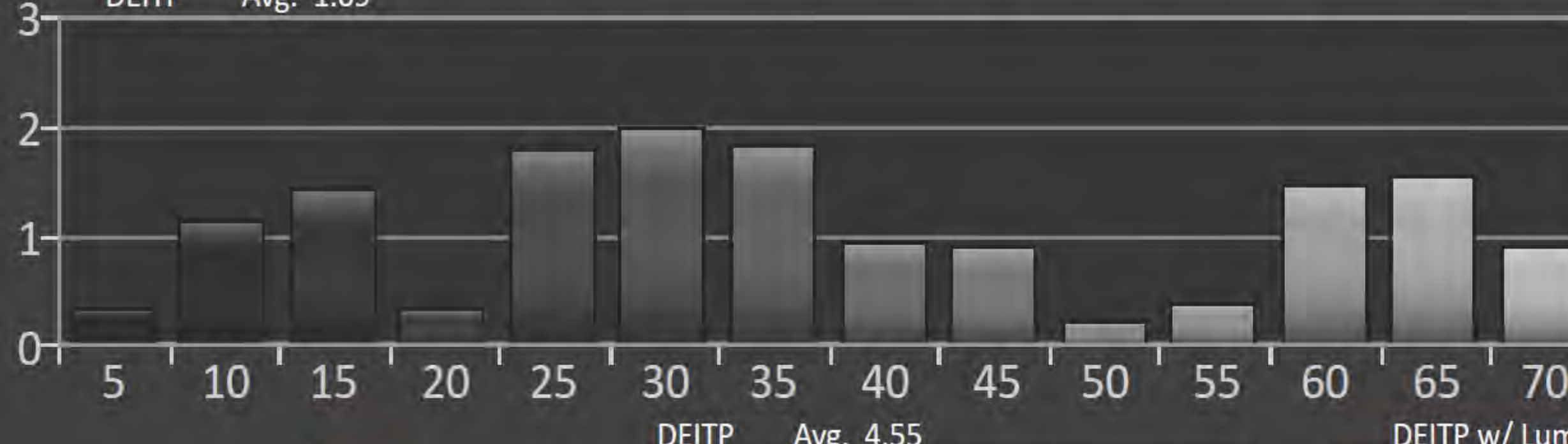
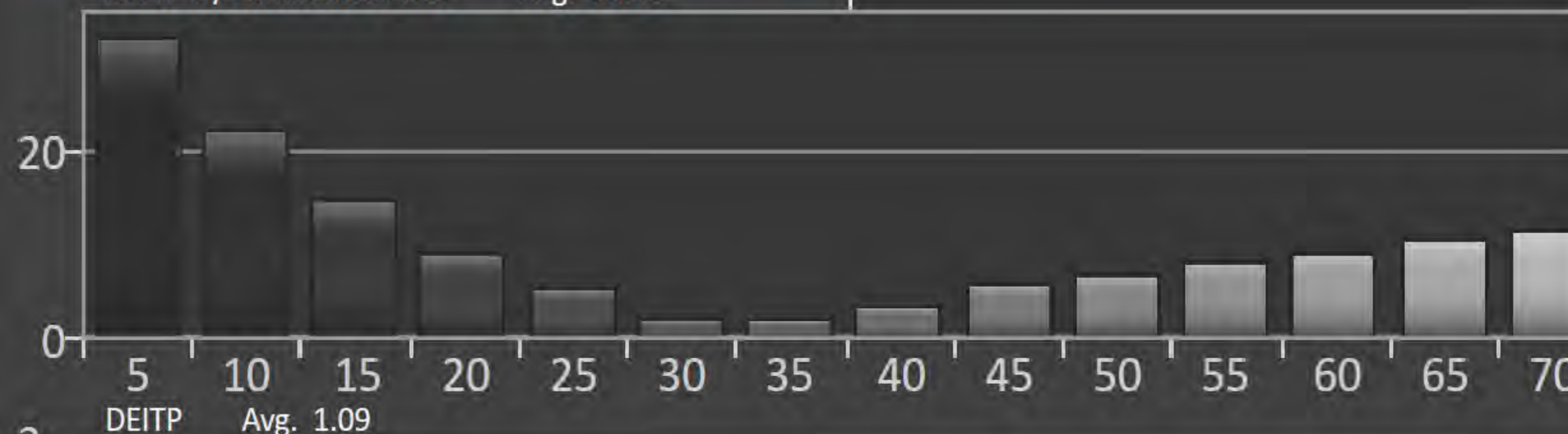


## Compare Calibrations

Cal 1 Notes

DEITP w/ Luminance Error

Avg. 11.48



Run a calibration session with initial base settings, then take Cal 1 Grayscale and/or Color Checker readings here writing key settings. If needed, change the base settings and run another calibration session, then take Cal 2 readings.

Repeat as needed, changing base settings, calibrating and taking readings using the worse previous Cal, always noting key settings, until best result is found. Planning key setting sequences to run is very useful.

Picture Size 16x9

Fit to Screen On

Backlight 34

Brightness 0

Contrast 23

Sharpness 0

Color 26

Tint (G/R) -1

Apply Picture Settings All Sources

Digital Clean View Off

Auto Motion Plus Off

Local Dimming Low

Contrast Enhancer Off

HDR+ Mode Off

Color Tone Warm2

R-Gain 0

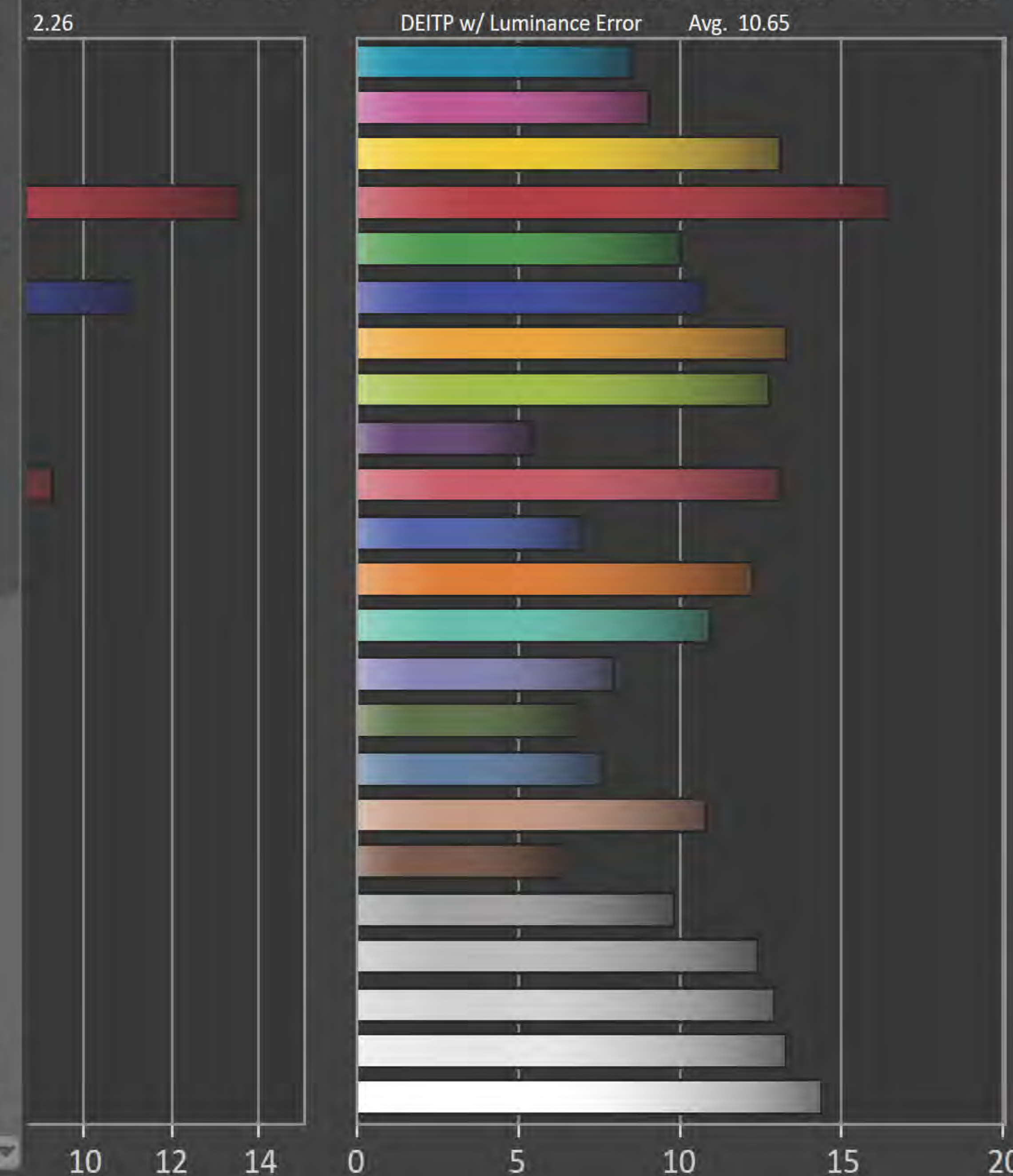
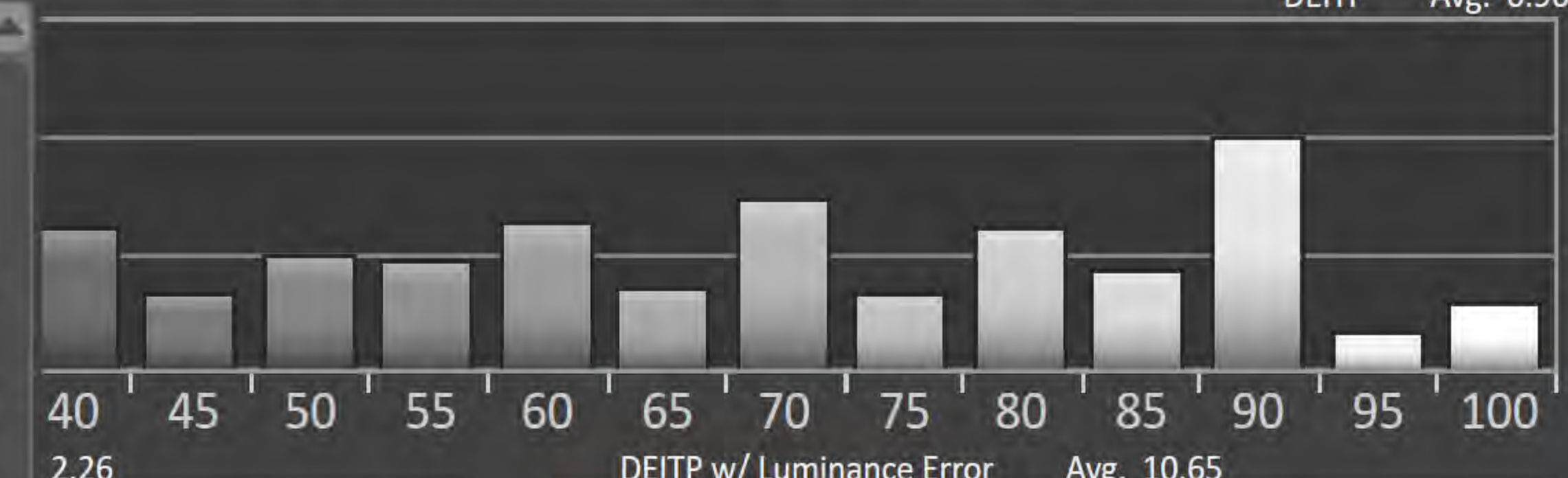
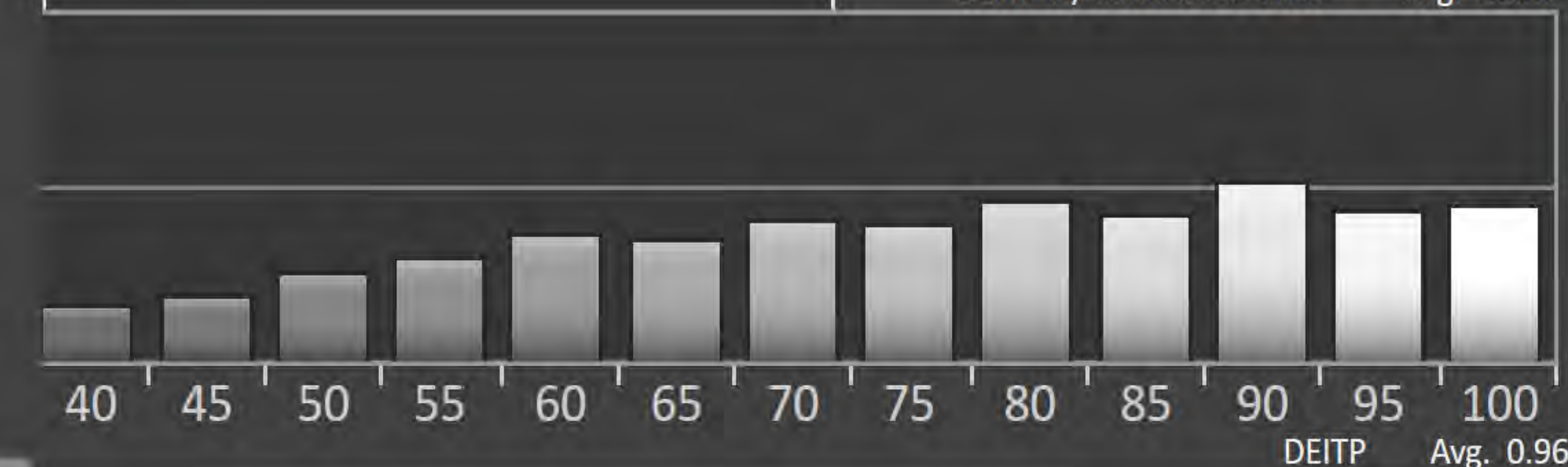
G-Gain 0

Cal 2 Notes

Show DDC settings &amp; Help

DEITP w/ Luminance Error

Avg. 11.27



Nav Bar

CAL  
Comp

Notes

Prepare  
Session  
Setup

Calibrate

2-Pt

M-Pt

CMS

Sat

LUT

PostCal  
Read

Analyze

Comp

Final  
Check

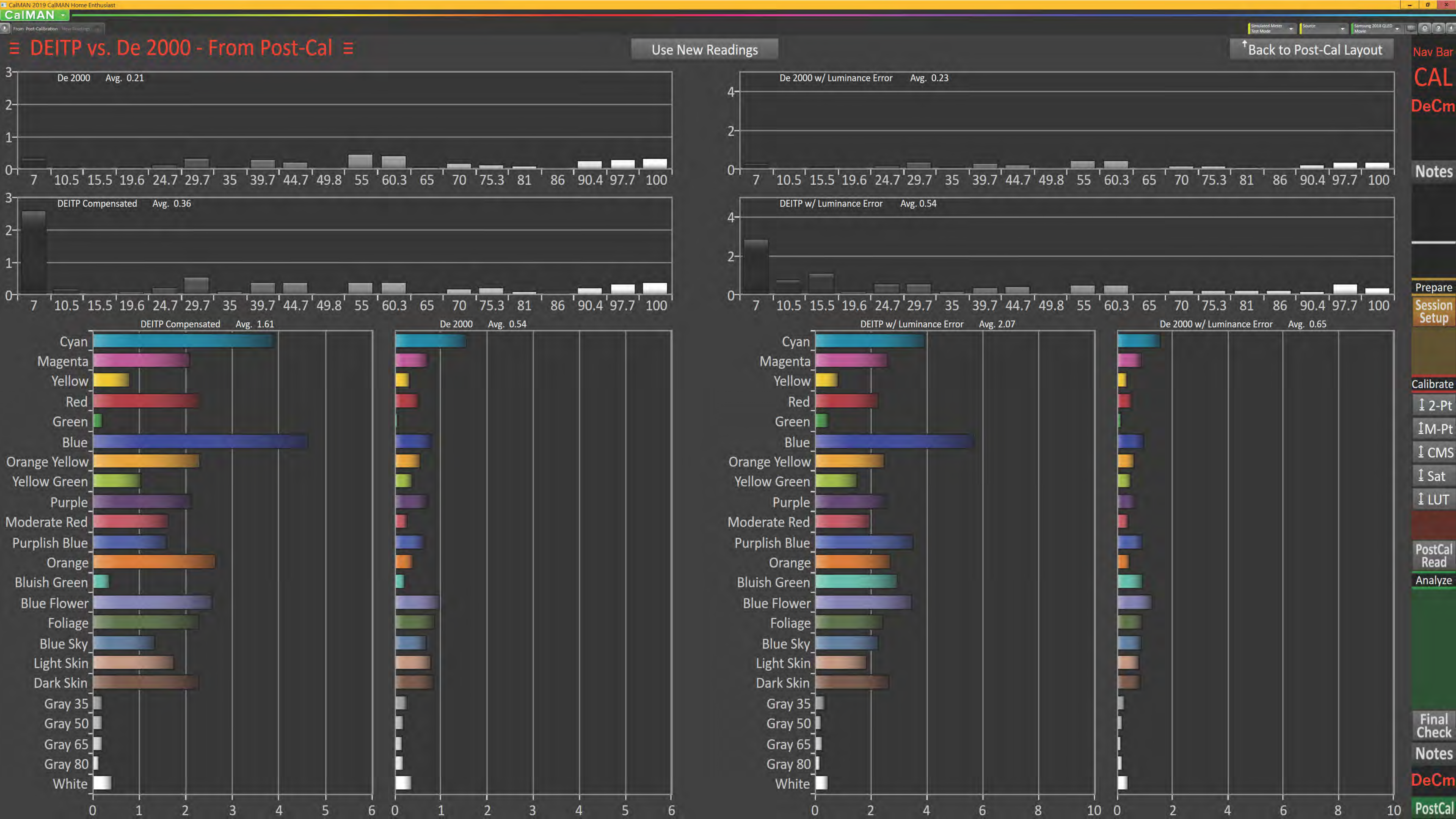
Comp

Notes

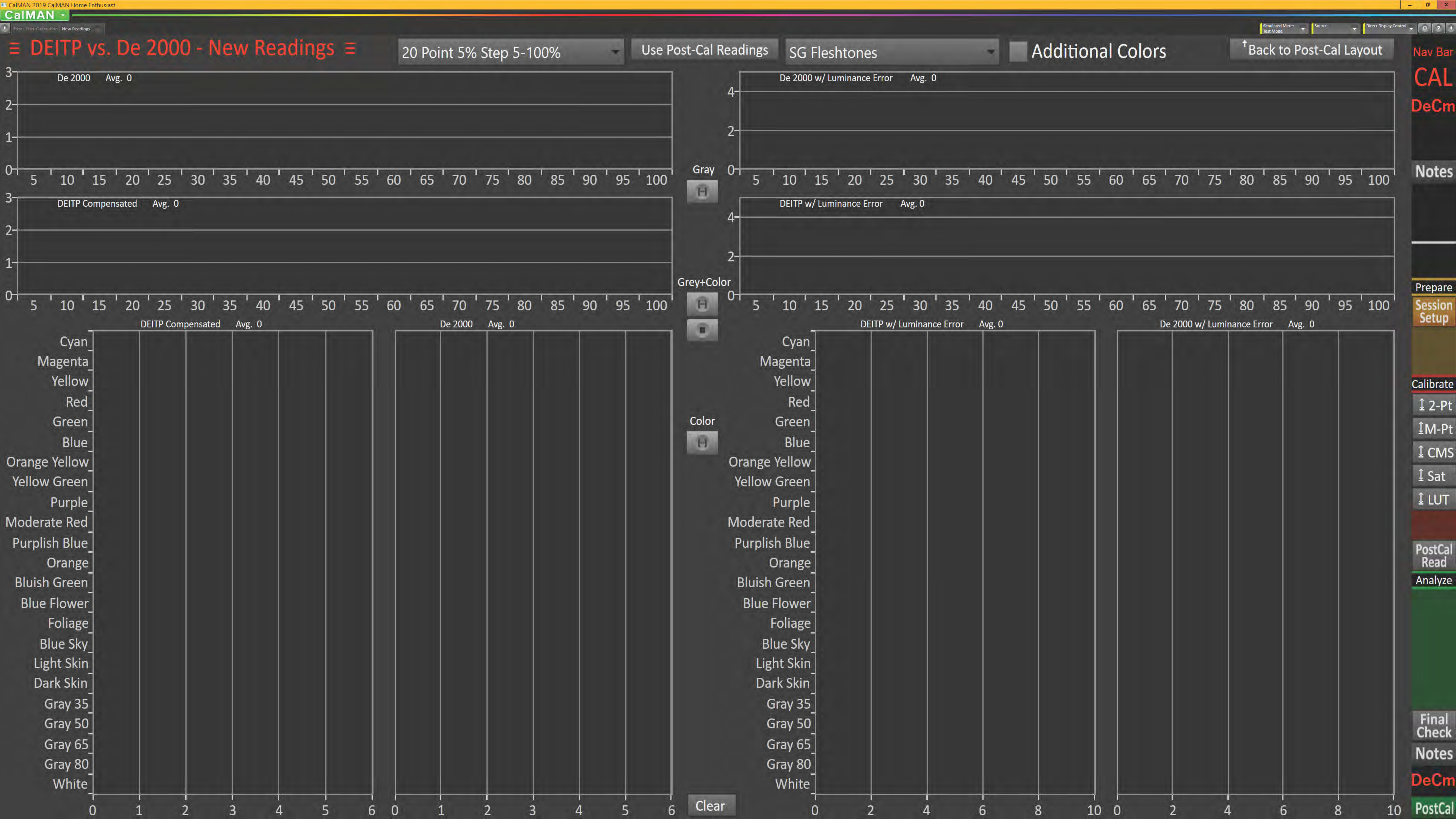
Comp

Notes

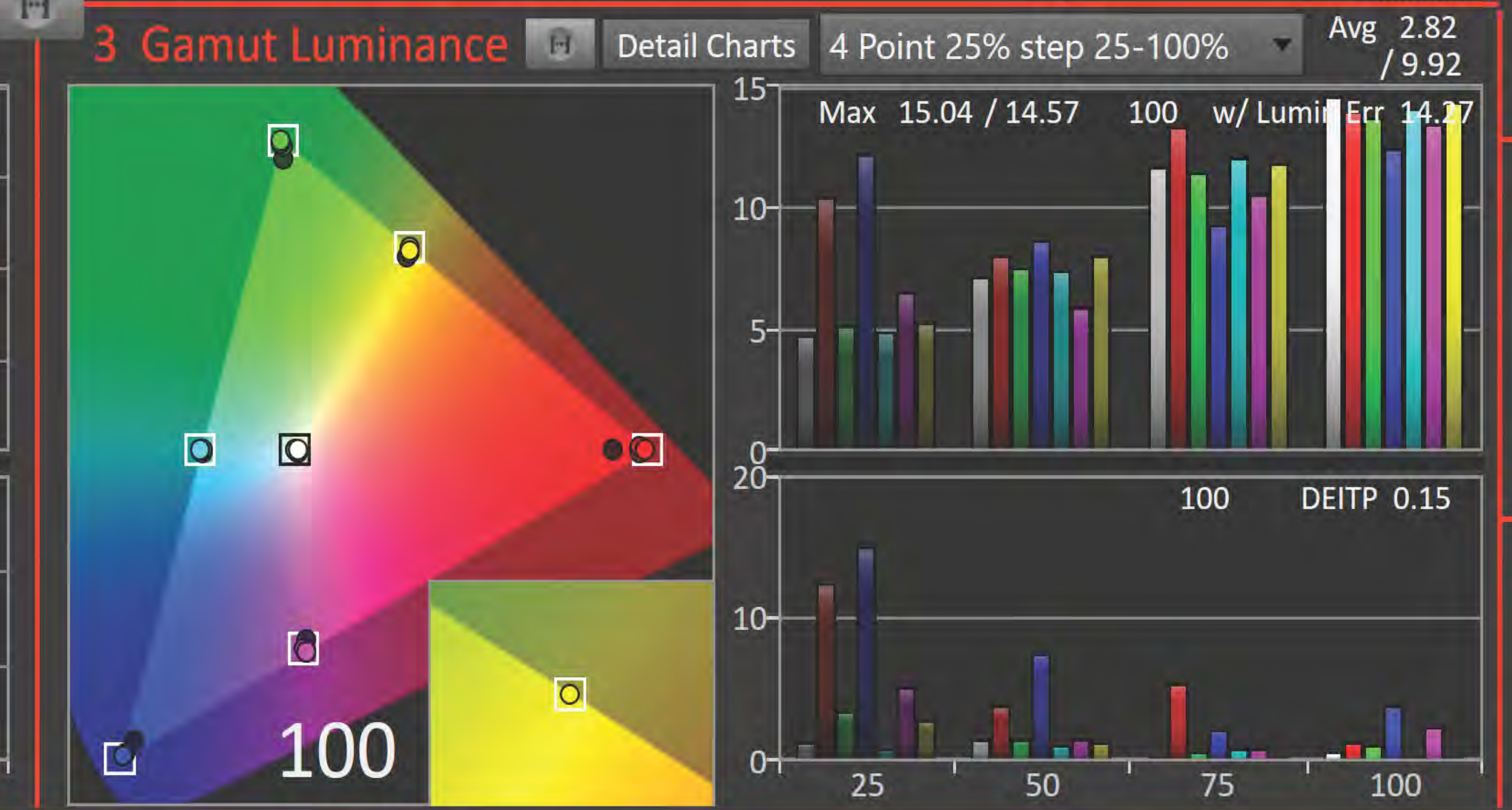
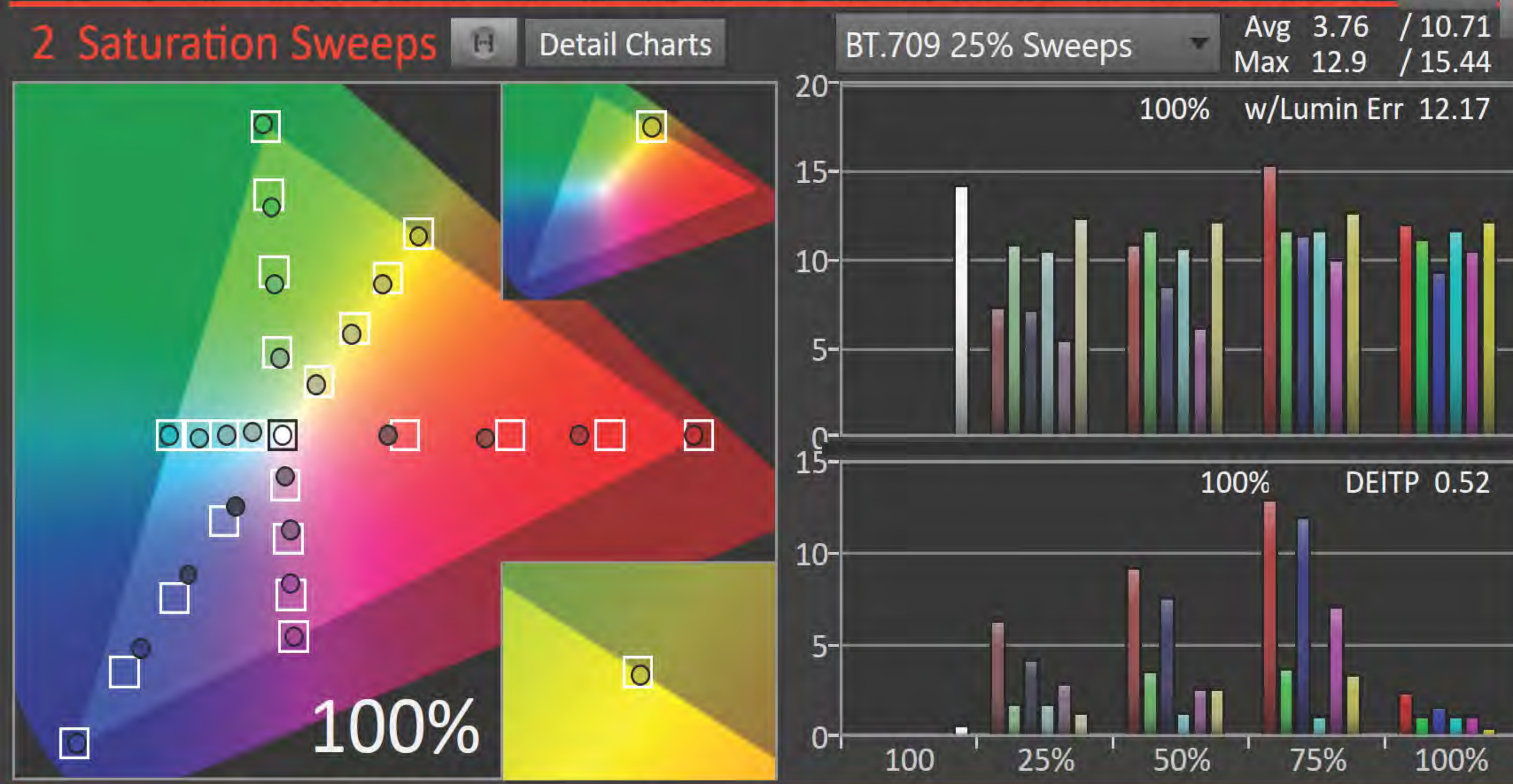
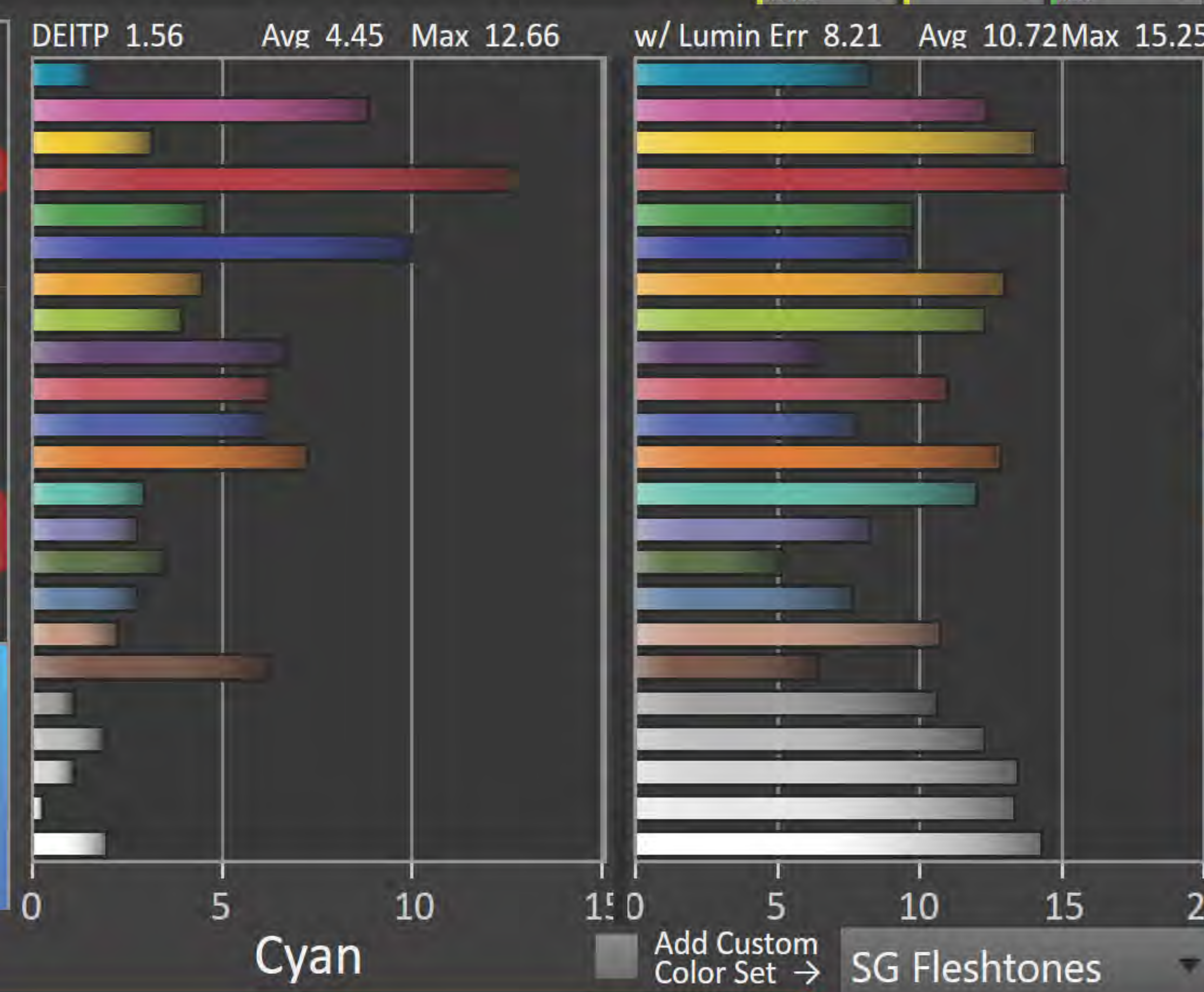
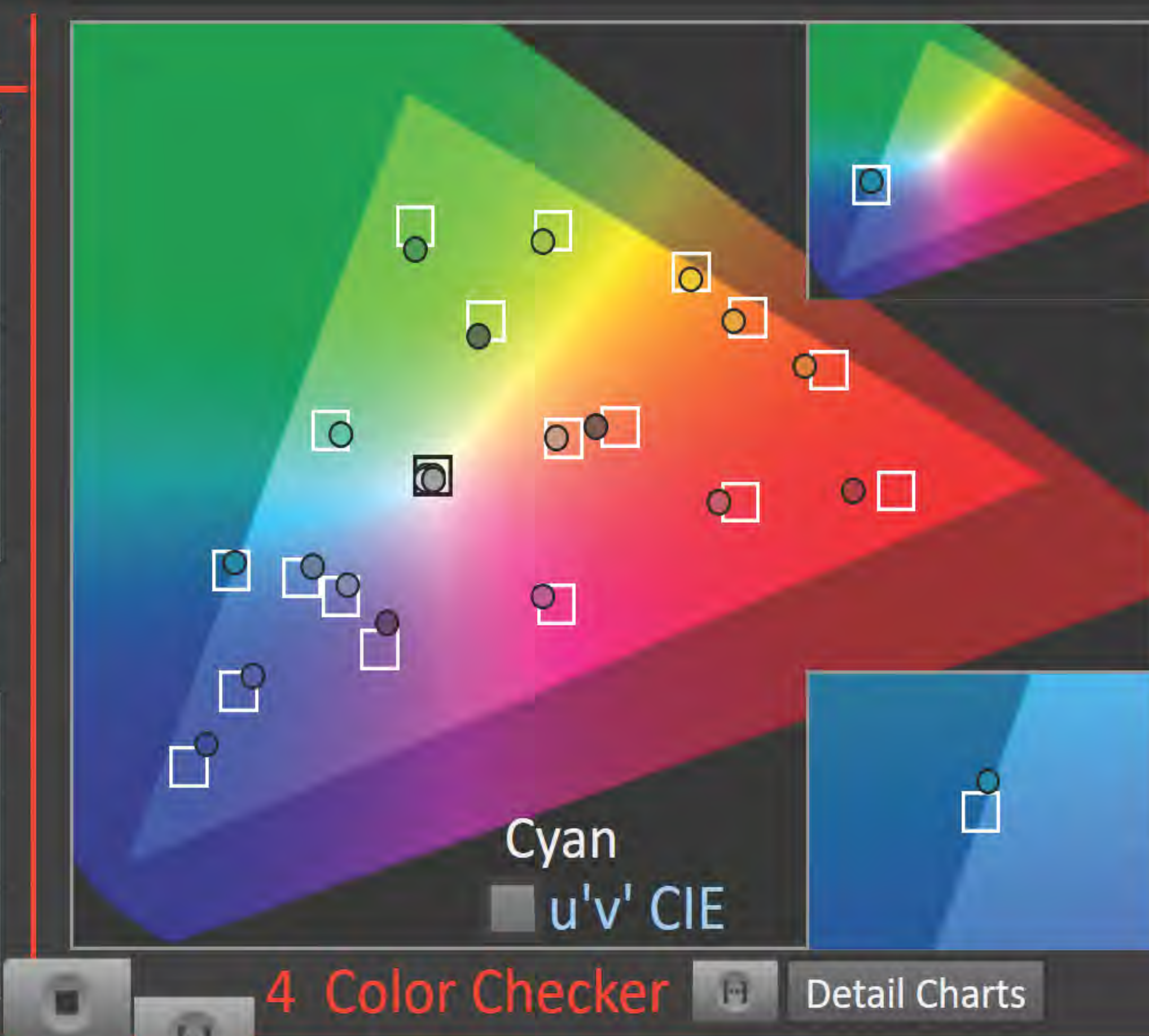
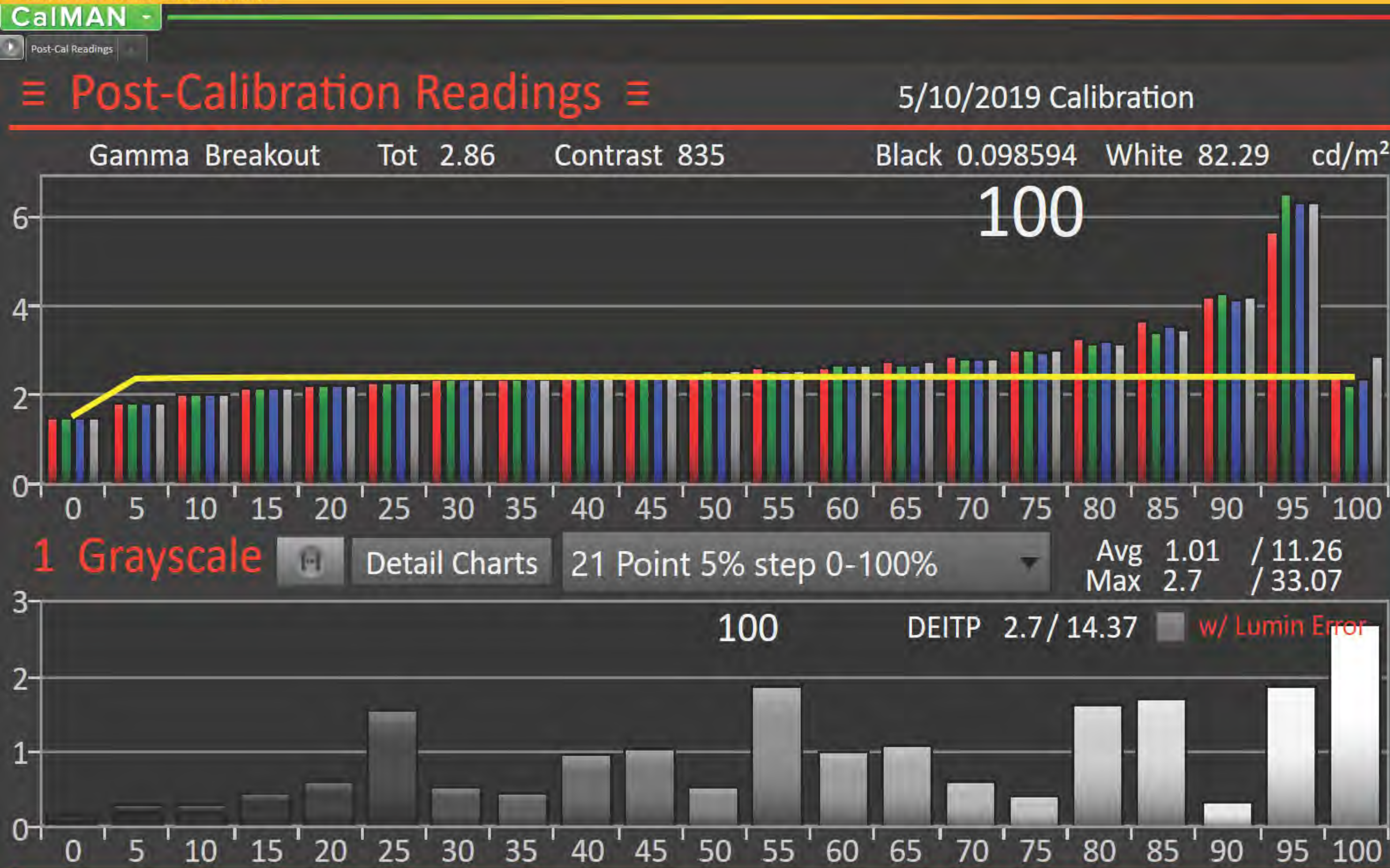












Movie 300 nits

**Post-Cal Readings**

Display Slot Movie

Contrast  TV Gamma

Brightness  Color

Backlight  Tint

Gain  Red  Green  Blue

Cut

Setup Values

Notes

DEITP vs. De 2000

Use [...] mid-screen or below to read all series or select one from the individual series above

**CAL**

PstCal Read

Back Next

PreCal Read

HOME

Prepare Session Setup PreCal Read

Calibrate

↓ Gry ↓ CMS ↓ Sat ↓ LUT ↓ Lum ↓ CCK

PreCal Read Analyze

↓ Gry ↓ Sat ↓ Lum ↓ CCK ↓ LUT

Comp Final Check

PstCal



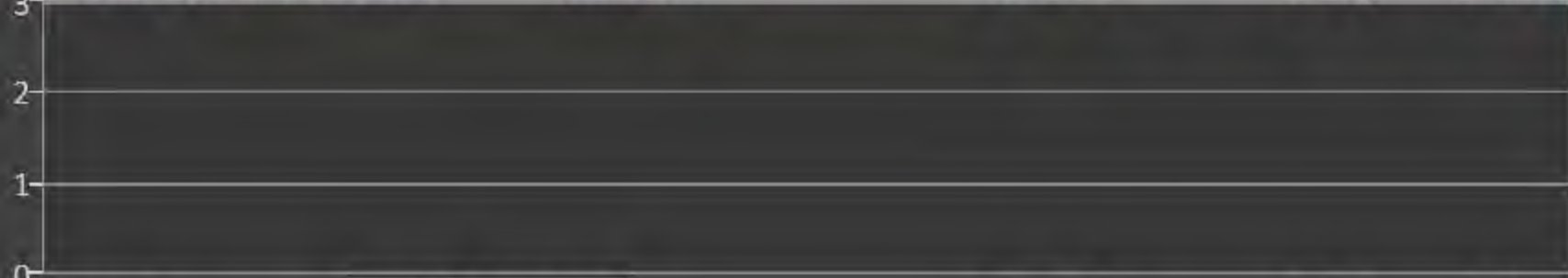
# Post-Cal Multi-Point Grayscale Detail

Comparator

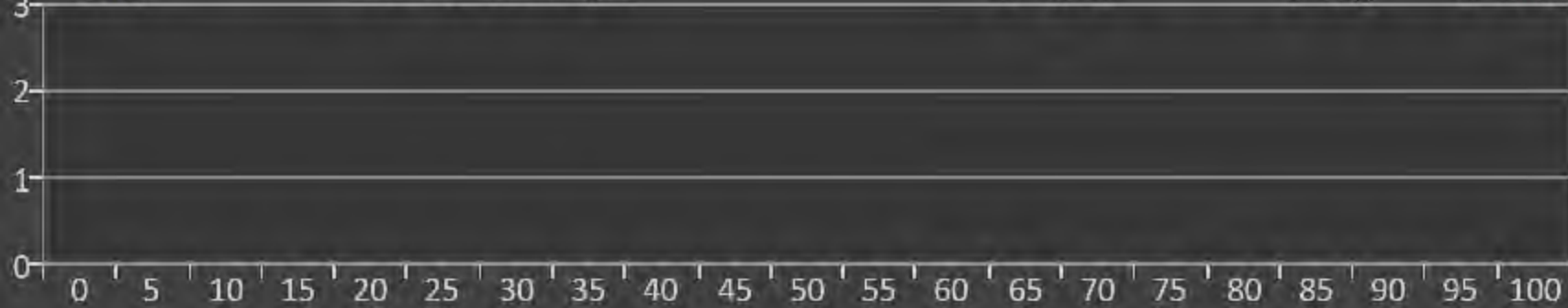
## POST-CAL

0  
White 100  
Black 0

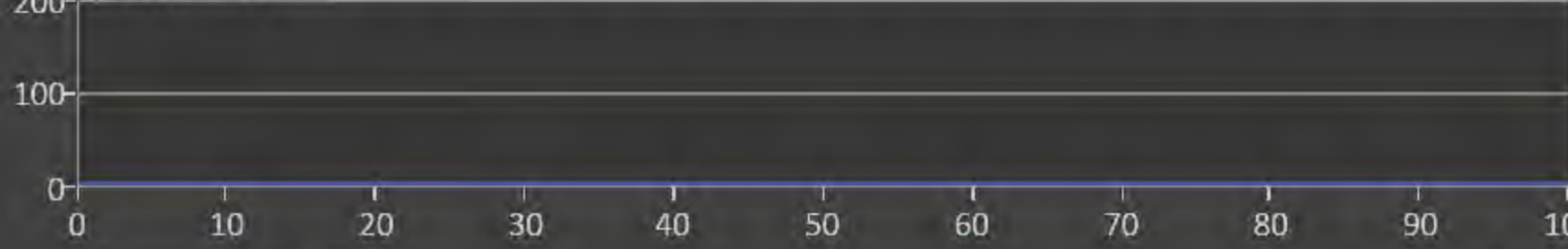
DEITP w/ Luminance Error Contrast 0 0 dE 0 0 Avg 0 Max



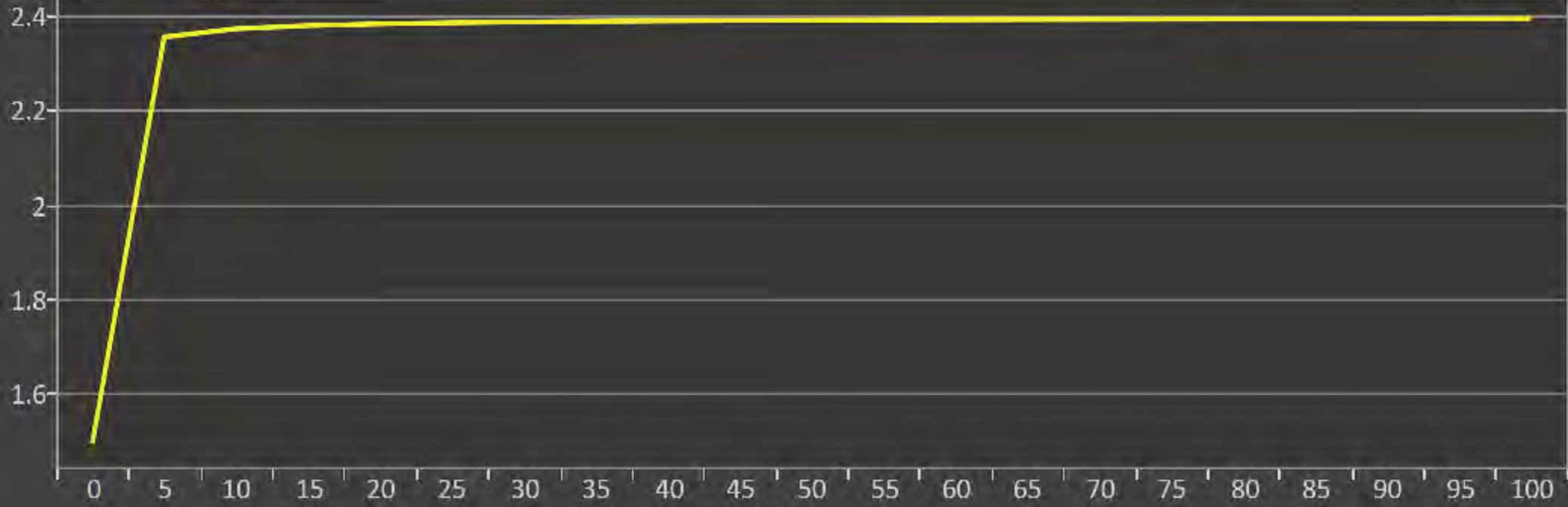
DEITP Post-Cal Readings 0 dE 0 0 Avg 0 Max



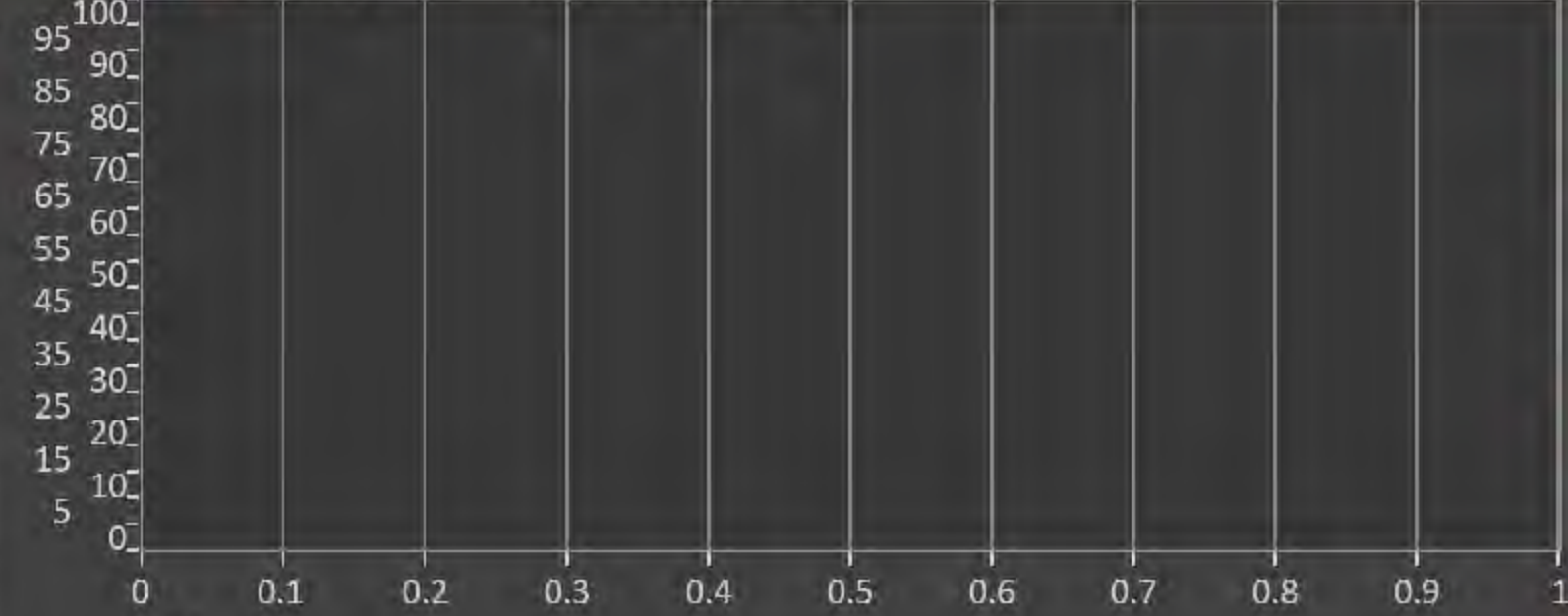
RGB Balance



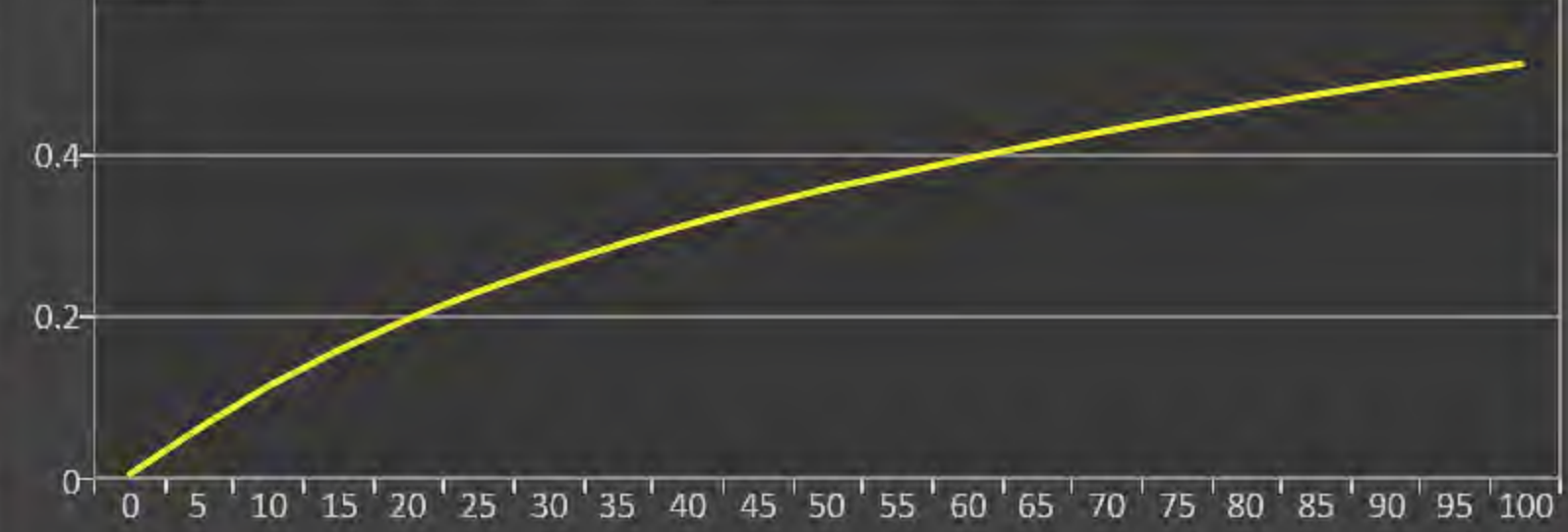
Gamma Target 2.4 0 2.39 Total



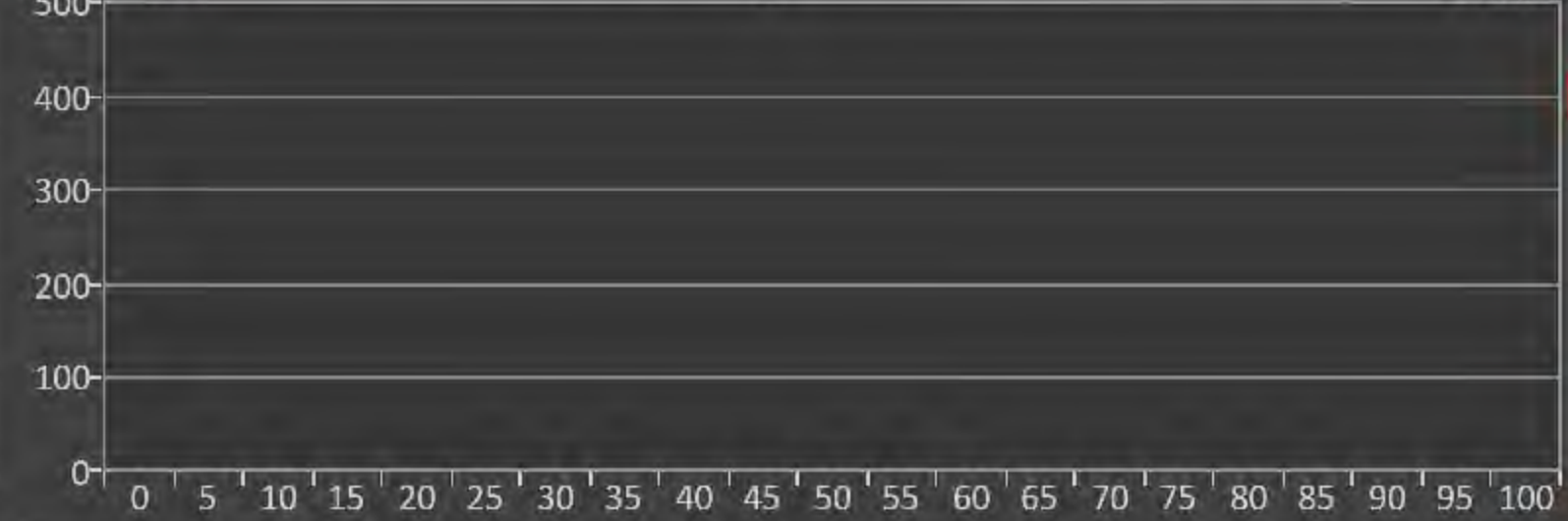
Luminance cd/m² Target 0.0001 0



EOTF



CCT 0 0 Avg



ANL

PstCal

Gray

Back

Next

PreCal

# Data

HOME

Prepare

Session Setup

PreCal Read

Calibrate

Gry

PostCal Read

Analyze

PreCal

Sat

Lum

CCK

LUT

Final Check

PstCal

Gray

Notes

Pre-Cal

# Datagrid

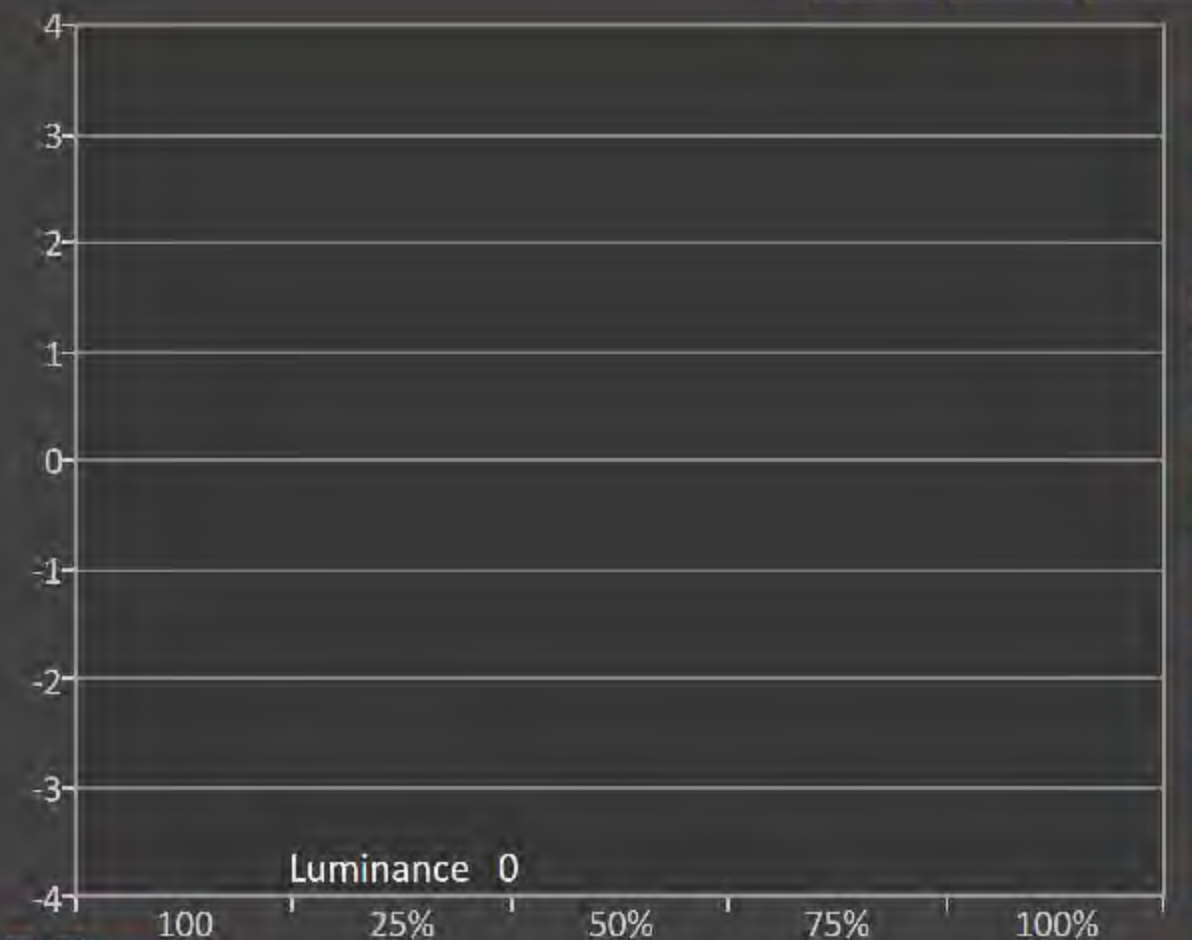
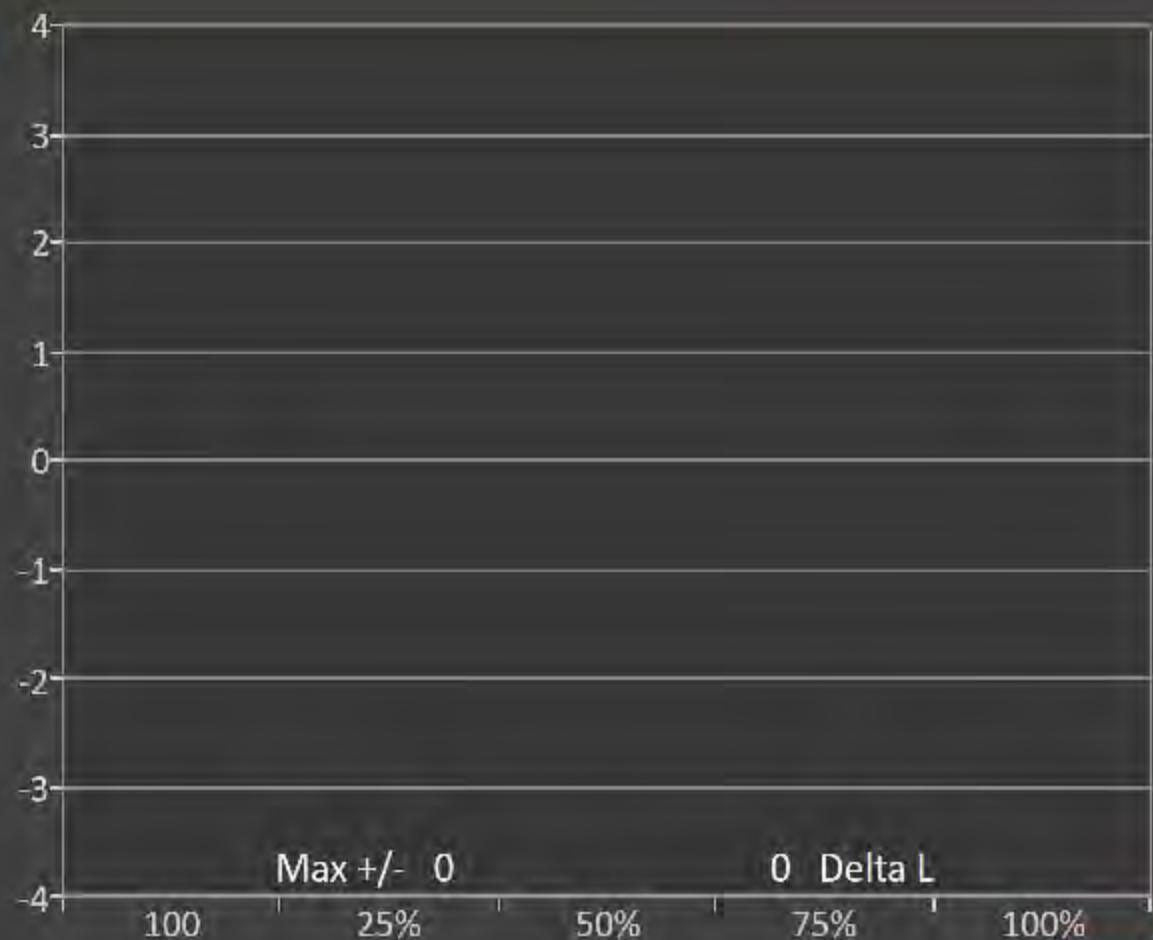
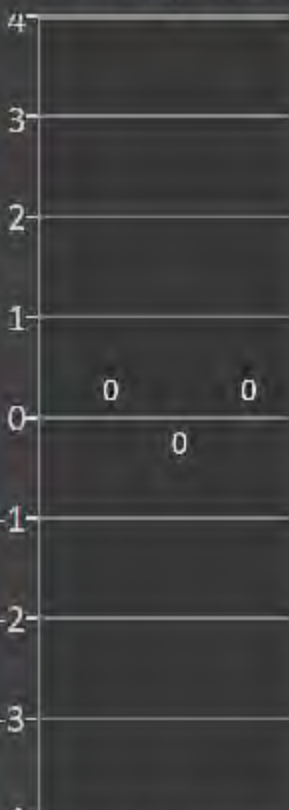
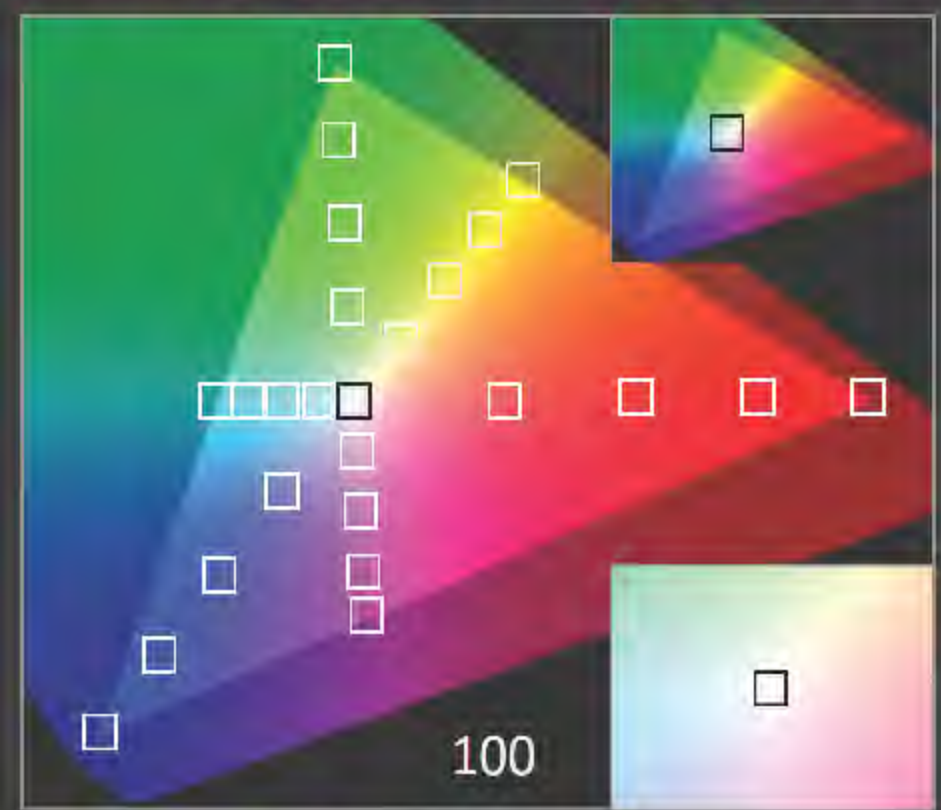
Back

Next

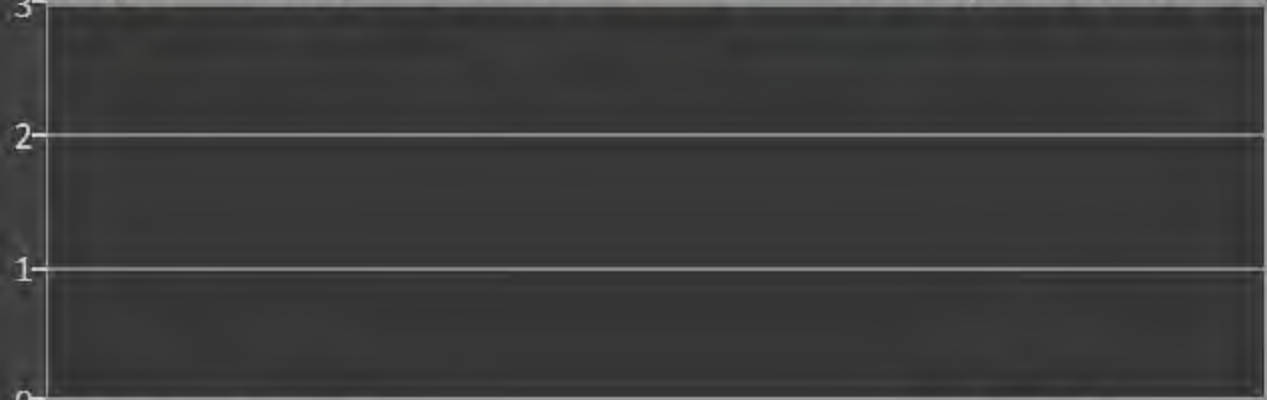


# Post-Cal Saturation Sweeps Detail

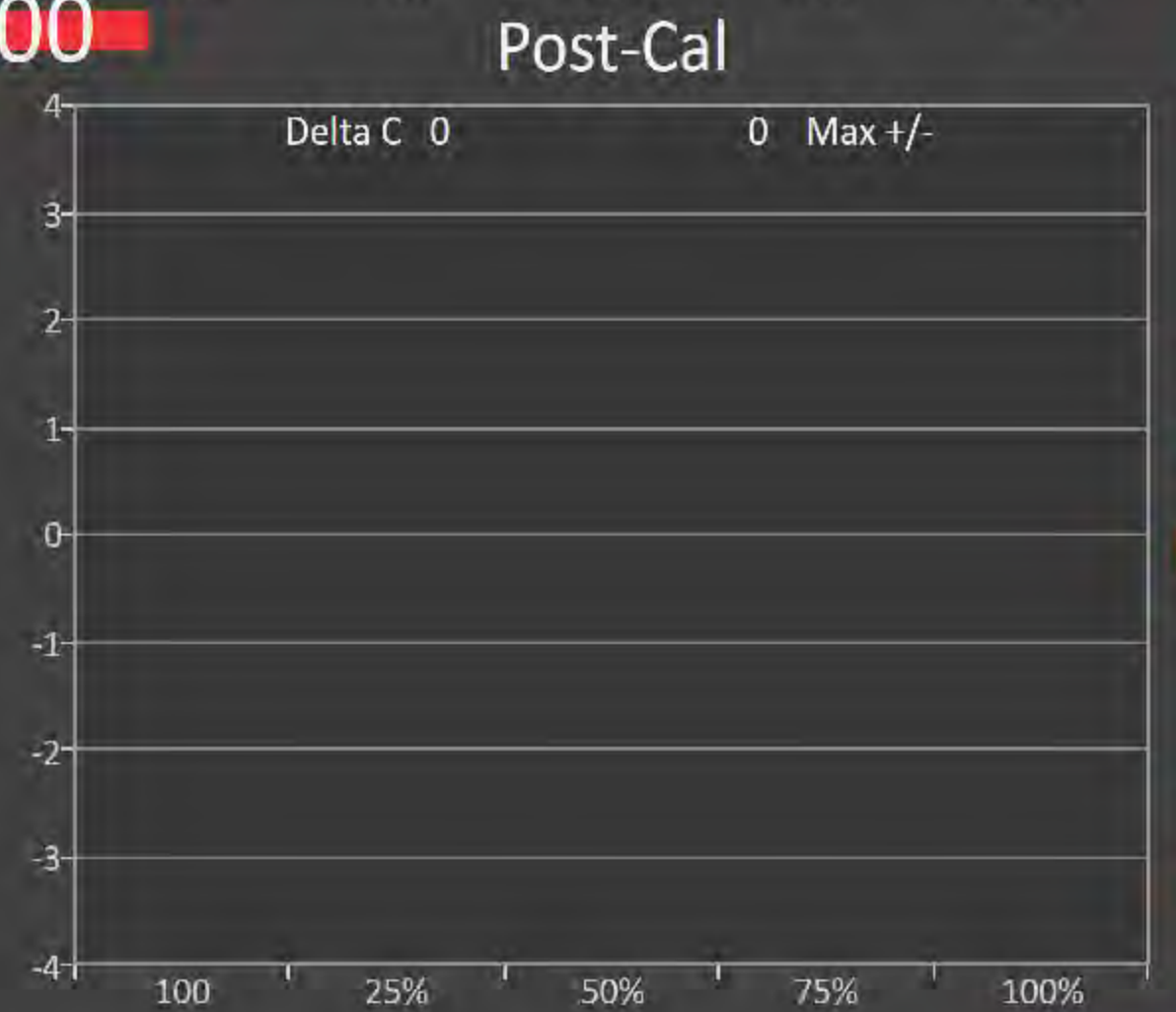
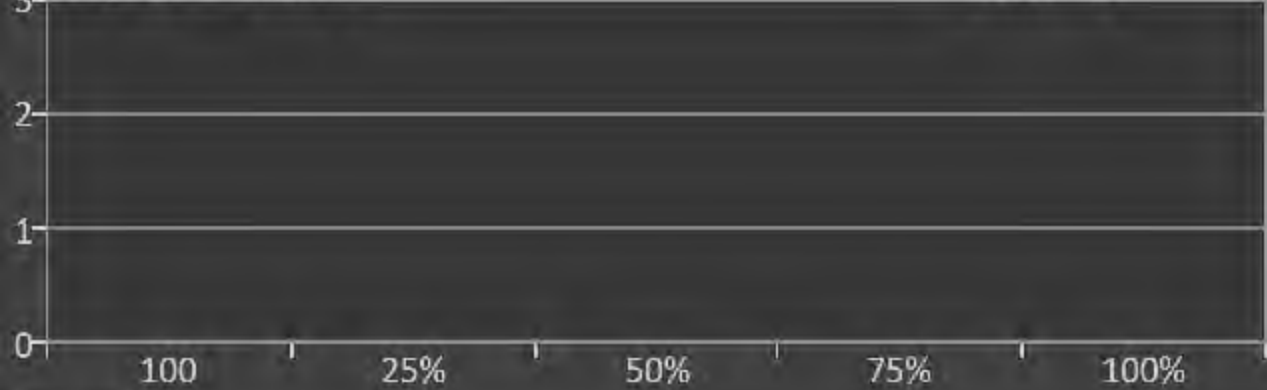
Comparator



Avg 0 Max 0 Post-Cal Readings DEITP w/ Lumin Error 0



Avg 0 Max 0 DEITP 0



100

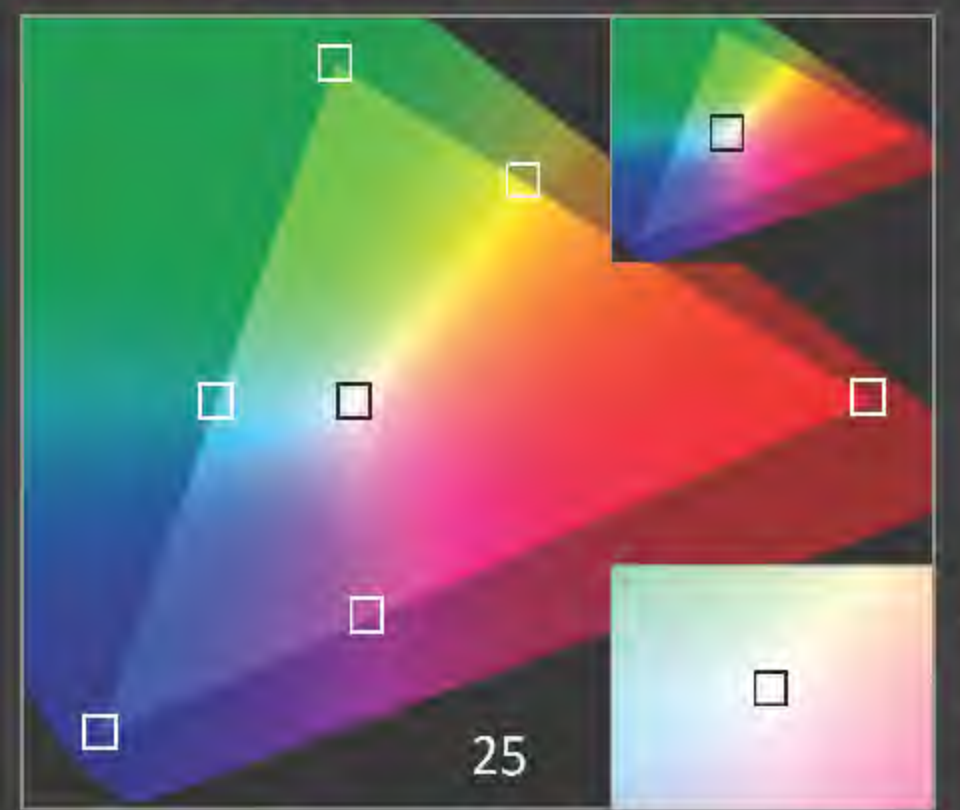
Navigation and status sidebar:

- Buttons: Back, Next, PreCal, # Data, HOME, Prepare, Session Setup, PreCal Read, Calibrate, I Sat, PostCal Read, Analyze, Gry, Lum, CCK, LUT, Final Check, PstCal, Satur, Notes.
- Top status: ?
- Bottom status: Pre-Cal, # Datagrid, Back, Next.



# Post-Cal Gamut Luminance Detail

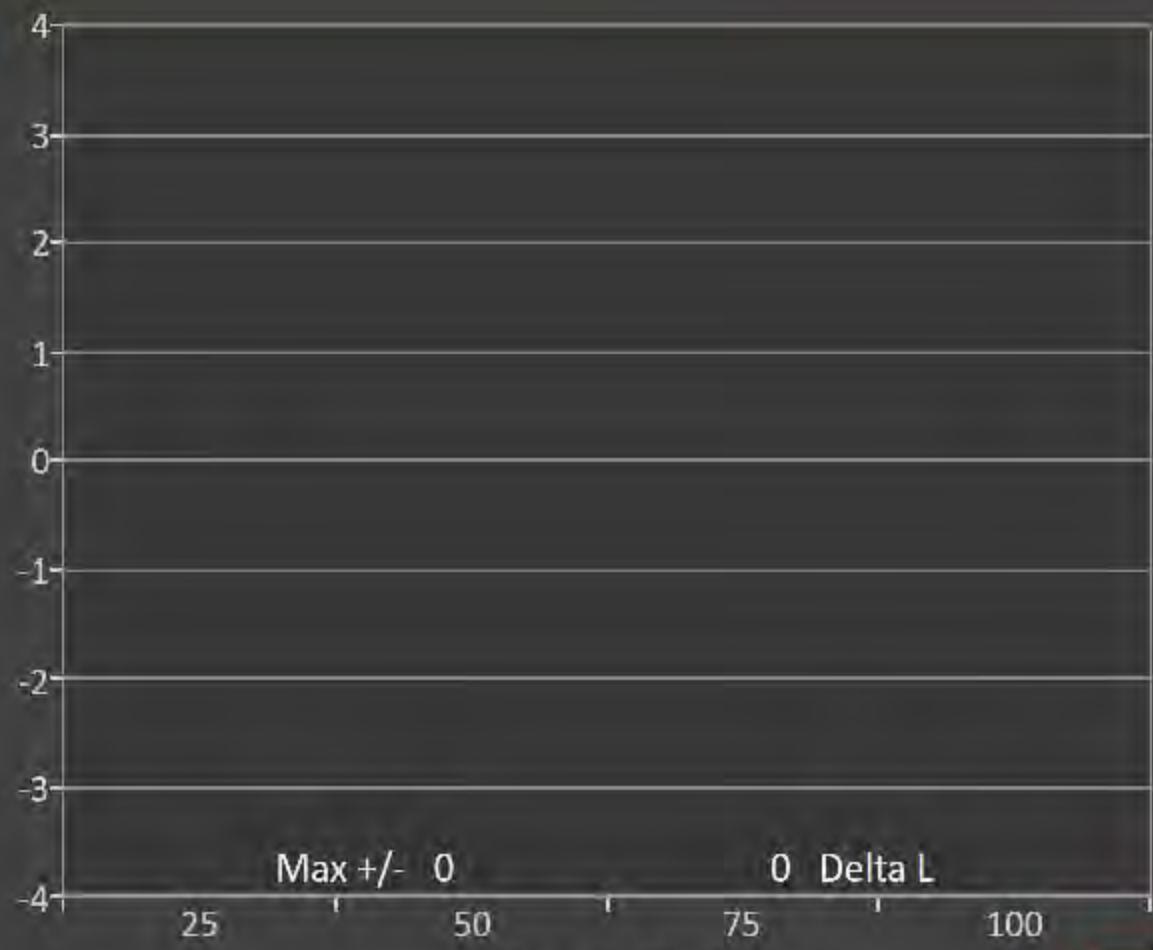
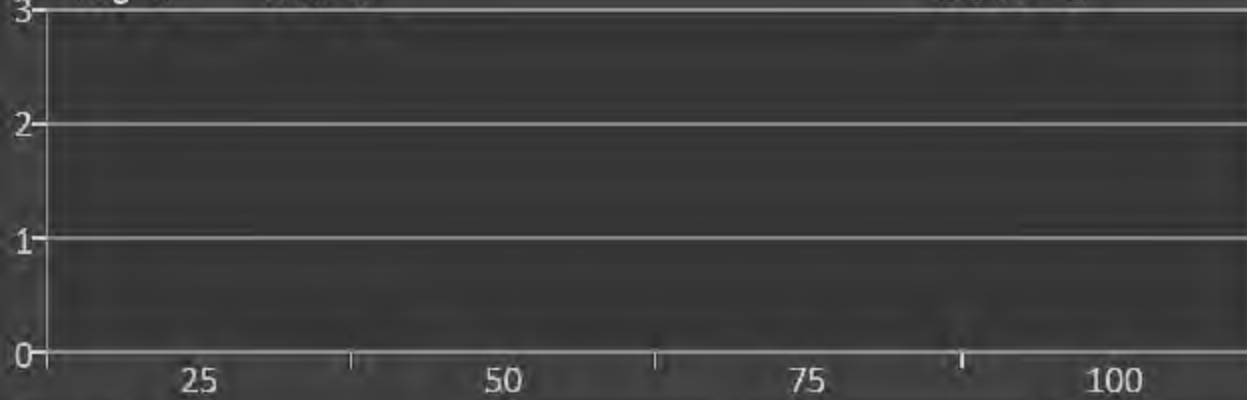
Comparator



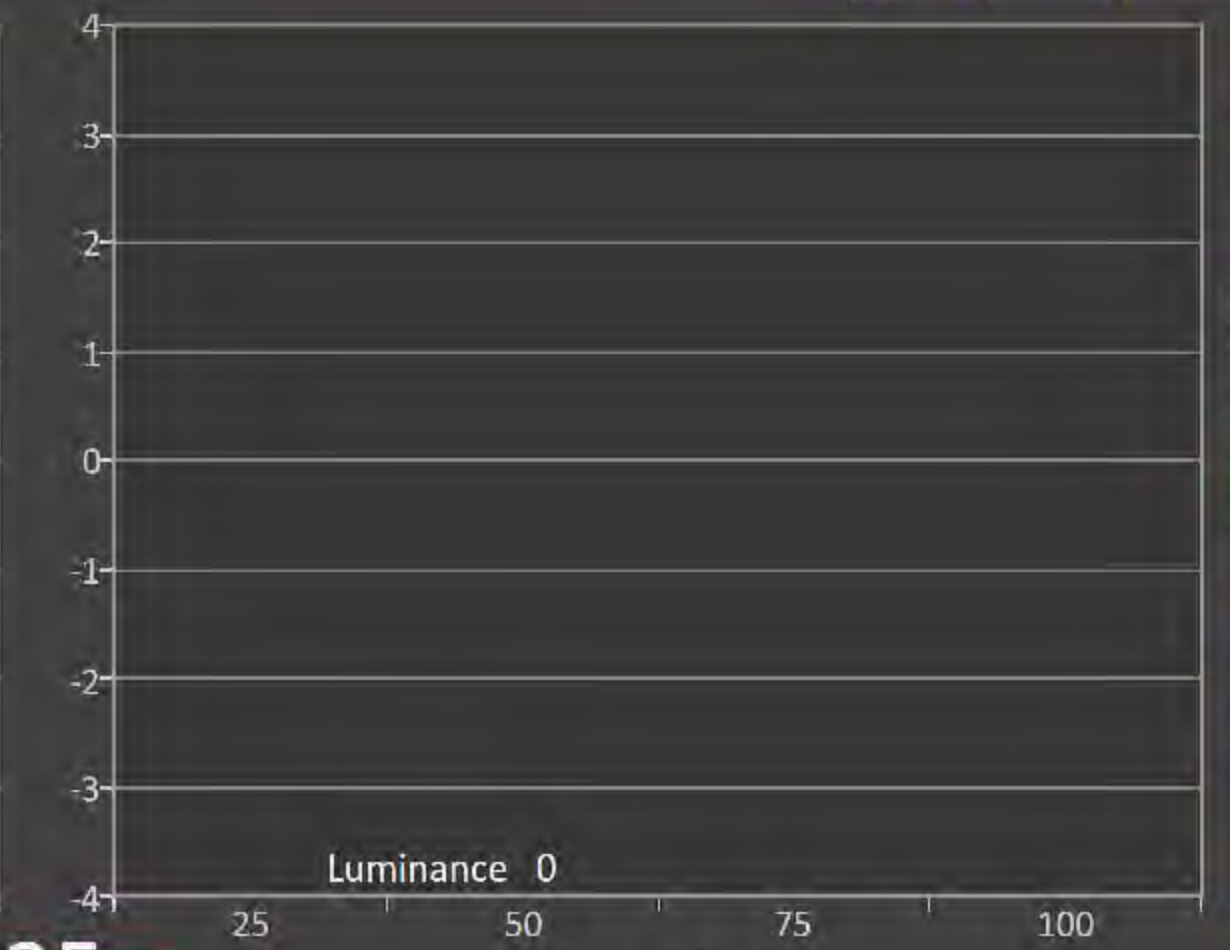
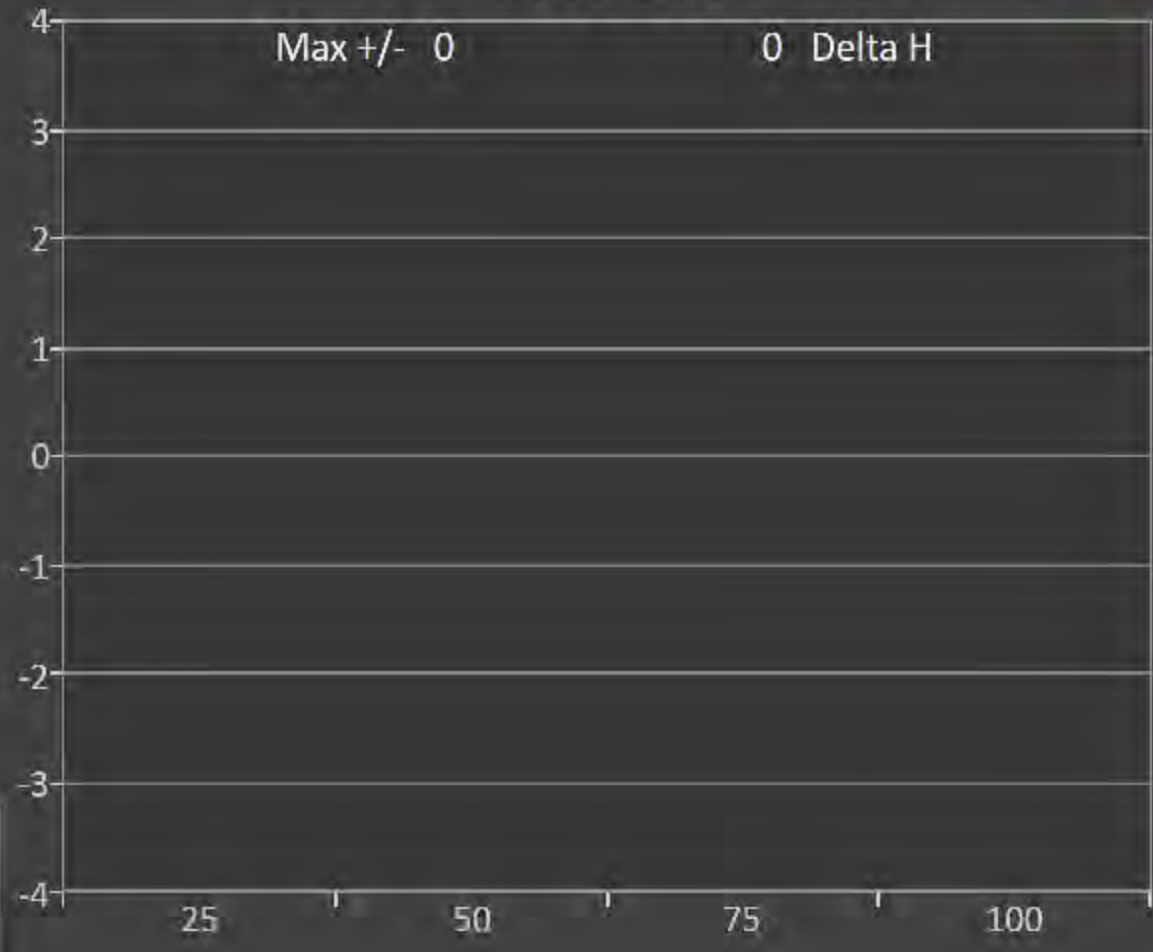
Avg 0 Max 0



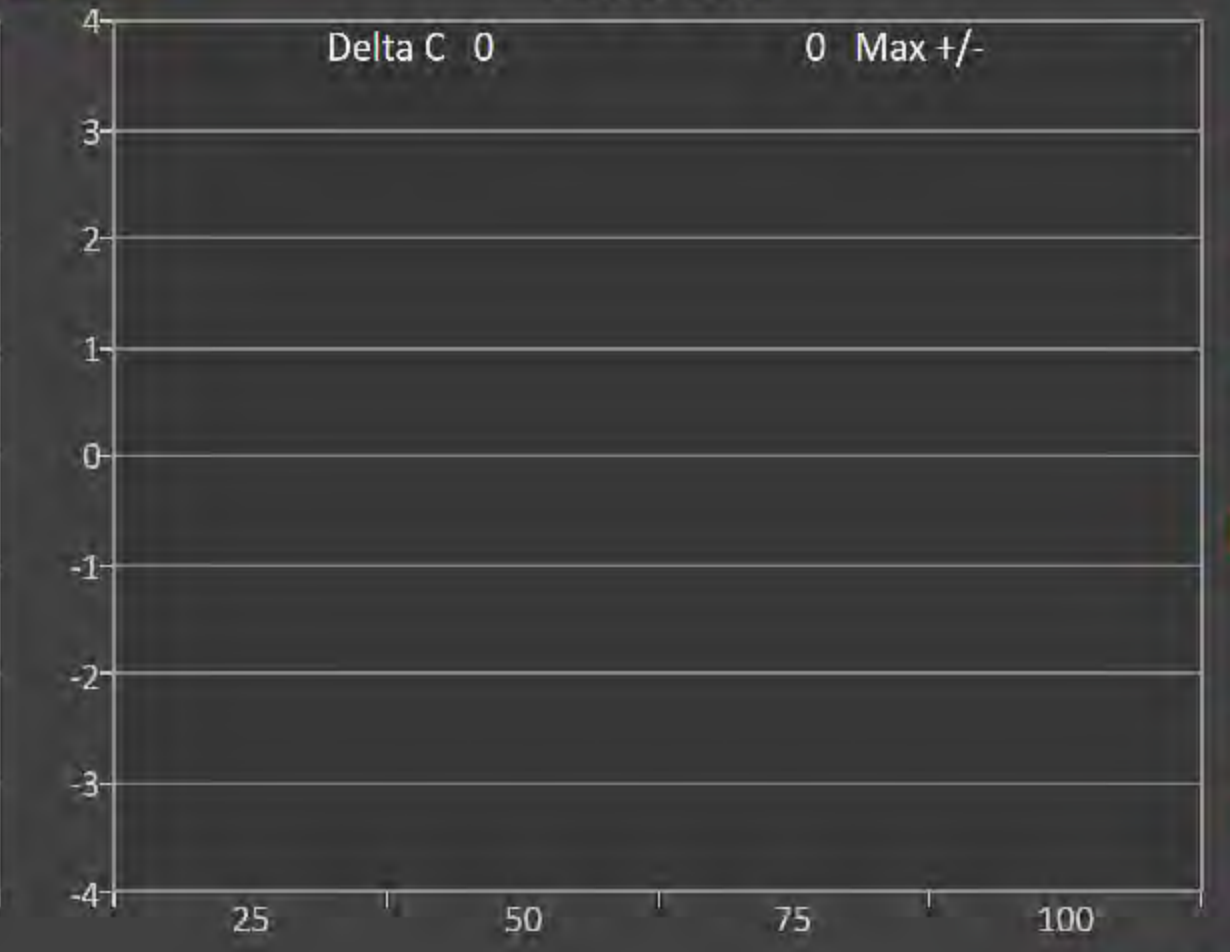
DEITP 0



Post-Cal Post-Cal Readings 25



Post-Cal



ANL

PstCal

Lumi

Back

Next

PreCal

# Data

HOME

Prepare

Session Setup

PreCal Read

Calibrate

I Lum

PostCal Read

Analyze

f Gry

f Sat

PreCal

f CCK

f LUT

Final Check

PstCal

Lumi

Notes

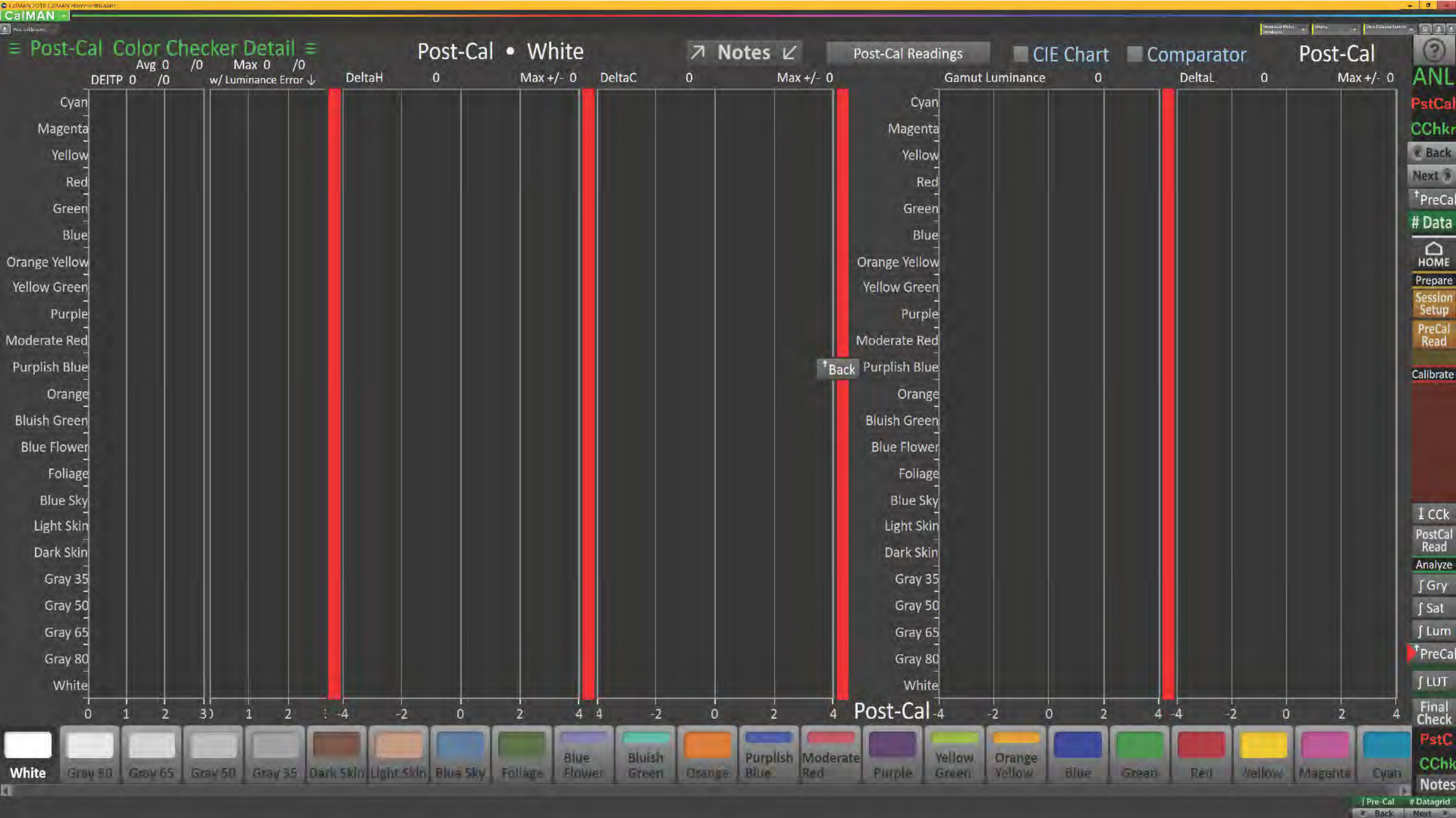
Pre-Cal

# Datagrid

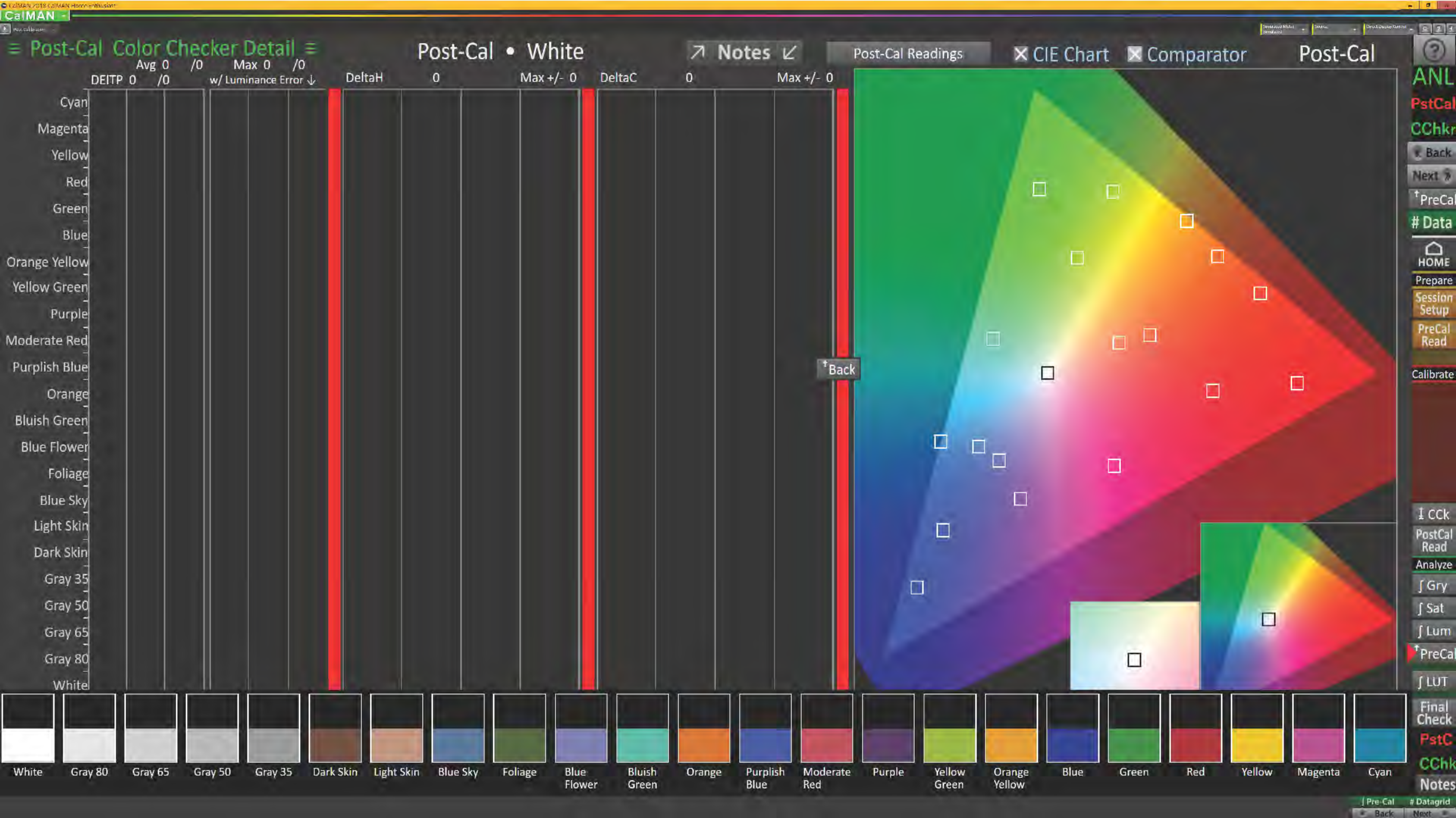
Back

Next



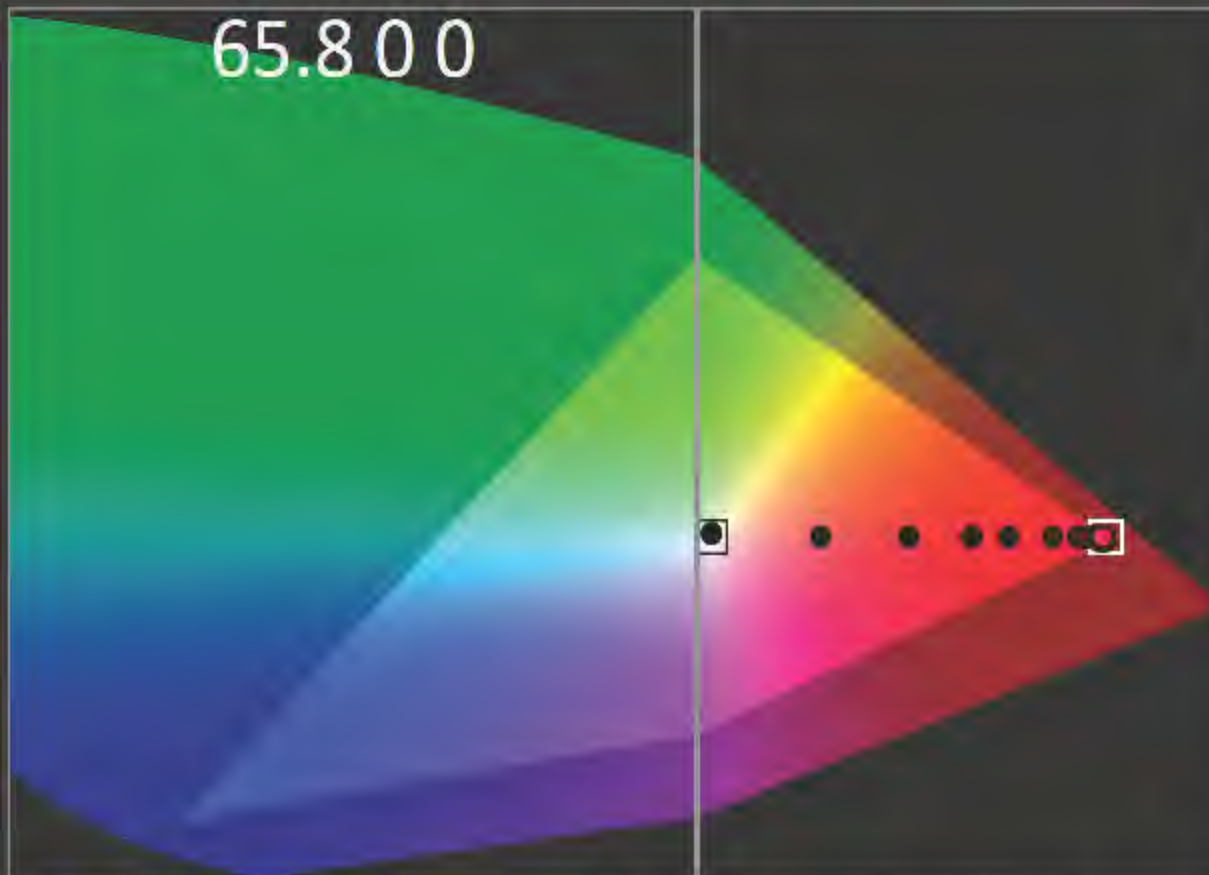




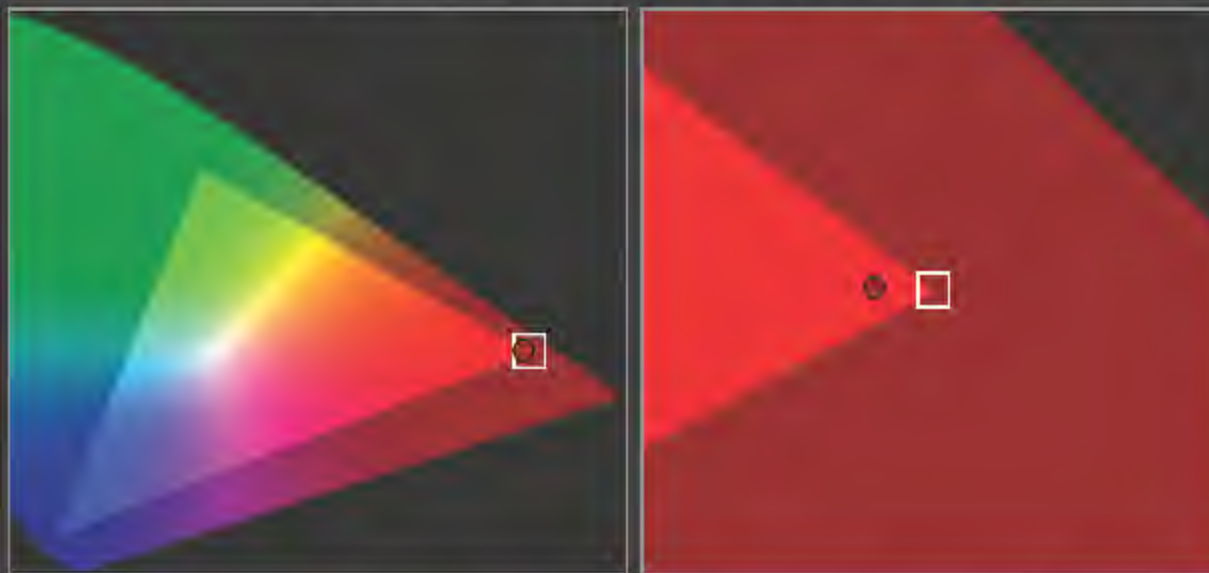




# 3D Color Cube LUT Full Calibration Detail 1

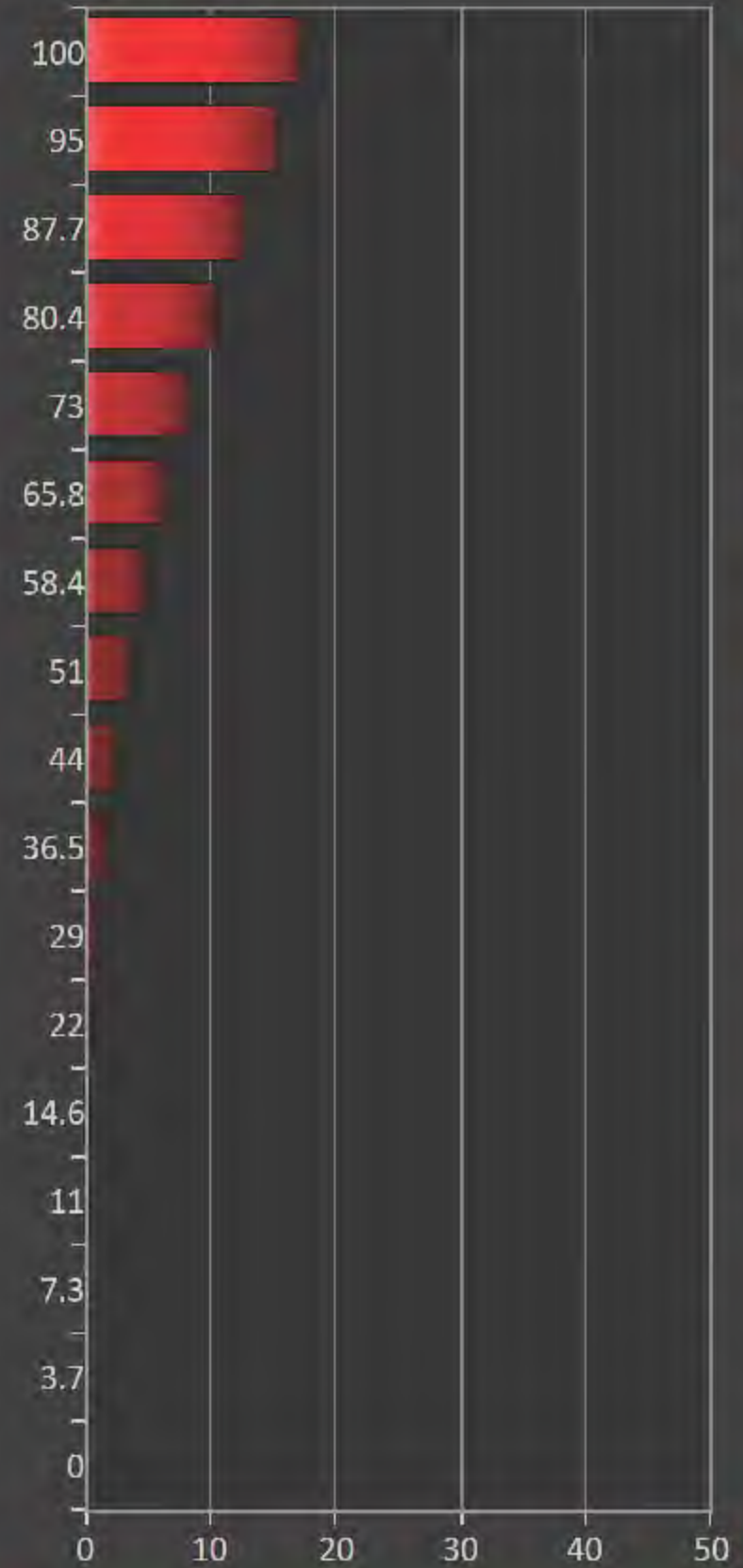
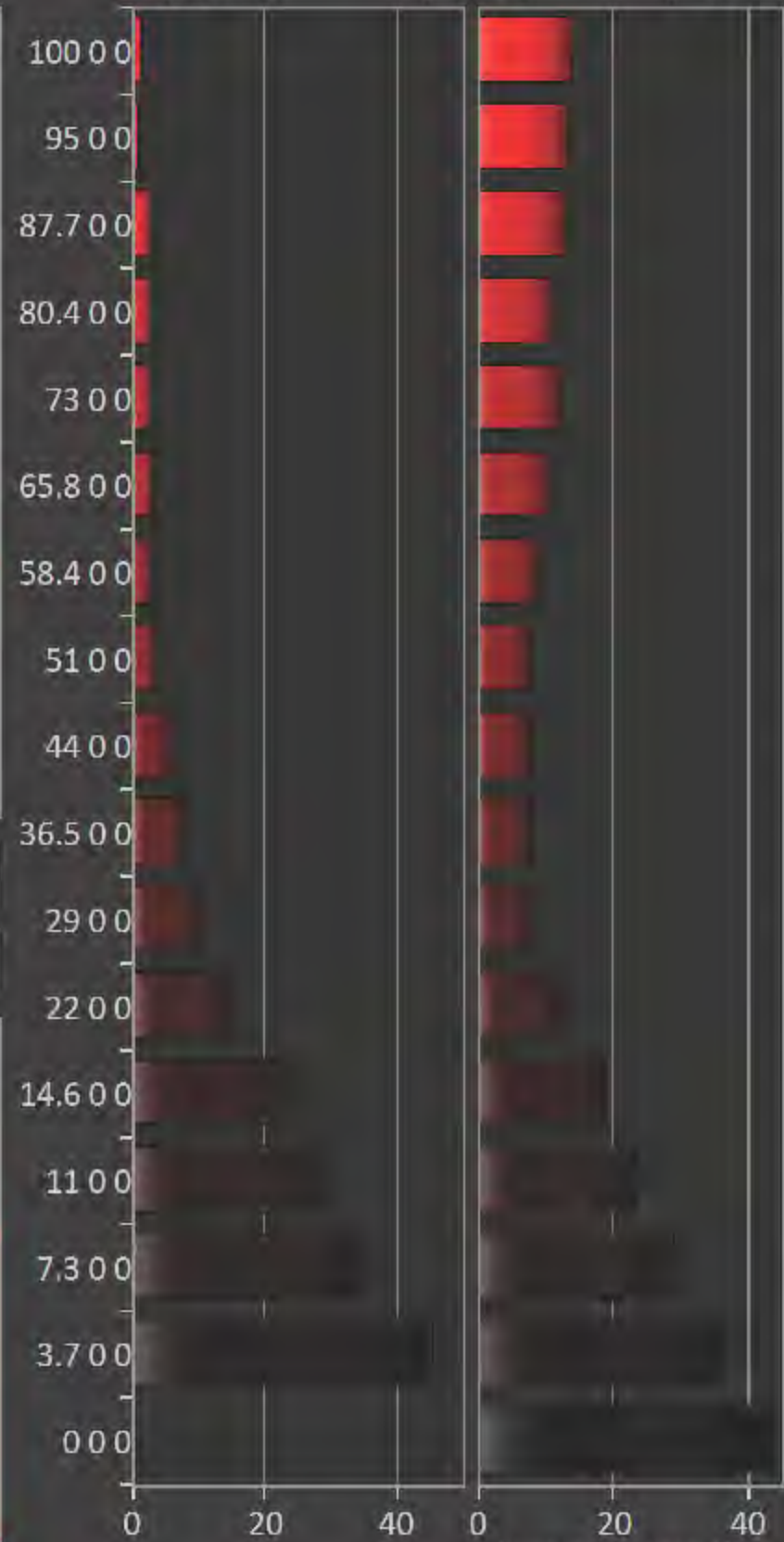


Red Green Blue White  
Cyan Magenta Yellow Charts 2



DEITP 3.28 / 10.86 Avg 12.11 / 14.81 Max 45.3 / 36.52

Delta L -2.43 Avg -1.06 Max 4.53 Luminance 6.71466

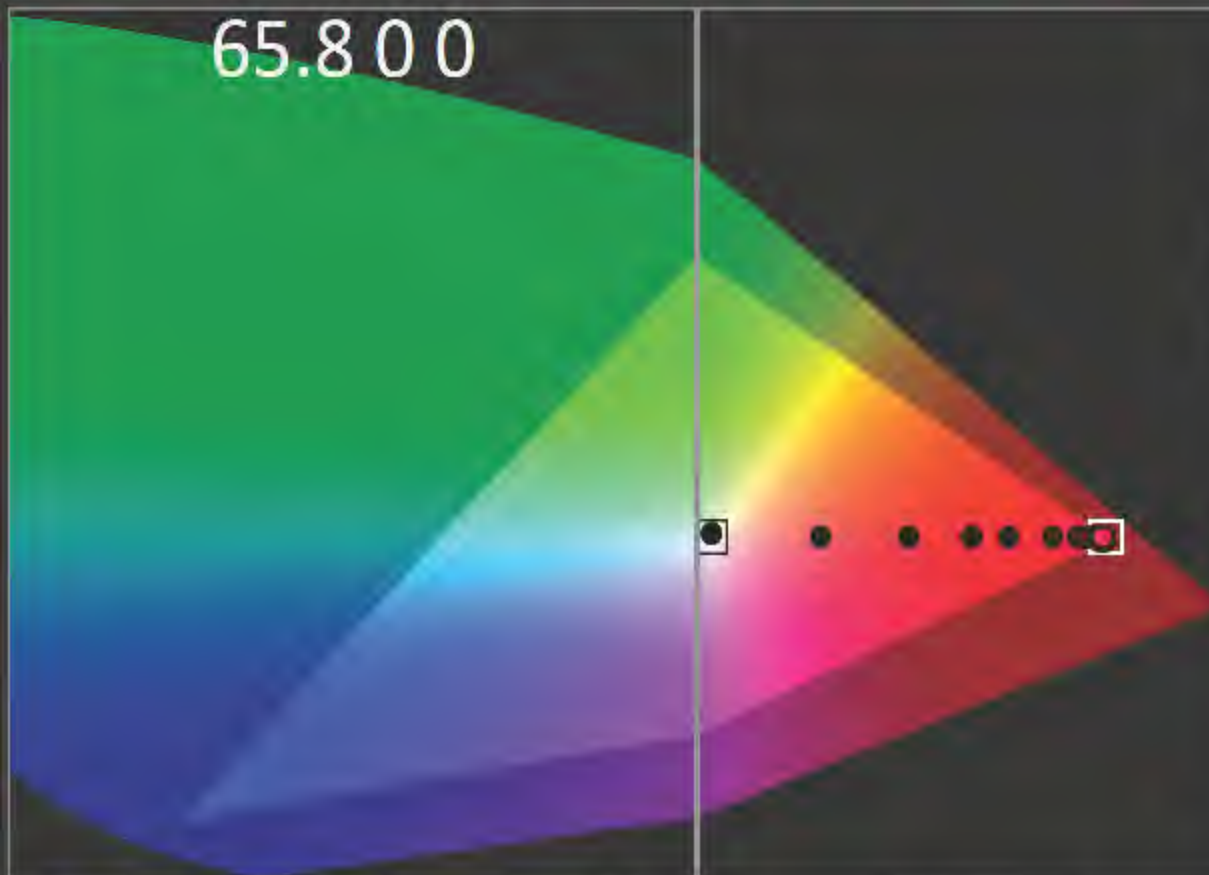


Navigation and status panel on the right side of the interface.

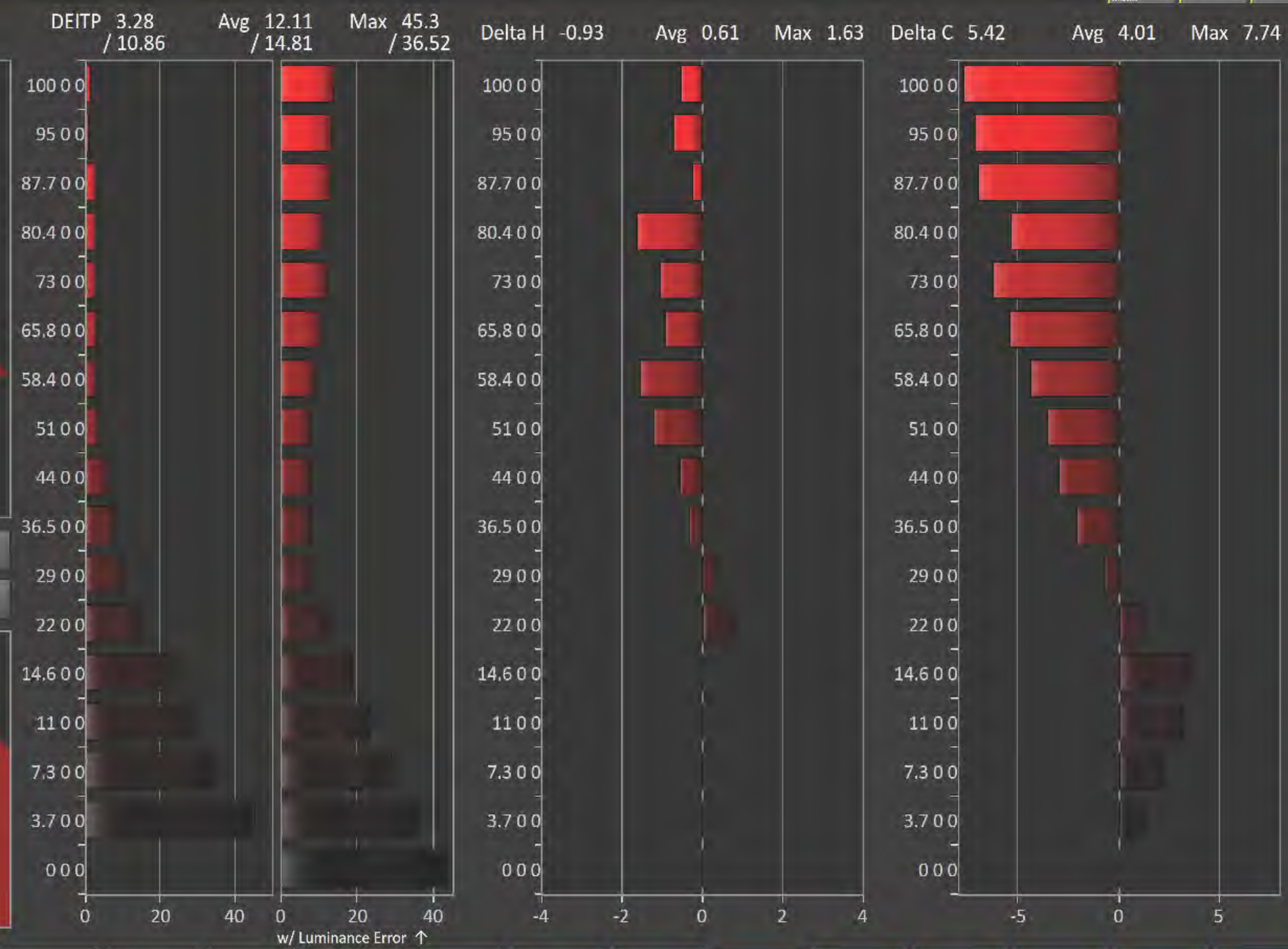
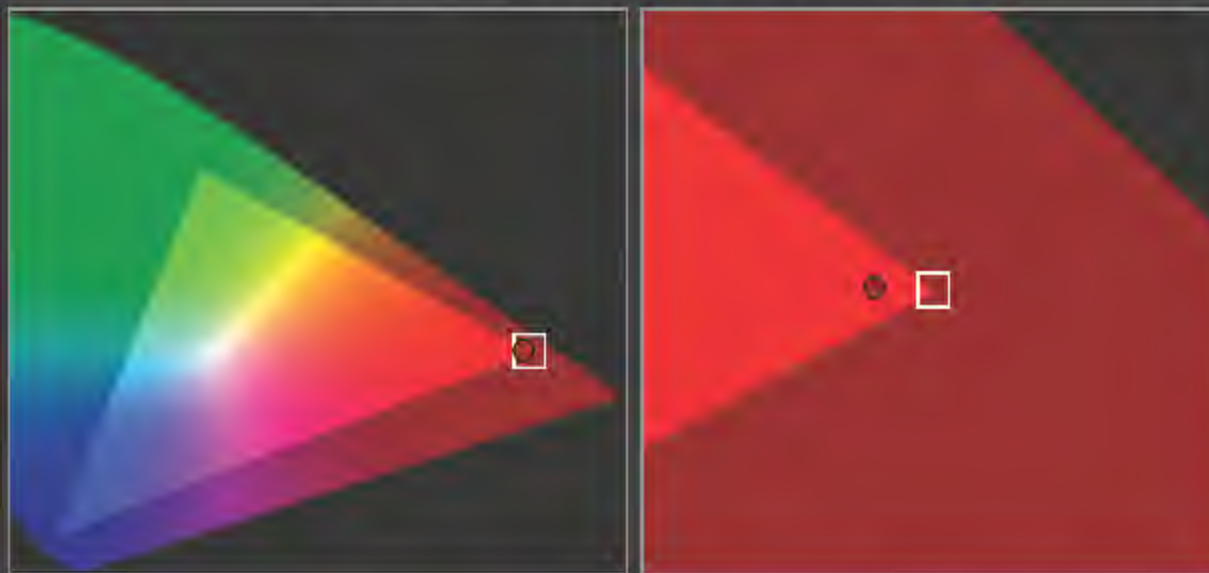
- Buttons: Back, Next, Calib, Home, Prepare, Session Setup, PreCal Read, Calibrate, PostCal Read, Analyze, Gry, Sat, Lum, CCK, Final Check, CAL.
- Search bar: Search
- Language: English
- Notes: Notes
- Grid: # Dalagrid



# 3D Color Cube LUT Full Calibration Detail 2



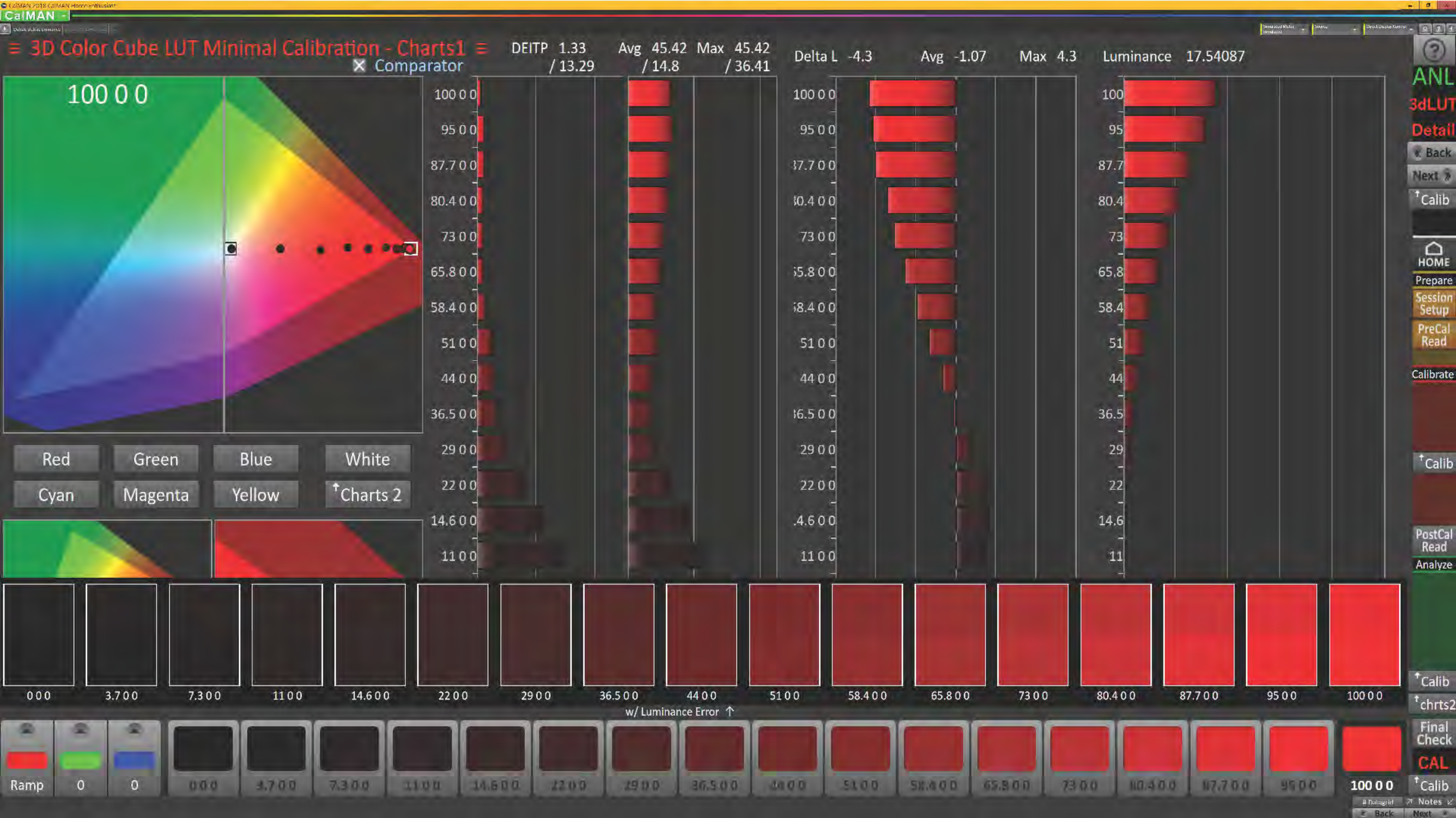
Red Green Blue White  
Cyan Magenta Yellow Charts 1



Navigation and status panel on the right side of the interface.

- Buttons: Back, Next, Calib, Home, Prepare, Session Setup, PreCal Read, Calibrate, PostCal Read, Analyze, Gry, Sat, Lum, CCK, Final Check, CAL.
- Labels: ANL, 3dLUT, Detail.
- Icons: ? (Help), Home, Prepare, Session Setup, PreCal Read, Calibrate, PostCal Read, Analyze, Gry, Sat, Lum, CCK, Final Check, CAL.







## Session Final Check

2/24/2019 Calibration

AV Mode - Cal Night 100 nits

## Contrast Verification

Data Points: select Clipping or Clipping with Peak White: Clipping with Peak White

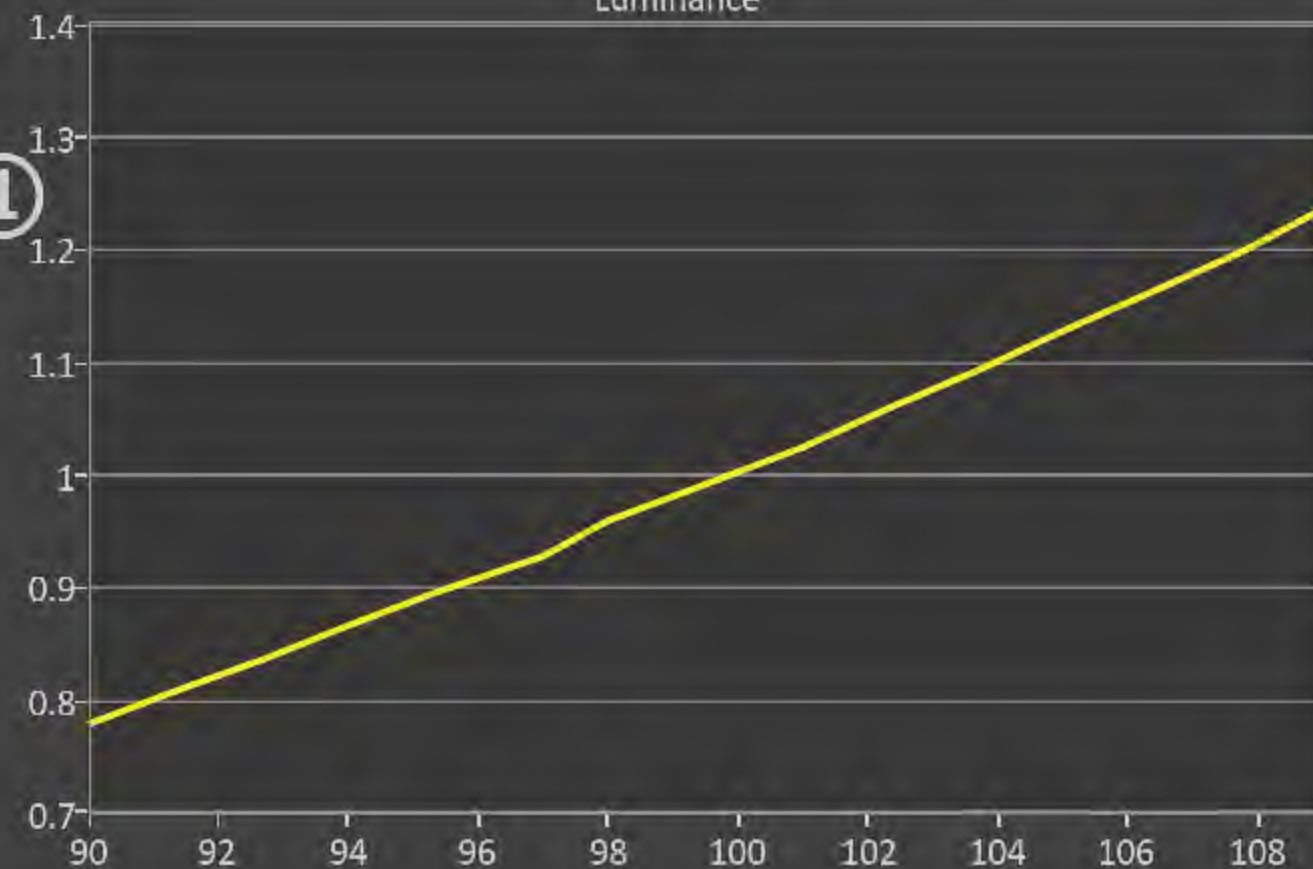
- ① Adjust the Backlight, Brightness and Contrast controls to optimize the white level so it doesn't clip any of the primaries.

## Gamma Level Verification

Data Points: select a full set of grayscale points, e.g. 11: Clipping with Peak White

- ② Check / adjust the gamma level across the full grayscale. Use the Backlight, Brightness, Contrast and Gamma controls to make this adjustment.

Luminance

~~100~~

Gamma 0

0 cd/m<sup>2</sup>

## Post-Calibration Summary

Grayscale dE Avg 0  
Max 0Saturation dE Avg 0  
Max 0Luminance dE Avg 0  
Max 0Color Checker dE Avg 0  
Max 0Color Cube LUT dE Avg 12.11 Full  
Max 45.3☐ Use Minimal layout data

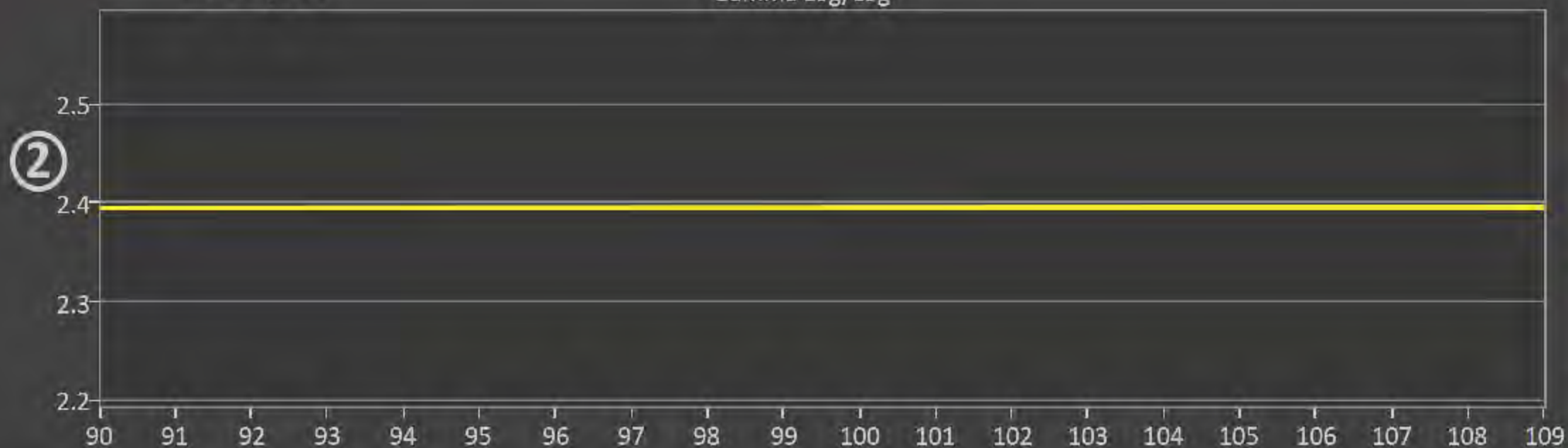
LUT values come from calibration Full layout, or Minimal layout if checked

Gamma Target 2.4  
Total 2.39CCT Target 6503  
Avg 0White 100 cd/m<sup>2</sup>

Black 0

Cntr Ratio 0

Gamma Log/Log



Post-Calibration Notes

Notes

Save

Contrast

Brightness

Backlight

TV Gamma

Color

Tint

Red

Green

Blue

Gain

Cut

ANL  
Final  
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SetupPreCal  
Read

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↑ Gry

↑ CMS

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↓ LUT

↓ Lum

↓ CCK

PostCal  
Read

Analyze

↓ Gry

↓ Sat

↓ Lum

↓ CCK

↓ LUT

Final  
Check

Final

Notes

Back

Save



CalMAN 2018 CalMAN Home enthusiast

CalMAN -

CalMAN 2018 CalMAN Home enthusiast

Pre-Cal Multi-Point Grayscale Data

Pre-Cal

	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
RGB Triplet	16, 16, 16	27, 27, 27	38, 38, 38	49, 49, 49	60, 60, 60	71, 71, 71	82, 82, 82	93, 93, 93	104, 104, 104	115, 115, 115	126, 126, 126	136, 136, 136	147, 147, 147	158, 158, 158	169, 169, 169	180, 180, 180	191, 191, 191	202, 202, 202	213, 213, 213
Target Y cd/m²	0.0001	0.0877	0.4304	1.1112	2.1890	3.7118	5.7207	8.2523	11.3393	15.0123	19.2991	23.7512	29.2818	35.4987	42.4243	50.0800	58.4863	67.6628	77.6237
Y cd/m²	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target x:CIE31	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127
x: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target y:CIE31	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290
y: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target CCT	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440
CCT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Post-Cal

	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
RGB Triplet	16, 16, 16	27, 27, 27	38, 38, 38	49, 49, 49	60, 60, 60	71, 71, 71	82, 82, 82	93, 93, 93	104, 104, 104	115, 115, 115	126, 126, 126	136, 136, 136	147, 147, 147	158, 158, 158	169, 169, 169	180, 180, 180	191, 191, 191	202, 202, 202	213, 213, 213
Target Y cd/m²	0.0001	0.0877	0.4304	1.1112	2.1890	3.7118	5.7207	8.2523	11.3393	15.0123	19.2991	23.7512	29.2818	35.4987	42.4243	50.0800	58.4863	67.6628	77.6237
Y cd/m²	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target x:CIE31	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127	0.3127
x: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target y:CIE31	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290	0.3290
y: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target CCT	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440	6503.4440
CCT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Click Change Selection then right-click on either datagrid chart (ESCAPE the context menu) to show possible selections

Change Selection

Pre-Cal

Post-Cal



CalMAN

Pre-Cal Saturation Sweeps Data

	100
RGB Triplet	235, 235, 235
Target x:CIE31	0.3127
x: CIE31	0.0000
Target y:CIE31	0.3290
y: CIE31	0.0000
Target Y	100.0000
Y	0.0000
Gamma Point: Flat	0.0000
ΔE 2000	0.0000
dE2000 LuminanceCompensated	0.0000
ΔE 1994 L*:±	0.0000
ΔE 1994 Sat:±	0.0000
ΔE 1994 Hue:±	0.0000
Signed dE94 L LuminanceCompensated	0.0000
Signed dE94 C LuminanceCompensated	0.0000
Signed dE94 H LuminanceCompensated	0.0000

Pre-Cal

100

Post-Cal Saturation Sweeps Data

	100
RGB Triplet	235, 235, 235
Target x:CIE31	0.3127
x: CIE31	0.0000
Target y:CIE31	0.3290
y: CIE31	0.0000
Target Y	100.0000
Y	0.0000
Gamma Point: Flat	0.0000
ΔE 2000	0.0000
dE2000 LuminanceCompensated	0.0000
ΔE 1994 L*:±	0.0000
ΔE 1994 Sat:±	0.0000
ΔE 1994 Hue:±	0.0000
Signed dE94 L LuminanceCompensated	0.0000
Signed dE94 C LuminanceCompensated	0.0000
Signed dE94 H LuminanceCompensated	0.0000

Post-Cal

100

Change Selection

Click Change Selection then right-click on either datagrid chart (ESCAPE the context menu) to show possible selections

ANL

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Calibrate

↑ Sat

PostCal Read

Datagrid

# Gry

# Lum

# Ck

Final Check

DTA

Notes

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Post-Cal

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Color Check Datagrid

Standard Status  
Standard

Source

Device Color

?

?

?

≡ Pre-Cal Color Checker Data ≡

Pre-Cal

	White	Gray 80	Gray 65	Gray 50	Gray 35	Dark Skin	Light Skin	Blue Sky	Foliage	Blue Flower	Bluish Green	Orange	Purplish Blue	Moderate Red	Purple	Yellow Gre
RGB Triplet	235, 235, 235	213, 213, 213	196, 196, 196	176, 176, 176	152, 152, 152	115, 86, 73	182, 145, 128	97, 121, 150	93, 108, 73	128, 126, 167	101, 178, 161	202, 119, 51	80, 95, 156	182, 88, 99	95, 69, 108	152, 176,
Target x:CIE31	0.3127	0.3127	0.3127	0.3127	0.3127	0.4144	0.3841	0.2445	0.3428	0.2648	0.2594	0.5252	0.2089	0.4779	0.2858	0.3780
x: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target y:CIE31	0.3290	0.3290	0.3290	0.3290	0.3290	0.3660	0.3579	0.2597	0.4389	0.2464	0.3622	0.4055	0.1791	0.3124	0.2094	0.5019
y: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target Y	100.0000	77.6285	62.5608	47.2103	32.0212	8.1891	32.6031	16.5635	11.0615	21.0539	39.6941	26.2802	9.8808	16.7058	5.2067	40.8403
Y	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Gamma Point: Flat	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ΔE 2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
dE2000 LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ΔE 1994 L*:±	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ΔE 1994 Sat:±	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ΔE 1994 Hue:±	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Signed dE94 L LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

≡ Post-Cal Color Checker Data ≡

Post-Cal

	White	Gray 80	Gray 65	Gray 50	Gray 35	Dark Skin	Light Skin	Blue Sky	Foliage	Blue Flower	Bluish Green	Orange	Purplish Blue	Moderate Red	Purple	Yellow Gre
RGB Triplet	235, 235, 235	213, 213, 213	196, 196, 196	176, 176, 176	152, 152, 152	115, 86, 73	182, 145, 128	97, 121, 150	93, 108, 73	128, 126, 167	101, 178, 161	202, 119, 51	80, 95, 156	182, 88, 99	95, 69, 108	152, 176,
Target x:CIE31	0.3127	0.3127	0.3127	0.3127	0.3127	0.4144	0.3841	0.2445	0.3428	0.2648	0.2594	0.5252	0.2089	0.4779	0.2858	0.3780
x: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target y:CIE31	0.3290	0.3290	0.3290	0.3290	0.3290	0.3660	0.3579	0.2597	0.4389	0.2464	0.3622	0.4055	0.1791	0.3124	0.2094	0.5019
y: CIE31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Target Y	100.0000	77.6285	62.5608	47.2103	32.0212	8.1891	32.6031	16.5635	11.0615	21.0539	39.6941	26.2802	9.8808	16.7058	5.2067	40.8403
Y	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Gamma Point: Flat	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ΔE 2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
dE2000 LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ΔE 1994 L*:±	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ΔE 1994 Sat:±	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ΔE 1994 Hue:±	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Signed dE94 L LuminanceCompensated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Click Change Selection then right-click on either datagrid chart (ESCAPE the context menu) to show possible selections

Change Selection

X

ANL

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