

EIZO CG2700S

Evaluation for Media & Entertainment Production

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### Introduction

The EIZO CG2700S monitor is part of the CG series range in the EIZO line up for the print, photography and post-production markets for 27" size screens. The CG2700S is a 10bit 16:9 aspect ratio screen, being 2560 x 1440. The CG2700S claims 99% coverage of the AdobeRGB colourspace and DCI-P3: 98% colourspace, a contrast ratio of 1600:1 (brightness mode) and approximately 1440:1 Uniformity mode, viewing angle of 178°, 178° (H/V), a response time of 19msec (grey/grey), and internal calibration with built in probe.

The CG2700S is ready to use after less than 3 minutes warm-up time.

#### Front Appearance

The CG2700S has slimmer bevel surrounds than previous models and importantly easily accessible selection buttons at the lower right. The screen is a matte black style of screen to minimise reflections with the addition of a special retardation screen for very good black levels.

#### Inputs

The CG2700S has very standard PC monitor style inputs. These are 1 x HDMI (Deep Color, HDCP 2.3) 10bit, DisplayPort (HDCP 2.3) 10bit and a USB Type-C (DisplayPort Alt Mode, HDCP 2.3).

#### Panel

The LCD panel on the CG2700S is a wide gamut blue led-RG phosphor LED backlight 10-bit panel.

## **Testing**

### **Equipment for Testing**

#### **Probes**

Colorimetry Research CR100 Colourimeter NIST Certified
Colorimetry Research CR300 2nm Spectrophotometer NIST Certified
Konica Minolta CA210 Colourimeter
CG2700S internal colourimeter

Software – EIZO ColorNavigator 7, Light Illusion Colourspace INF, DisplayCal, Colorimetry Research CRI App

#### Uniformity

The EIZO CG2700S comes from the factory with a uniformity datasheet. The panel was measured with the same amount of points for both luminance and chromaticity uniformity.

<u> </u>				
■ 100%: 104.1 cd/m² (+0.14%), 1.04 ΔC*00 ■ 75%: 53.2 cd/m² (+0.21%), 0.08 ΔC*00	<ul> <li>100%: 104.45 cd/m² (+0.47%), 1.27 △C*00</li> <li>75%: 53.58 cd/m² (+0.58%), 0.4 △C*00</li> </ul>	<ul> <li>100%: 103.42 cd/m² (-0.51%), 0.47 ΔC*00</li> <li>75%: 53.34 cd/m² (+0.35%), 0.06 ΔC*00</li> </ul>	■ 100%: 102.63 cd/m² (-1.28%), 0.69 ΔC*00 ■ 75%: 53.05 cd/m² (+0.07%), 0.9 ΔC*00	■ 100%: 105.46 cd/m² (+1.44%), 0.48 ΔC*00 ■ 75%: 54.31 cd/m² (+1.28%), 0.88 ΔC*00
50%: 20.43 cd/m² (+0.19%), -0.39 ΔC*00	50%: 20.56 cd/m² (+0.32%), -0.1 \(\Delta \C^*00\)	50%: 20.58 cd/m² (+0.35%), 0.06 ΔC*00	■ 50%: 20.37 cd/m² (+0.07%), 0.9 ΔC*00	● 50%: 21.03 cd/m² (+0.77%), -0.15 ΔC*00
25%; 3.88 cd/m² (-0.01%), -0.01 ΔC*00	25%: 3.93 cd/m² (+0.04%), 0.32 △C*00	25%; 3.95 cd/m² (+0.06%), 0.02 ΔC*00	■ 25%: 3.89 cd/m² (+0.01%), 0.22 △C*00	25%; 4.03 cd/m² (+0.17%), -0.19 ΔC*00
2070. 5.00 60711 (-5.0170), -5.01 20 00	25/8 5.55 cum (10.04/9), 0.52 20 00	25/41 5.55 Carili (+0.55/5), 0.52 Lto 00	20% 0.00 cam (*0.01%), 0.22 20 00	2011 4.00 dum (10.1470), 0.10 LO 00
<ul> <li>Average: +0.14 cd/m² (+0.13%), 0.18 △C*00</li> </ul>	<ul> <li>Average: +0.37 cd/m² (+0.35%), 0.47 △C*00</li> </ul>	<ul> <li>Average: +0.06 cd/m² (+0.06%), 0.06 △C*00</li> </ul>	<ul> <li>Average: -0.27 cd/m² (-0.26%), 0.46 △C*00</li> </ul>	<ul> <li>Average: +0.95 cd/m² (+0.91%), 0.35 △C*00</li> </ul>
<ul> <li>Maximum: +0.22 cd/m² (+0.21%), 1.04 ΔC*00</li> </ul>	<ul> <li>Maximum: +0.6 cd/m² (+0.58%), 1.27 △C*00</li> </ul>	<ul> <li>Maximum: -0.54 cd/m² (-0.51%), 0.47 △C*00</li> </ul>	<ul> <li>Maximum: -1.33 cd/m² (-1.28%), 0.9 ∆C*00</li> </ul>	<ul> <li>Maximum: +1.5 cd/m² (+1.44%), 0.88 △C*00</li> </ul>
Contrast deviation: 0.86%	Contrast deviation: 1.18%	Contrast deviation: 2.26%	Contrast deviation: 2.04%	Contrast deviation: 2.48%
√ Recommended tolerance passed	√ Recommended tolerance passed	√ Recommended tolerance passed	✓ Recommended tolerance passed	✓ Recommended tolerance passed
■ 100%: 106.03 cd/m² (+1.99%), 0.31 △C*00	■ 100%: 108.05 cd/m² (+3.94%), 0.83 △C*00	■ 100%: 103.59 cd/m² (-0.36%), 0.57 △C*00	■ 100%: 105.99 cd/m² (+1.96%), 0.27 △C*00	■ 100%: 105.77 cd/m² (+1.74%), 0.32 △C*00
<ul> <li>75%: 53.7 cd/m² (+0.69%), -0.01 △C*00</li> </ul>	<ul> <li>75%: 54.39 cd/m² (+1.35%), 0.87 △C*00</li> </ul>	75%: 53.13 cd/m² (+0.14%), 0.15 △C*00	75%: 53.13 cd/m² (+0.14%), 1.16 △C*00	<ul> <li>75%: 54.15 cd/m² (+1.13%), 0.63 △C*00</li> </ul>
<ul> <li>50%: 20.56 cd/m² (+0.32%), -0.1 △C*00</li> </ul>	50%: 20.67 cd/m² (+0.43%), 0.04 △C*00	<ul> <li>50%: 20.34 cd/m² (+0.11%), -0.46 △C*00</li> </ul>	<ul> <li>50%: 20.24 cd/m² (+0.02%), 0.36 △C*00</li> </ul>	<ul> <li>50%: 20.81 cd/m² (+0.56%), -0.3 △C*00</li> </ul>
<ul> <li>25%: 3.9 cd/m² (+0.02%), 0.26 △C*00</li> </ul>	<ul> <li>25%: 3.95 cd/m² (+0.06%), 0.46 △C*00</li> </ul>	25%: 3.9 cd/m² (+0.01%), -0.05 △C*00	<ul> <li>25%: 3.9 cd/m² (+0.01%), 0.39 △C*00</li> </ul>	25%: 4 cd/m² (+0.11%), 0.15 △C*00
• Average: +0.78 cd/m² (+0.75%), 0.11 △C*00	<ul> <li>Average: +1.5 cd/m² (+1.45%), 0.55 △C*00</li> </ul>	<ul> <li>Average: -0.02 cd/m² (-0.02%), 0.05 △C*00</li> </ul>	<ul> <li>Average: +0.55 cd/m² (+0.53%), 0.55 △C*00</li> </ul>	Average: +0.92 cd/m² (+0.88%), 0.2 △C*00
<ul> <li>Maximum: +2.07 cd/m² (+1.99%), 0.31 ∆C*00</li> </ul>	Maximum: +4.1 cd/m² (+3.94%), 0.87 △C*00	<ul> <li>Maximum: -0.37 cd/m² (-0.36%), 0.57 △C*00</li> </ul>	<ul> <li>Maximum: +2.03 cd/m² (+1.96%), 1.16 ΔC*00</li> </ul>	<ul> <li>Maximum: +1.81 cd/m² (+1.74%), 0.63 ΔC*00</li> </ul>
Contrast deviation: 0.33%	Contrast deviation: 1.67%	Contrast deviation: 0.91%	Contrast deviation: 1.84%	Contrast deviation: 1.12%
√ Recommended tolerance passed	√ Recommended tolerance passed	√ Recommended tolerance passed	✓ Recommended tolerance passed	√ Recommended tolerance passed
■ 100%: 104.52 cd/m² (+0.54%), 0.05 ΔC*00	● 100%: 109.38 cd/m² (+5.21%), 0.25 △C*00	100%: 103.96 cd/m² (100%)	<b>Q</b> ■ 100%: 105.38 cd/m² (+1.37%), 0.97 △C*00	● 100%: 104,77 cd/m² (+0,78%), 0,88 △C*00
■ 75%: 53.74 cd/m² (+0.73%), 0.29 △C*00	75%: 55.57 cd/m² (+2.49%), 1.1 \(\Delta \C^*00\)	75%: 52.98 cd/m² (50.96%)	75%: 52.6 cd/m² (-0.36%), 1.26 ΔC*00	■ 75%: 53.86 cd/m² (+0.85%), 0.34 △C*00
● 50%: 20.6 cd/m² (+0.36%), 0.18 △C*00	■ 50%: 21.09 cd/m² (+0.83%), 0.19 △C*00	50%: 20.23 cd/m² (19.46%)	■ 50%: 20.02 cd/m² (-0.2%), 0.91 △C*00	● 50%: 20.64 cd/m² (+0.4%), -0.06 △C*00
● 25%: 3.92 cd/m² (+0.03%), 0.36 ΔC*00	• 25%; 4.01 cd/m² (+0.12%), 0.51 △C*00	25%: 3.88 cd/m² (3.73%)	25%; 3.85 cd/m² (-0.03%), 0.47 ΔC*00	● 25%: 3.96 cd/m² (+0.08%), 0.19 △C*00
(),	(,	(,		(,
<ul> <li>Average: +0.43 cd/m² (+0.42%), 0.22 △C*00</li> </ul>	<ul> <li>Average: +2.25 cd/m² (+2.16%), 0.51 △C*00</li> </ul>	Evaluation criteria:	<ul> <li>Average: +0.2 cd/m² (+0.19%), 0.9 △C*00</li> </ul>	<ul> <li>Average: +0.55 cd/m² (+0.53%), 0.34 △C*00</li> </ul>
<ul> <li>Maximum: +0.76 cd/m² (+0.73%), 0.36 ∆C*00</li> </ul>	<ul> <li>Maximum: +5.42 cd/m² (+5.21%), 1.1 ∆C*00</li> </ul>	Average luminance & ∆C*00 ∨	<ul> <li>Maximum: +1.42 cd/m² (+1.37%), 1.26 △C*00</li> </ul>	<ul> <li>Maximum: +0.89 cd/m² (+0.85%), 0.88 △C*00</li> </ul>
Contrast deviation: 1.29%	Contrast deviation: 0.89%		Contrast deviation: 2.36%	Contrast deviation: 1.28%
✓ Recommended tolerance passed	✓ Recommended tolerance passed		✓ Recommended tolerance passed	✓ Recommended tolerance passed
<ul> <li>100%: 105.19 cd/m² (+1.18%), 0.27 △C*00</li> </ul>	• 100%: 108.37 cd/m² (+4.24%), 0.45 △C*00	<ul> <li>100%: 105.49 cd/m² (+1.47%), 0.55 △C*00</li> </ul>	<ul> <li>100%: 106.43 cd/m² (+2.37%), 0.6 △C*00</li> </ul>	<ul> <li>100%: 101.98 cd/m² (-1.91%), 0.86 △C*00</li> </ul>
• 75%: 54.96 cd/m² (+1.9%), 0.35 △C*00	<ul> <li>75%: 55.09 cd/m² (+2.03%), 0.26 △C*00</li> </ul>	<ul> <li>75%: 53.67 cd/m² (+0.66%), 0.09 △C*00</li> </ul>	● 75%: 53.58 cd/m² (+0.58%), 1.33 △C*00	● 75%: 53.9 cd/m² (+0.88%), 0.09 △C*00
• 50%: 20.96 cd/m² (+0.7%), -0.36 △C*00 • 25%: 3.97 cd/m² (+0.09%), 0.3 △C*00	<ul> <li>50%: 21 cd/m² (+0.75%), 0.27 △C*00</li> <li>25%: 3.97 cd/m² (+0.09%), 0.22 △C*00</li> </ul>	<ul> <li>50%: 20.48 cd/m² (+0.24%), -0.18 △C*00</li> <li>25%: 3.91 cd/m² (+0.03%), 0.05 △C*00</li> </ul>	<ul> <li>50%: 20.5 cd/m² (+0.26%), 0.18 ΔC*00</li> <li>25%: 3.93 cd/m² (+0.05%), 0.25 ΔC*00</li> </ul>	<ul> <li>50%: 20.69 cd/m² (+0.44%), -0.16 △C°00</li> <li>25%: 3.96 cd/m² (+0.08%), 0.17 △C°00</li> </ul>
25%: 5.97 Cu/III* (+0.09%), 0.3 AC-00	25%: 3.97 CUMP (+0.09%), 0.22 AC-00	25%: 3.91 Cu/III= (±0.03%), 0.05 ΔC=00	25%; 3.93 Cd/III* (+0.05%), 0.25 AC-00	25%; 3.96 CU/III* (±0.06%), 0.17 ΔC*00
<ul> <li>Average: +1.01 cd/m² (+0.97%), 0.14 ∆C*00</li> </ul>	Average: +1.85 cd/m² (+1.78%), 0.3 △C*00	Average: +0.63 cd/m² (+0.6%), 0.13 ∆C*00	<ul> <li>Average: +0.85 cd/m² (+0.81%), 0.59 ΔC*00</li> </ul>	Average: -0.13 cd/m² (-0.12%), 0.24 △C*00
■ Maximum: +1.98 cd/m² (+1.9%), -0.36 △C*00	Maximum: +4.41 cd/m² (+4.24%), 0.45 △C*00	Maximum: +1.53 cd/m² (+1.47%), 0.55 △C*00	Maximum: +2.47 cd/m² (+2.37%), 1.33 ΔC*00	■ Maximum: -1.98 cd/m² (-1.91%), 0.86 △C*00
Contrast deviation: 2.41%	Contrast deviation: 0.39%	Contrast deviation: 0.21%	Contrast deviation: 1.01%	Contrast deviation: 4.27%
✓ Recommended tolerance passed	✓ Recommended tolerance passed	✓ Recommended tolerance passed	✓ Recommended tolerance passed	✓ Recommended tolerance passed
● 100%: 108.01 cd/m² (+3.9%), 0.51 △C*00	<ul> <li>100%: 108.66 cd/m² (+4.53%), 0.52 △C*00</li> </ul>	<ul> <li>100%: 105.61 cd/m² (+1.59%), 0.83 △C*00</li> </ul>	<ul> <li>100%: 107.34 cd/m² (+3.25%), 0.65 △C*00</li> </ul>	<ul> <li>100%: 104.86 cd/m² (+0.87%), 1.09 △C*00</li> </ul>
75%: 54.9 cd/m² (+1.85%), 0.12 △C*00	<ul> <li>75%: 55.08 cd/m² (+2.02%), 0.86 △C*00</li> </ul>	<ul> <li>75%: 53.62 cd/m² (+0.62%), 0.49 ∆C*00</li> </ul>	<ul> <li>75%: 54.54 cd/m² (+1.51%), 0.12 △C*00</li> </ul>	<ul> <li>75%: 54.53 cd/m² (+1.49%), 0.87 △C*00</li> </ul>
<ul> <li>50%: 21.03 cd/m² (+0.77%), -0.15 ΔC*00</li> </ul>	<ul> <li>50%: 21.04 cd/m² (+0.78%), 0.17 △C*00</li> </ul>	<ul> <li>50%: 20.49 cd/m² (+0.25%), -0.25 △C*00</li> </ul>	<ul> <li>50%: 20.89 cd/m² (+0.64%), 0.45 △C*00</li> </ul>	<ul> <li>50%: 21 cd/m² (+0.75%), 0.27 △C*00</li> </ul>
● 25%: 3.97 cd/m² (+0.09%), 0.15 ΔC*00	<ul> <li>25%: 3.98 cd/m² (+0.09%), 0.36 △C*00</li> </ul>	<ul> <li>25%: 3.91 cd/m² (+0.03%), 0.3 △C*00</li> </ul>	25%: 4.01 cd/m² (+0.12%), 0.27 △C*00	<ul> <li>25%: 4.03 cd/m² (+0.14%), 0.34 △C*00</li> </ul>
Average: +1.72 cd/m² (+1.65%), 0.16 △C*00	Average: +1.93 cd/m² (+1.86%), 0.48 △C*00	Average: +0.65 cd/m² (+0.62%), 0.34 ΔC*00	Average: +1.43 cd/m² (+1.38%), 0.37 △C*00	<ul> <li>Average: +0.84 cd/m² (+0.81%), 0.64 △C*00</li> </ul>
■ Average: +1.72 cd/m² (+1.65%), 0.16 ΔC*00 ■ Maximum: +4.05 cd/m² (+3.9%), 0.51 ΔC*00	■ Average: +1.93 cd/m² (+1.06%), 0.46 ΔC*00 ■ Maximum: +4.71 cd/m² (+4.53%), 0.86 ΔC*00	Maximum: +1.66 cd/m² (+1.59%), 0.83 ΔC*00	■ Maximum: +3.38 cd/m² (+3.25%), 0.57 △C*00	Maximum: +1.55 cd/m² (+1.49%), 1.09 ΔC*00
Contrast deviation: 0.06%	Contrast deviation: 0.49%	Contrast deviation: 0.3%	Contrast deviation: 0.05%	Contrast deviation: 2.94%
✓ Recommended tolerance passed	✓ Recommended tolerance passed	✓ Recommended tolerance passed	✓ Recommended tolerance passed	✓ Recommended tolerance passed
- Nessentation totaline passeu	Necommended total disc passed	- Assortine and total and passed	- Accommended tolerance passed	* Accommended total and passed
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Uniformity was found to be excellent for both luminance and chrominance.

#### Contrast Ratio

The measured contrast ratio for the CG2700S, when calibrated to a D65 whitepoint, was 1435 in uniformity mode.

#### Flicker

Contrast flicker was extremely good. No discernible flicker and a value of 0.1 measured on the CA210

#### Response

The response of the CG2700S specification is 19 ms (grey-to-grey)

### Warm-Up Time

The marketing information states a warm-up time of 3 minutes, which is very short. The graph below shows the luminance response from a cold start turn on. Ambient temperature was  $29^{\circ}$  C and approximately 65% RH.

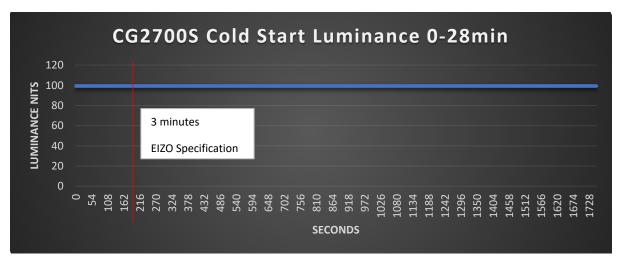
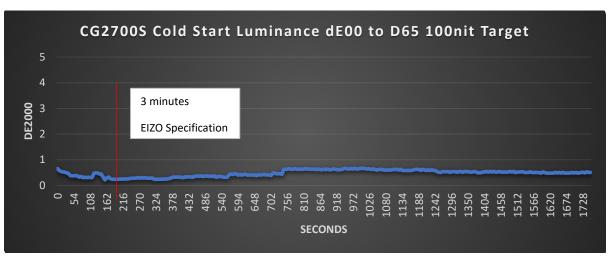


Figure 2 CG2700S Luminance Warm-Up Time

It can be seen that the CG2700S is extremely stable from the very initial turn on. The graph shows nits on the Y-axis and time in seconds on the x-axis.

Figure 3 CG2700S Chromaticity Warm-Up Time



Chromaticity from cold start was excellent. Averaging less than 0.5 dE2000.

# Calibration and Colour Accuracy

#### Native Panel

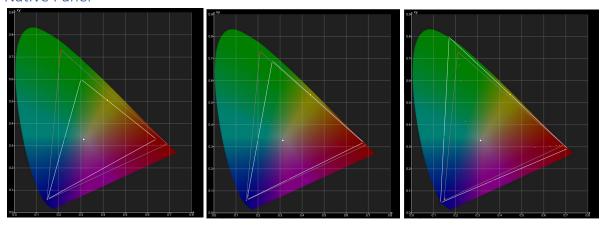


Figure 4 CG2700S Native to Rec.709

Figure 5 CG2700S Native to DCI-P3 D65 Figure 6 CG2700S Native to Rec.2020

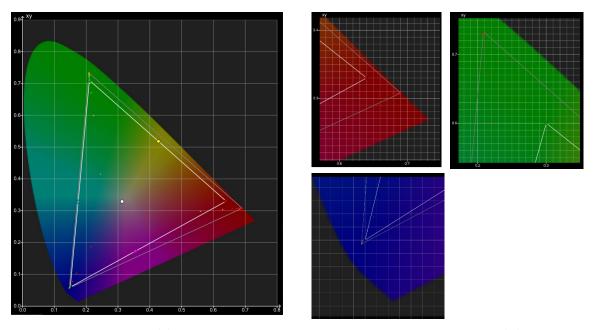


Figure 7 CG2700S Native to AdobeRGB

Figure 8 CG2700 Native to Rec.709 Expanded Primaries

The CG2700S native panel is slightly larger than AdobeRGB and the blue primary covers the Rec.709 primary such that the entire Rec.709/sRGB gamut will be covered by the native panel. The native panel has a gamma of 2.2. Measurements with a Colorimetry Research CR300/CR100.

The following diagram shows the native panel profiled to its native colourspace (RGB primaries and native white point and eotf). This shows the linearity of the monitor across the colour volume, remembering the colour volume is three dimensional. Green indicated  $\Delta$ E2000 less than 1, orange 1-2.3 and red > 2.3

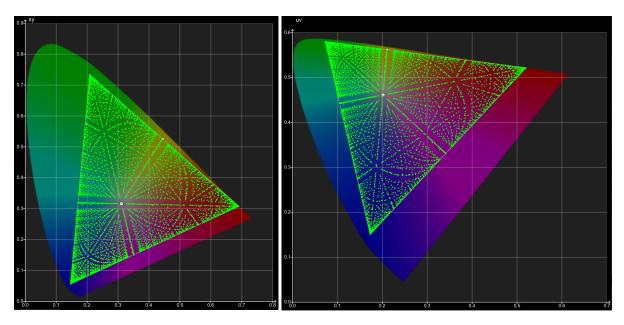


Figure 9 CG2700S Colour Volume 2D View

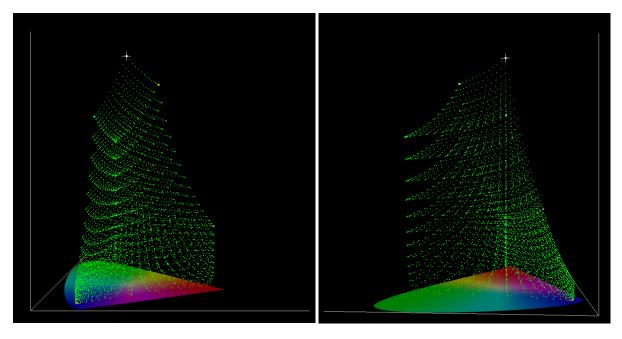


Figure 10 CG2700S Colour Volume 3D View

The 3D view in particular shows an exceptional response with  $\Delta$ E2000 errors less than 1 across almost the entire colour volume. Only in the very deep black areas are higher errors which is a very normal response. This indicates that the CG2700S will calibrate very well to colourspaces such as Rec.709 and DCI-P3.

#### **Presets**

The CG2700S has standard presets available such as BT.0202, BT.709, DCI-P3, PQ-DCI-P3, HLG.BT2100, AdobeRGB and sRGB. Looking at the three primaries above the CG2700Swill calibrate

well to the various presets other than BT.2020 where the colourspace is larger than the CG2700S gamut, which is normal for all current monitors.

Below is the BT.709 and DCI-P3 D65 preset 'Out of Box' of the CG2700. The 1000 patch verification shows an extremely good response across the entire colour volume of the CG2700S, remembering the green dots are dE00 errors less than 1; totally imperceptible.

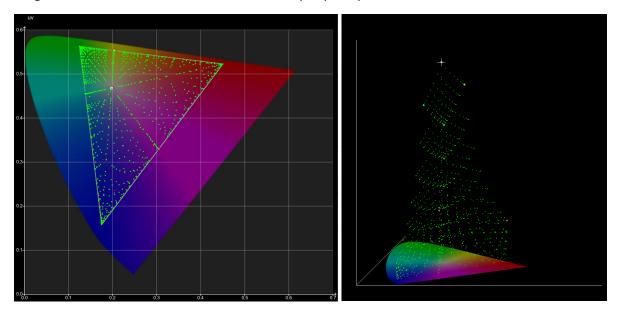
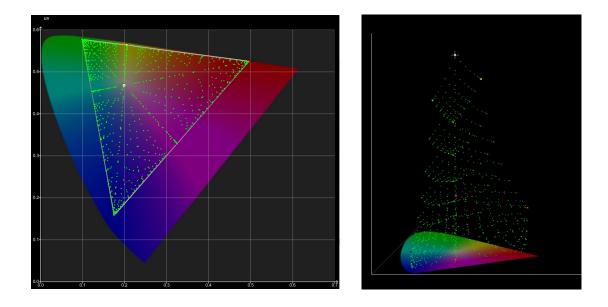


Figure 11 Preset BT.709B u'v' and 3D view

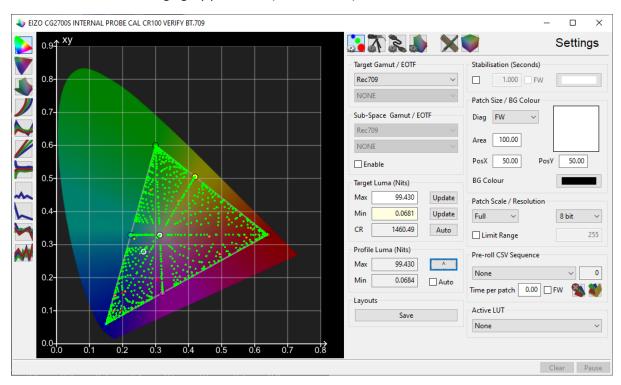


### ColorNavigator 7 Rec.709 Calibration

The CG2700S has an in-built sensor (probe) for calibration, the version 2 model as in the CG319X. ColorNavigator 7 (CN7) has the capability to correlate the probe to an external reference spectrophotometer. It also has the ability to use other external probes. For the following analysis,

the in-built probe was correlated to a Colorimetry Research CR300 2nm probe (NIST Certified). For verification, a Colorimetry Research CR100 (NIST Certified) was also correlated to the CR300.

The following results show that the CG2700S can be calibrated with CN7 and it's internal probe to reference level standards, with almost the entire colour volume showing dE00 errors less than 1. The verification is a 10<sup>3</sup> + large grey patch run (1034 colours) to evaluate the colour volume.



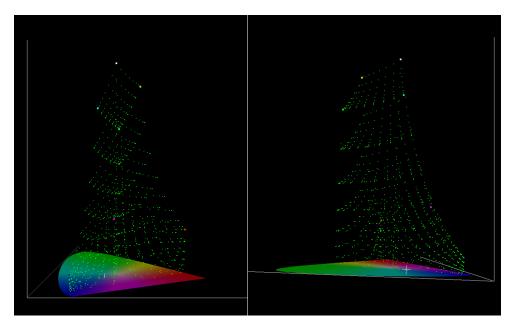


Figure 13 Rec.709 Verification Views

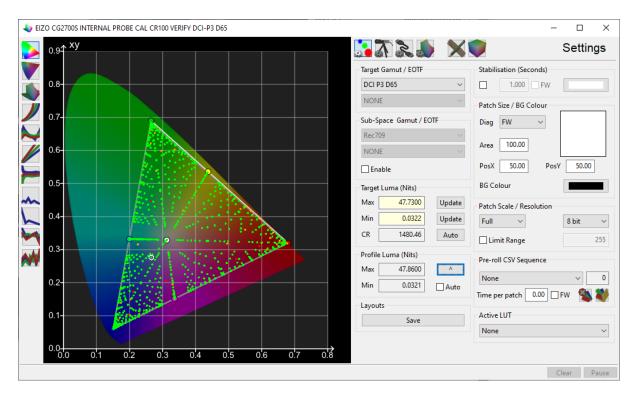


Figure 14 DCI-3 D65

#### Resolution

Observing resolution tests charts such as EBU Test Pattern 7 and other test signals the CG2700S showed no signs of aliasing or other artefacts.

# **Summary**

The CG2700S is an excellent choice for media and entertainment post-production, vfx and editing uses. Colour accuracy and the greyscale response was excellent. Its colour accuracy, stability and uniformity stand out. The internal calibration probe is unique and an extremely useful feature and allows non-technical creatives to maintain the monitor in a colour accurate state.

# **Contact Us**

Your local EIZO team is standing by to support you.

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