

# *Monitor Calibration*

## *Best Practices for Photographers*

Presented by Ken Fleisher

Goddard Photo Club  
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# *My Story*

Ken Fleisher, Photographer & Color Scientist

B.F.A. Commercial Photography  
Rochester Institute of Technology, 1989

M.S. Color Science  
Rochester Institute of Technology, 2006

# *Why it is Essential to Calibrate Your Monitor*

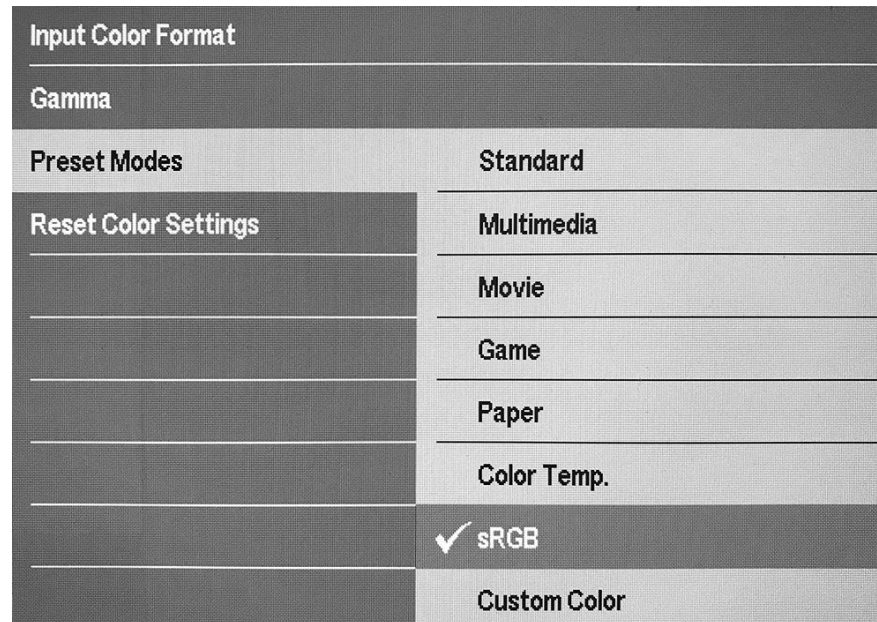
## 1. Benefits include:

- a. Less time to color correct
- b. Less \$\$ making test prints
- c. Correct color instructions travel with your digital file



# *Why it is Essential to Calibrate Your Monitor*

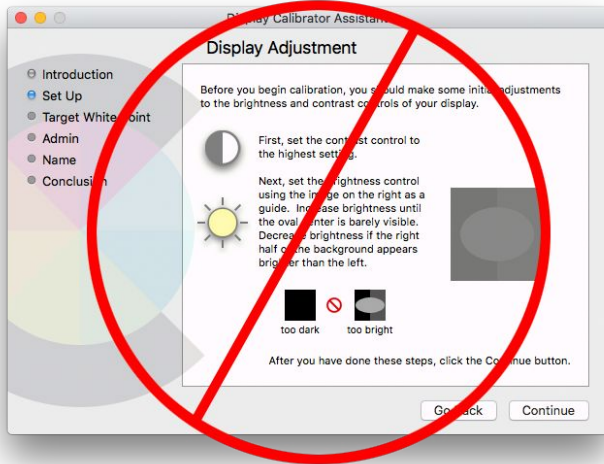
2. Your monitor's sRGB mode is not a calibration
3. Factory calibration does not last



# *Always Use a Color Measurement Device*

“Your senses are some of the worst  
data taking devices that exist.”

— Neil deGrasse Tyson



# *Best Practice #1*

Always calibrate/re-calibrate with a  
hardware color measuring device

# *Monitor Calibration Accuracy Limits*

1. Quality and technology of the monitor
2. Accuracy of the measuring device



# Monitor Calibration Accuracy Limits

Measurement Report 3.8.9.3

**\$279.99** DELL U2414H @ 1680, 0, 1920x1080 — 2021-01-25 16:54:20

Evaluation criteria: **ISO 14861:2015 color accuracy** [View raw reference data](#) [View raw measurement data](#)

Evaluate gray balance through calibration only: ☐

Use blackbody locus as assumed target whitepoint: ☐

Show additional statistics: ☐

Show values as: **L\*a\*b\***

Use absolute values: ☐

Use display profile whitepoint as reference white: ☐

Color distance metric:  **$\Delta E^*00$**

**\$90.30**

▼ Basic Information

Device:	DELL U2414H @ 1680, 0, 1920x1080
Instrument:	<b>Spyder5</b> LCD White LED
Correction:	None
Display profile:	U2414H #2 2021-01-17 13-27 165cdm² D6500 2.2 F-S XYZLUT+MTX
Display profile luminance:	164.2 cd/m²
Display profile whitepoint:	xy 0.3129 0.3292 (XYZ 95.03 100 108.69), CCT 6492K
Measured luminance:	166.5 cd/m²
Measured whitepoint:	xy 0.3118 0.3273 (XYZ 95.27 100 110.24), CCT 6565K
Assumed target whitepoint:	6600K daylight, xy 0.3112 0.3276 (XYZ 94.99 100 110.26)
Measured black luminance:	0.214 cd/m²
Contrast:	777.9:1
Testchart:	verify_extended.ti1
Simulation profile:	None
Gamma mapping:	N/A
Whitepoint simulation:	N/A
Chromatic adaptation:	Bradford
DeviceLink profile:	None
Evaluation criteria:	ISO 14861:2015 color accuracy
Date:	2021-01-25 16:54:20

▼ Summary

Criteria	Nominal	Recommended	#	Actual	Result
Average $\Delta E^*00$	$\leq 2.5$			0.68	OK ✓
99% percentile $\Delta E^*00$	$\leq 4.5$			1.78	OK ✓

✓ Nominal tolerance passed



## *Best Practice #2*

- Match the monitor quality to your needs.
- Many inexpensive monitors are suitable for photography (depending on your use case).
- Recognize the limitations & set expectations.

# *Monitor Calibration Accuracy*

1. Incorrect Settings
2. Right Settings, Wrong Use Case

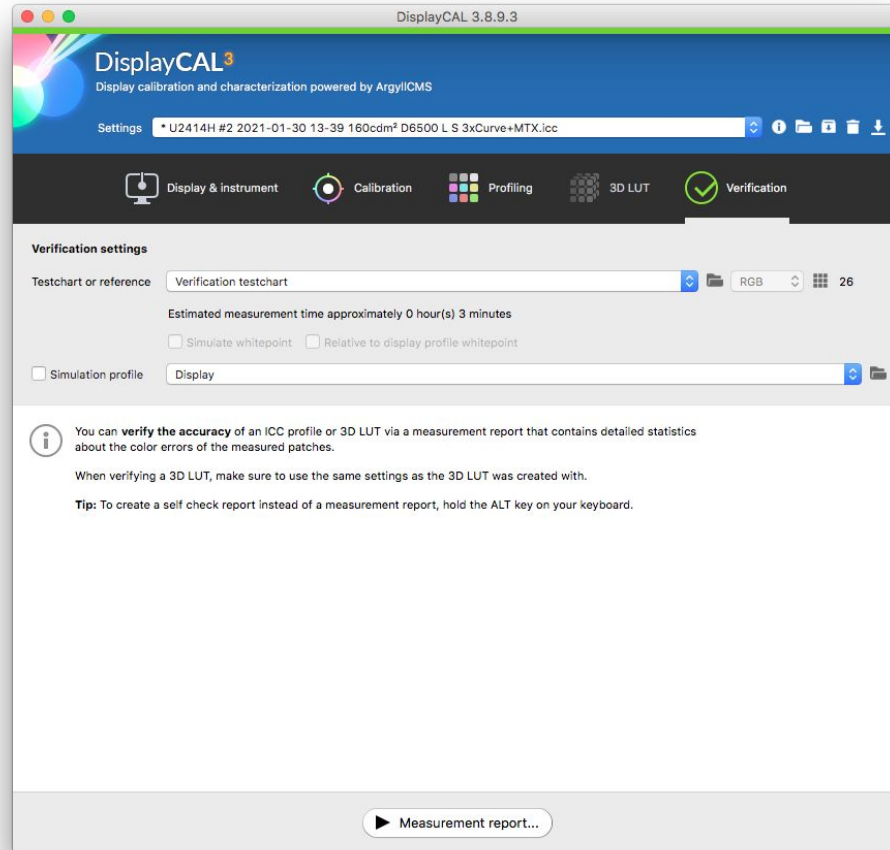


# *Monitor Calibration Accuracy*

## 3. Misleading Validation Report



# Monitor Calibration Accuracy



<https://displaycal.net/>

# *Best Practice #3*

Always validate calibration using DisplayCal

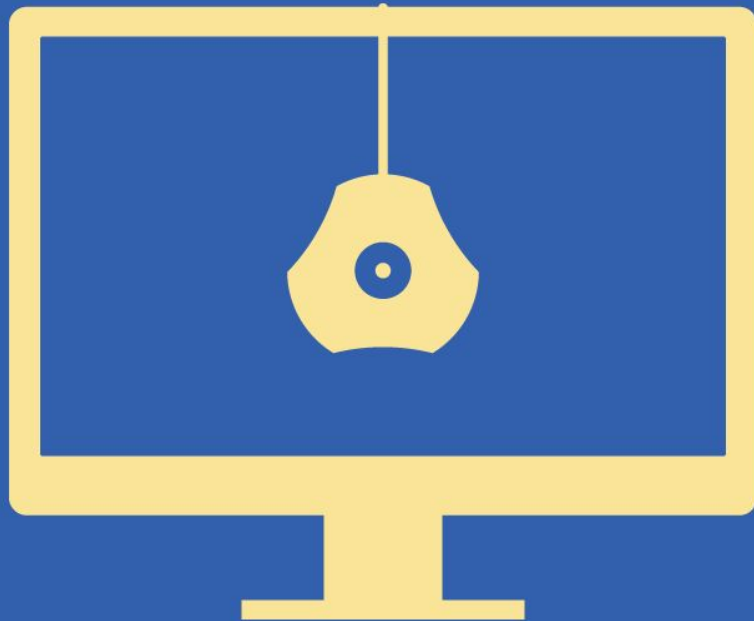
<https://displaycal.net/>

# Calibration Settings Demystified

- Luminance
  - 160 cd/m<sup>2</sup>
- Gamma
  - 2.4
- White Point
  - 5000K



*Need more help with monitor calibration?*



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***Q&A***