



EIZO CG2420

Evaluation for Media &
Entertainment Production

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Introduction

The EIZO CG2420 monitor part of the CG series range in the EIZO line up for the print, photography and post-production markets for 24" size screens. The CG2420 is a 10bit 16:10 aspect ratio screen, being 1920 x 1200. The CG2420 claims 99% coverage of the AdobeRGB colourspace and DCI-P3: 98% colourspace, a contrast ratio of 1500:1 (brightness mode), viewing angle of 178°, 178° (H/V), a response time of 10msec (grey/grey), and internal calibration with built in probe.

The CG2420 is ready to use after only 3 minutes warm-up time.

Front Appearance

The CG2420 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.

Inputs

The CG2420 has very standard PC monitor style inputs. These are 1 x HDMI (v1.4) 10bit, DisplayPort 10bit and a DVI-D.

The CG2420 has two modes; a PC mode and a Video mode. To place the monitor into Video mode, turn the monitor off, press and hold the first button and press the power button until the menu appears on the screen, select Signal Selection and work your way to HDMI to change the mode.

Panel

The LCD panel on the CG2420 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
CG2420 internal

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

Uniformity

The EIZO CG2420 comes from the factory with a uniformity datasheet. The panel was measured with the same amount of points for both luminance and chromaticity uniformity.

<ul style="list-style-type: none"> 100%: 102.09 cd/m² (+2.32%), 0.75 ΔC*00 75%: 52.03 cd/m² (+1.44%), 0.3 ΔC*00 50%: 19.9 cd/m² (+0.56%), -0.08 ΔC*00 25%: 3.82 cd/m² (+0.12%), 0.1 ΔC*00 <ul style="list-style-type: none"> Average: +1.11 cd/m² (+1.11%), 0.27 ΔC*00 Maximum: -2.32 cd/m² (-2.32%), 0.75 ΔC*00 Contrast deviation: 0.53% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 100.48 cd/m² (+0.72%), 0.6 ΔC*00 75%: 51.12 cd/m² (+0.52%), 0.23 ΔC*00 50%: 19.54 cd/m² (+0.19%), 0.29 ΔC*00 25%: 3.73 cd/m² (+0.04%), 0.17 ΔC*00 <ul style="list-style-type: none"> Average: +0.37 cd/m² (+0.37%), 0.32 ΔC*00 Maximum: -0.71 cd/m² (-0.72%), 0.6 ΔC*00 Contrast deviation: 0.27% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 100.78 cd/m² (+1.02%), 0.71 ΔC*00 75%: 51.15 cd/m² (+0.56%), 0.16 ΔC*00 50%: 19.57 cd/m² (+0.22%), -0.16 ΔC*00 25%: 3.75 cd/m² (+0.05%), 0.24 ΔC*00 <ul style="list-style-type: none"> Average: +0.46 cd/m² (+0.46%), 0.24 ΔC*00 Maximum: +0.71 cd/m² (+1.02%), 0.71 ΔC*00 Contrast deviation: 0.14% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 100.27 cd/m² (+0.51%), 0.68 ΔC*00 75%: 50.68 cd/m² (+0.09%), 0.3 ΔC*00 50%: 19.31 cd/m² (-0.03%), -0.09 ΔC*00 25%: 3.7 cd/m² (+0.01%), 0.13 ΔC*00 <ul style="list-style-type: none"> Average: +0.14 cd/m² (+0.14%), 0.25 ΔC*00 Maximum: -0.5 cd/m² (-0.51%), 0.68 ΔC*00 Contrast deviation: 0.66% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 101.56 cd/m² (+1.8%), 0.95 ΔC*00 75%: 51.3 cd/m² (+0.7%), 0.15 ΔC*00 50%: 19.64 cd/m² (+0.3%), -0.12 ΔC*00 25%: 3.75 cd/m² (+0.05%), 0.15 ΔC*00 <ul style="list-style-type: none"> Average: +0.71 cd/m² (+0.71%), 0.28 ΔC*00 Maximum: +1.79 cd/m² (+1.8%), 0.95 ΔC*00 Contrast deviation: 0.25% ✓ Recommended tolerance passed
<ul style="list-style-type: none"> 100%: 101.03 cd/m² (+1.26%), 0.37 ΔC*00 75%: 51.55 cd/m² (+0.96%), 0.19 ΔC*00 50%: 19.69 cd/m² (+0.34%), 0.52 ΔC*00 25%: 3.75 cd/m² (+0.05%), 0.03 ΔC*00 <ul style="list-style-type: none"> Average: +0.65 cd/m² (+0.65%), 0.28 ΔC*00 Maximum: -1.26 cd/m² (-1.26%), 0.52 ΔC*00 Contrast deviation: 0.5% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 99.2 cd/m² (-0.57%), 0.29 ΔC*00 75%: 50.43 cd/m² (-0.17%), 0.35 ΔC*00 50%: 19.28 cd/m² (-0.06%), 0.2 ΔC*00 25%: 3.69 cd/m² (-0.01%), 0.15 ΔC*00 <ul style="list-style-type: none"> Average: -0.2 cd/m² (-0.2%), 0.25 ΔC*00 Maximum: -0.57 cd/m² (-0.57%), 0.35 ΔC*00 Contrast deviation: 0.25% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 99.49 cd/m² (-0.28%), 0.45 ΔC*00 75%: 50.64 cd/m² (+0.04%), 0.17 ΔC*00 50%: 19.21 cd/m² (-0.03%), -0.13 ΔC*00 25%: 3.69 cd/m² (-0.01%), 0.14 ΔC*00 <ul style="list-style-type: none"> Average: -0.07 cd/m² (-0.07%), 0.16 ΔC*00 Maximum: -0.28 cd/m² (-0.28%), 0.45 ΔC*00 Contrast deviation: 0.12% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 99.27 cd/m² (-0.5%), 0.44 ΔC*00 75%: 50.35 cd/m² (-0.24%), 0.32 ΔC*00 50%: 19.21 cd/m² (-0.03%), 0.06 ΔC*00 25%: 3.68 cd/m² (-0.02%), 0.07 ΔC*00 <ul style="list-style-type: none"> Average: -0.22 cd/m² (-0.22%), 0.22 ΔC*00 Maximum: -0.5 cd/m² (-0.5%), 0.44 ΔC*00 Contrast deviation: 0.21% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 99.99 cd/m² (+0.22%), 0.92 ΔC*00 75%: 51.04 cd/m² (+0.45%), 0.15 ΔC*00 50%: 19.46 cd/m² (+0.12%), 0.03 ΔC*00 25%: 3.72 cd/m² (+0.02%), 0.1 ΔC*00 <ul style="list-style-type: none"> Average: +0.2 cd/m² (+0.2%), 0.3 ΔC*00 Maximum: +0.45 cd/m² (+0.45%), 0.92 ΔC*00 Contrast deviation: 0.39% ✓ Recommended tolerance passed
<ul style="list-style-type: none"> 100%: 100.88 cd/m² (+1.11%), 0.35 ΔC*00 75%: 51.37 cd/m² (+0.78%), 0.27 ΔC*00 50%: 19.72 cd/m² (+0.37%), 0.22 ΔC*00 25%: 3.75 cd/m² (+0.05%), 0.01 ΔC*00 <ul style="list-style-type: none"> Average: +0.58 cd/m² (+0.58%), 0.21 ΔC*00 Maximum: -1.11 cd/m² (-1.11%), 0.35 ΔC*00 Contrast deviation: 0.81% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 99.45 cd/m² (-0.32%), 0.35 ΔC*00 75%: 50.46 cd/m² (-0.14%), 0.25 ΔC*00 50%: 19.24 cd/m² (-0.11%), -0.3 ΔC*00 25%: 3.7 cd/m² (+0%), -0.02 ΔC*00 <ul style="list-style-type: none"> Average: -0.14 cd/m² (-0.14%), 0.07 ΔC*00 Maximum: -0.32 cd/m² (-0.32%), 0.35 ΔC*00 Contrast deviation: 0.23% ✓ Recommended tolerance passed 	<p>100%: 99.77 cd/m² (100%)</p> <p>75%: 50.46 cd/m² (-0.14%), 0.25 ΔC*00</p> <p>50%: 19.35 cd/m² (-0.03%), -0.19 ΔC*00</p> <p>25%: 3.7 cd/m² (+0%), -0.02 ΔC*00</p> <p>Evaluation criteria:</p> <p>Average luminance & ΔC*00 ▾</p>	<ul style="list-style-type: none"> 100%: 99.75 cd/m² (-0.02%), 0.63 ΔC*00 75%: 50.53 cd/m² (-0.06%), 0.41 ΔC*00 50%: 19.31 cd/m² (-0.03%), -0.19 ΔC*00 25%: 3.67 cd/m² (-0.03%), 0.05 ΔC*00 <ul style="list-style-type: none"> Average: -0.04 cd/m² (-0.04%), 0.23 ΔC*00 Maximum: -0.06 cd/m² (-0.06%), 0.63 ΔC*00 Contrast deviation: 0.14% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 101.06 cd/m² (+1.29%), 0.3 ΔC*00 75%: 50.82 cd/m² (+0.23%), 0.18 ΔC*00 50%: 19.39 cd/m² (+0.12%), 0.04 ΔC*00 25%: 3.7 cd/m² (+0%), 0.11 ΔC*00 <ul style="list-style-type: none"> Average: +0.39 cd/m² (+0.39%), 0.16 ΔC*00 Maximum: +1.29 cd/m² (+1.29%), 0.3 ΔC*00 Contrast deviation: 1.05% ✓ Recommended tolerance passed
<ul style="list-style-type: none"> 100%: 99.3 cd/m² (-0.47%), 0.18 ΔC*00 75%: 50.64 cd/m² (+0.04%), 0.17 ΔC*00 50%: 19.31 cd/m² (-0.03%), -0.17 ΔC*00 25%: 3.69 cd/m² (-0.01%), 0.06 ΔC*00 <ul style="list-style-type: none"> Average: -0.12 cd/m² (-0.12%), 0.06 ΔC*00 Maximum: -0.47 cd/m² (-0.47%), 0.18 ΔC*00 Contrast deviation: 0.3% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 99.02 cd/m² (-0.76%), 0.46 ΔC*00 75%: 50.31 cd/m² (-0.29%), 0.11 ΔC*00 50%: 19.31 cd/m² (-0.03%), -0.07 ΔC*00 25%: 3.71 cd/m² (+0.01%), -0.06 ΔC*00 <ul style="list-style-type: none"> Average: -0.27 cd/m² (-0.27%), 0.11 ΔC*00 Maximum: -0.75 cd/m² (-0.76%), 0.46 ΔC*00 Contrast deviation: 0.59% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 98.56 cd/m² (-1.22%), 0.2 ΔC*00 75%: 50.13 cd/m² (-0.47%), 0.19 ΔC*00 50%: 19.09 cd/m² (-0.26%), 0.24 ΔC*00 25%: 3.68 cd/m² (-0.02%), 0.05 ΔC*00 <ul style="list-style-type: none"> Average: -0.49 cd/m² (-0.49%), 0.17 ΔC*00 Maximum: -1.21 cd/m² (-1.22%), 0.24 ΔC*00 Contrast deviation: 0.1% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 98.77 cd/m² (-1%), 0.8 ΔC*00 75%: 50.01 cd/m² (-0.59%), 0.01 ΔC*00 50%: 19.13 cd/m² (-0.21%), 0.08 ΔC*00 25%: 3.66 cd/m² (-0.04%), 0.11 ΔC*00 <ul style="list-style-type: none"> Average: -0.46 cd/m² (-0.46%), 0.25 ΔC*00 Maximum: -1 cd/m² (-1%), 0.8 ΔC*00 Contrast deviation: 0.1% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 98.58 cd/m² (-1.19%), 0.39 ΔC*00 75%: 49.83 cd/m² (-0.77%), 0.3 ΔC*00 50%: 18.99 cd/m² (-0.36%), 0 ΔC*00 25%: 3.64 cd/m² (-0.06%), 0.13 ΔC*00 <ul style="list-style-type: none"> Average: -0.59 cd/m² (-0.59%), 0.21 ΔC*00 Maximum: -1.19 cd/m² (-1.19%), 0.39 ΔC*00 Contrast deviation: 0.68% ✓ Recommended tolerance passed
<ul style="list-style-type: none"> 100%: 102.19 cd/m² (+2.43%), 0.72 ΔC*00 75%: 52.09 cd/m² (+1.5%), 0.18 ΔC*00 50%: 19.97 cd/m² (+0.63%), 0.05 ΔC*00 25%: 3.85 cd/m² (+0.16%), -0.03 ΔC*00 <ul style="list-style-type: none"> Average: +1.18 cd/m² (+1.18%), 0.23 ΔC*00 Maximum: -2.42 cd/m² (-2.43%), 0.72 ΔC*00 Contrast deviation: 0.8% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 99.13 cd/m² (-0.64%), 0.69 ΔC*00 75%: 50.35 cd/m² (-0.24%), 0.33 ΔC*00 50%: 19.31 cd/m² (-0.03%), -0.17 ΔC*00 25%: 3.74 cd/m² (+0.04%), 0.02 ΔC*00 <ul style="list-style-type: none"> Average: -0.22 cd/m² (-0.22%), 0.22 ΔC*00 Maximum: -0.64 cd/m² (-0.64%), 0.69 ΔC*00 Contrast deviation: 0.48% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 98.29 cd/m² (-1.48%), 0.99 ΔC*00 75%: 49.65 cd/m² (-0.95%), 0.03 ΔC*00 50%: 19.06 cd/m² (-0.29%), -0.17 ΔC*00 25%: 3.65 cd/m² (-0.05%), 0.13 ΔC*00 <ul style="list-style-type: none"> Average: -0.69 cd/m² (-0.69%), 0.24 ΔC*00 Maximum: -1.48 cd/m² (-1.48%), 0.99 ΔC*00 Contrast deviation: 0% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 98.49 cd/m² (-1.28%), 0.23 ΔC*00 75%: 49.8 cd/m² (-0.8%), 0.13 ΔC*00 50%: 19.06 cd/m² (-0.29%), -0.17 ΔC*00 25%: 3.65 cd/m² (-0.05%), 0.13 ΔC*00 <ul style="list-style-type: none"> Average: -0.6 cd/m² (-0.6%), 0.08 ΔC*00 Maximum: -1.28 cd/m² (-1.28%), 0.23 ΔC*00 Contrast deviation: 0.2% ✓ Recommended tolerance passed 	<ul style="list-style-type: none"> 100%: 100.21 cd/m² (+0.44%), 0.25 ΔC*00 75%: 50.53 cd/m² (-0.06%), 0.24 ΔC*00 50%: 19.43 cd/m² (+0.09%), 0.7 ΔC*00 25%: 3.71 cd/m² (+0.01%), 0.14 ΔC*00 <ul style="list-style-type: none"> Average: +0.12 cd/m² (+0.12%), 0.33 ΔC*00 Maximum: +0.44 cd/m² (+0.44%), 0.7 ΔC*00 Contrast deviation: 0% ✓ Recommended tolerance passed

Figure 1 CG2420 Uniformity

Uniformity was found to be excellent for both luminance and chrominance.

Contrast Ratio

The measured contrast ratio for the CG2420, when calibrated to a D65 whitepoint, was 1361.94 in uniformity mode and 1562.21 in brightness 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 CG2420 specification is 10 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 24⁰ C and approximately 48% RH.

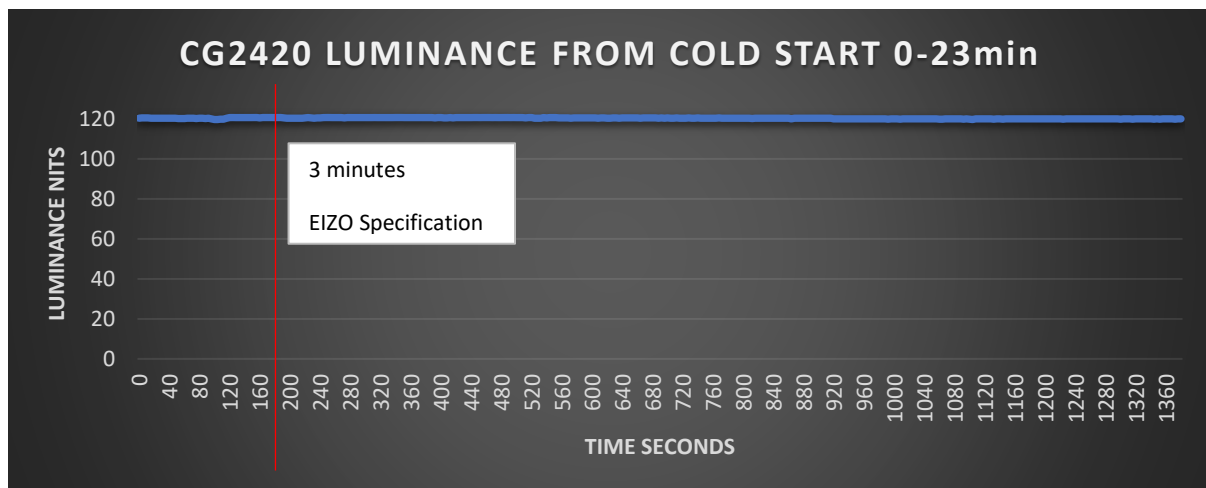
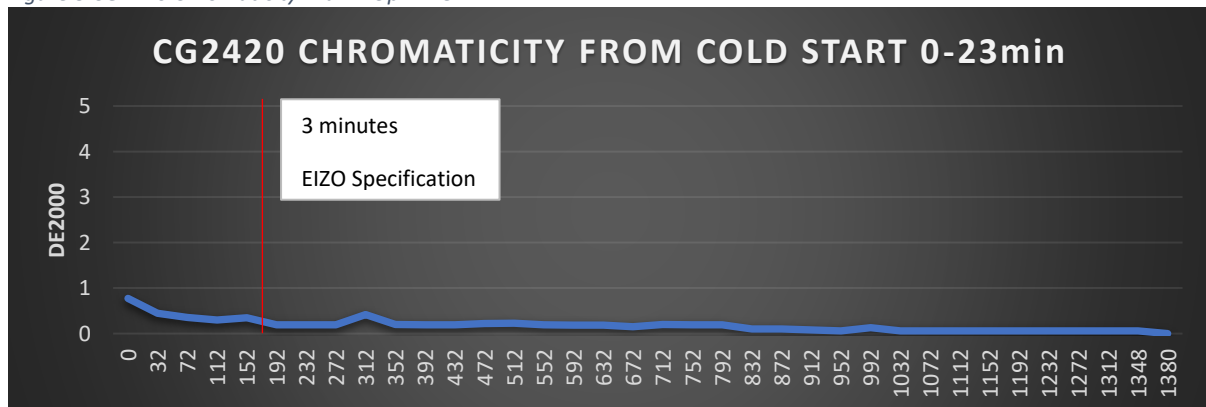


Figure 2 CG2420 Luminance Warm-Up Time

It can be seen that the CG2420 is stable from the very initial turn on. While the graph shows 23 minutes, in reality, this is only about 0.7nit from its final luminance level, which was tested again after 1 hour and read the same. The graph shows nits on the Y-axis and time in seconds on the x-axis.

Figure 3 CG2420 Chromaticity Warm-Up Time



Chromaticity from cold start was excellent. Less than 1 dE2000 from cold and less than 0.5 dE2000 at 32 seconds.

Calibration and Colour Accuracy

Native Panel

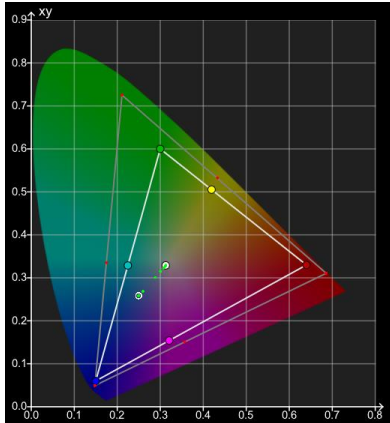


Figure 4 CG2420 Native to Rec.709

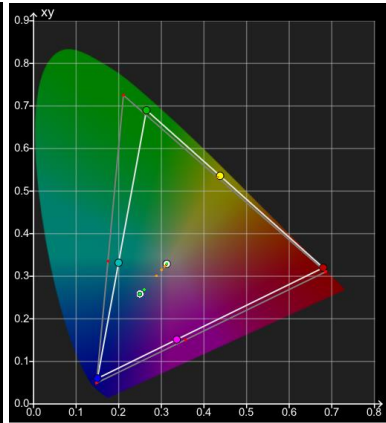


Figure 5 CG2420 Native to DCI-P3 D65

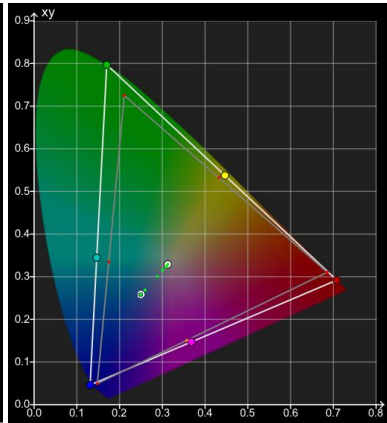


Figure 6 CG2420 Native to Rec.2020

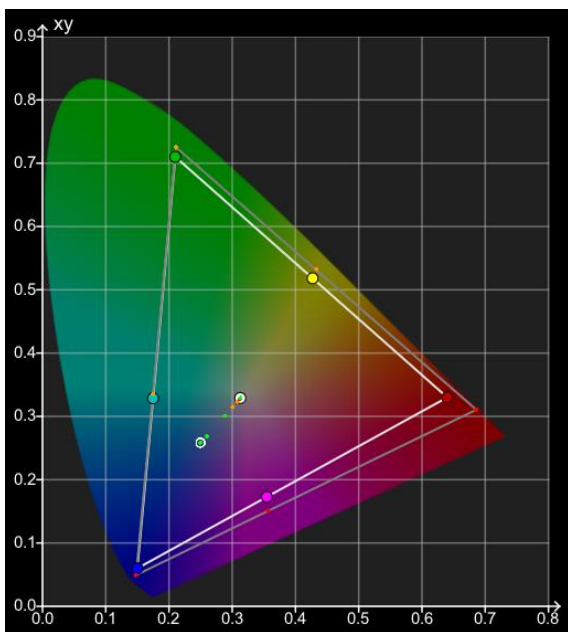


Figure 7 CG2420 Native to AdobeRGB

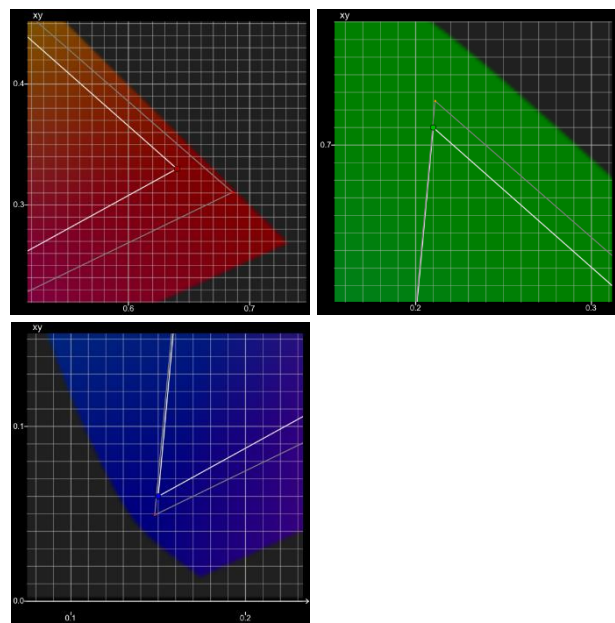


Figure 8 CG2420 Native to AdobeRGB Expanded Primaries

The CG2420 native panel is slightly larger than AdobeRGB. The native panel has a gamma of 2.2. Measurements with a Colorimetry Research CR300.

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 ΔE_{2000} less than 1, orange 1-2.3 and red > 2.3

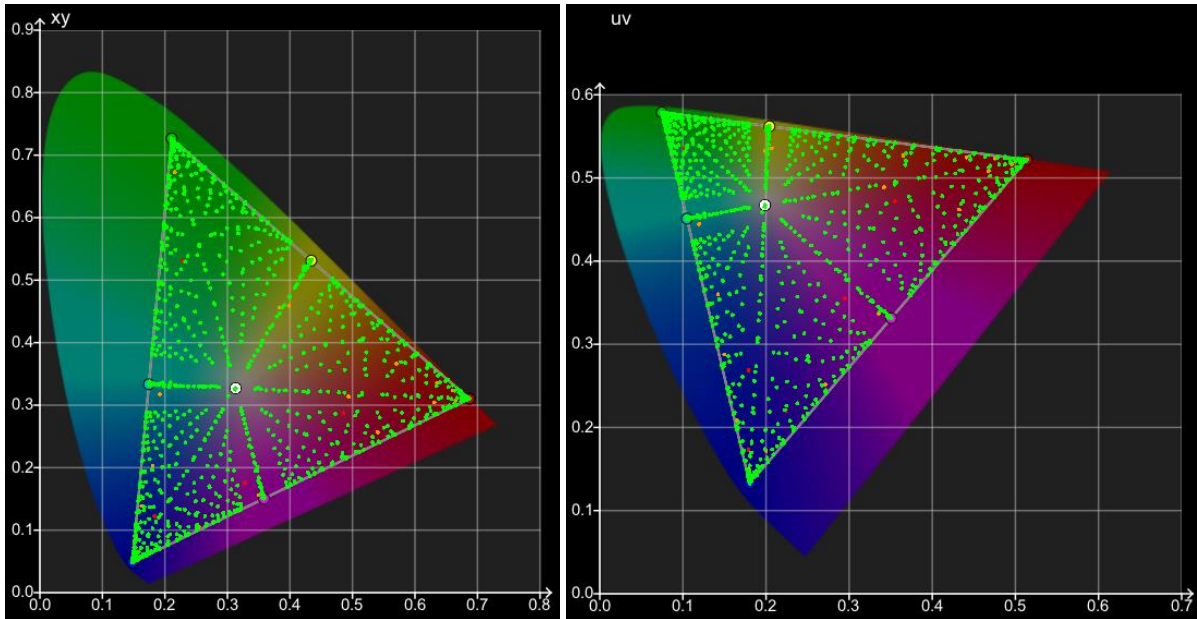


Figure 9 CG2420 Colour Volume 2D View

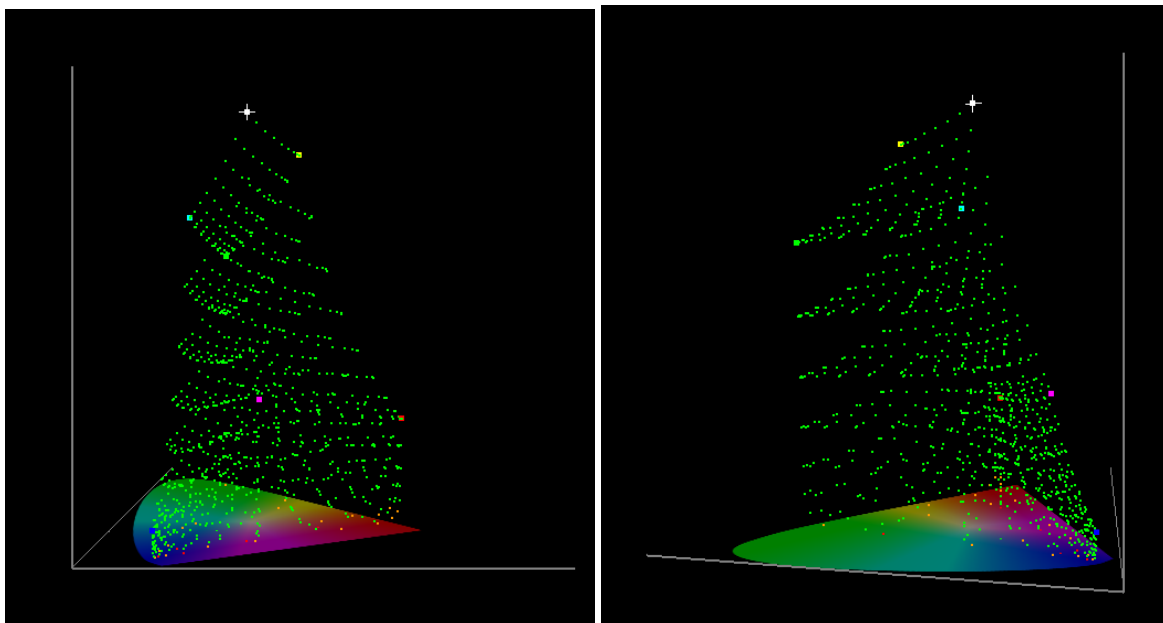


Figure 10 CG2420 Colour Volume 3D View

The 3D view in particular shows an exceptional response with ΔE_{2000} 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 CG2420 should calibrate very well to colourspace such as Rec.709.

Presets

The CG2420 has standard presets available such as AdobeRGB and sRGB. Looking at the three primaries above the CG2420 will calibrate well to the various presets.

Below is the AdobeRGB and sRGB preset 'Out of Box' of the CG2420. The 1000 patch verification shows an extremely good response across the entire colour volume of the CG2420, remembering the green dots are dE00 errors less than 1; totally imperceptible.

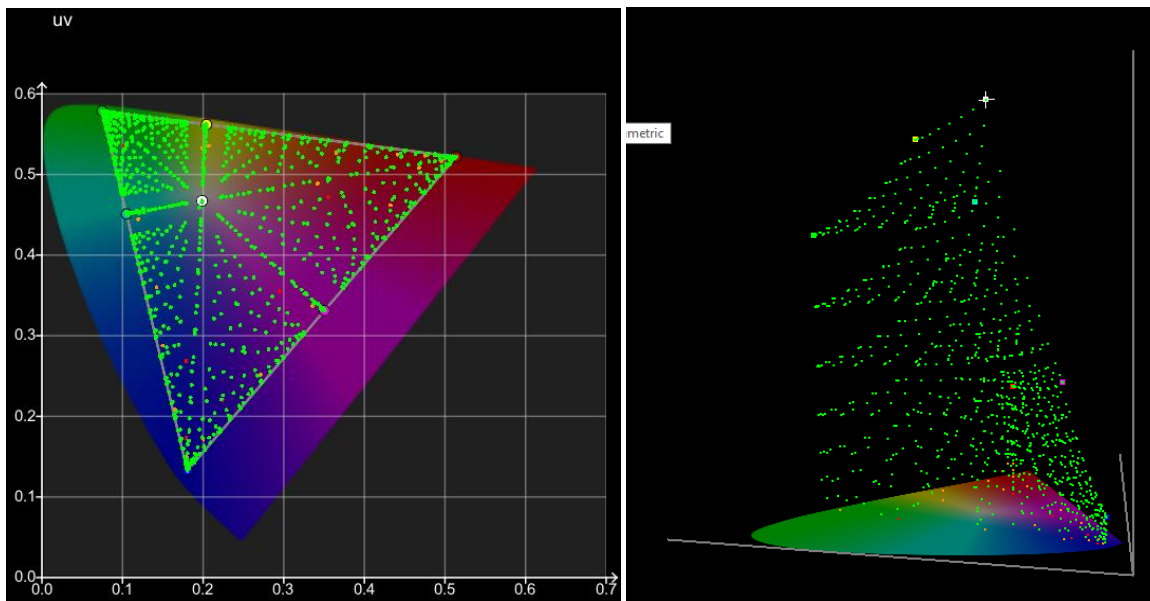


Figure 11 Preset AdobeRGB $u'v'$ and 3D view

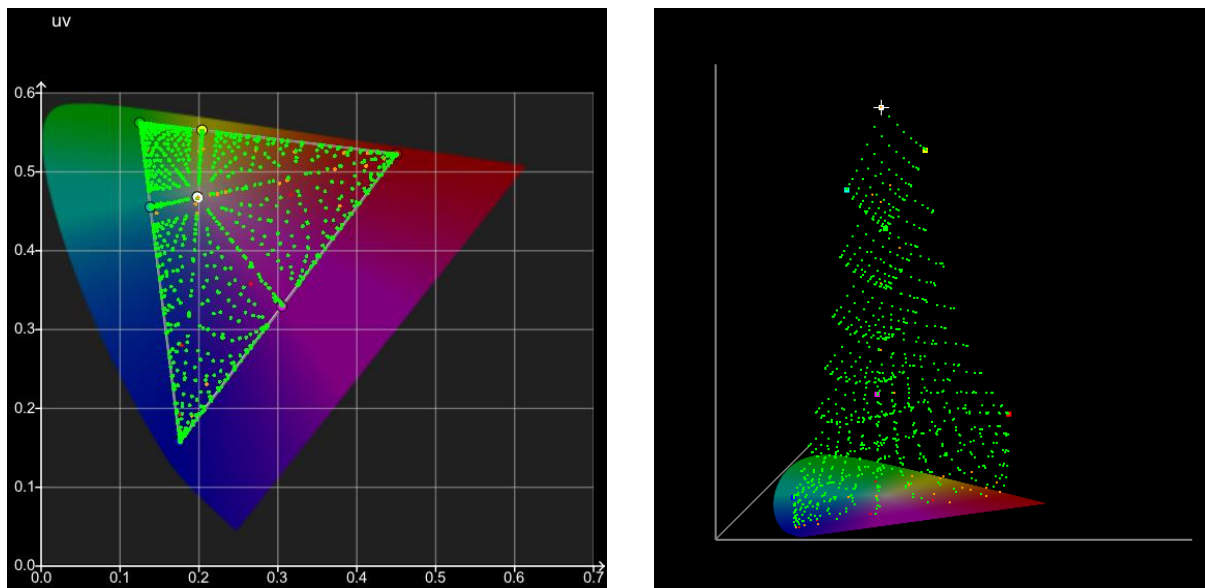


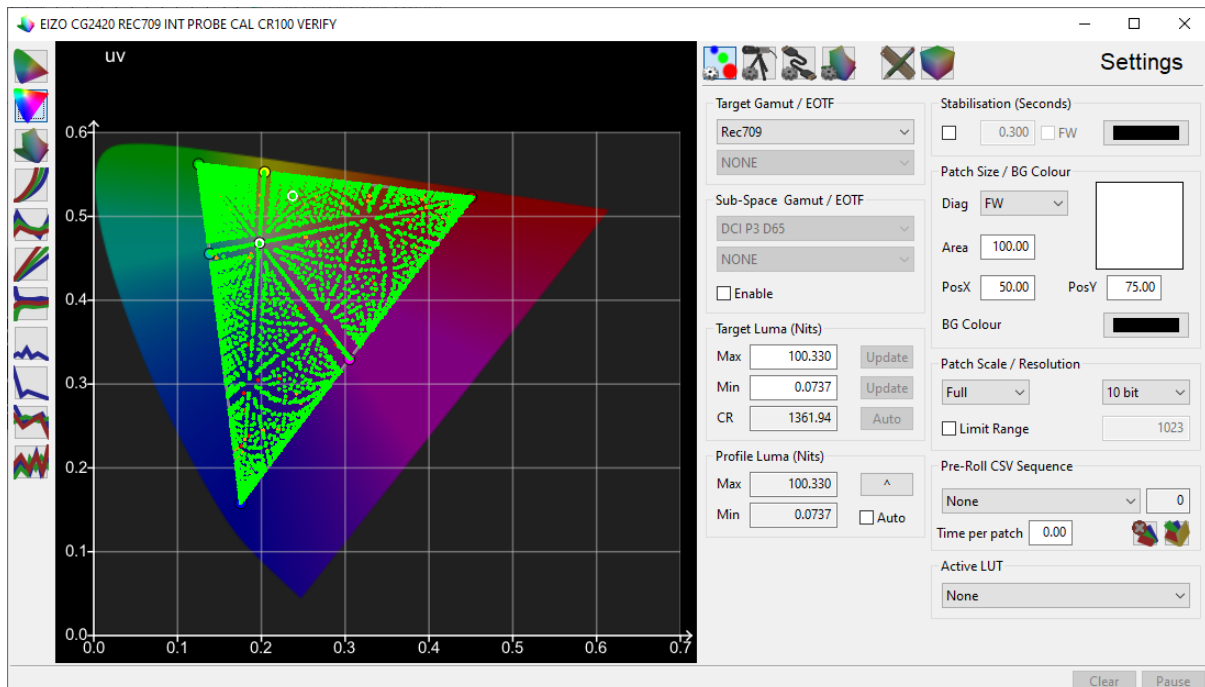
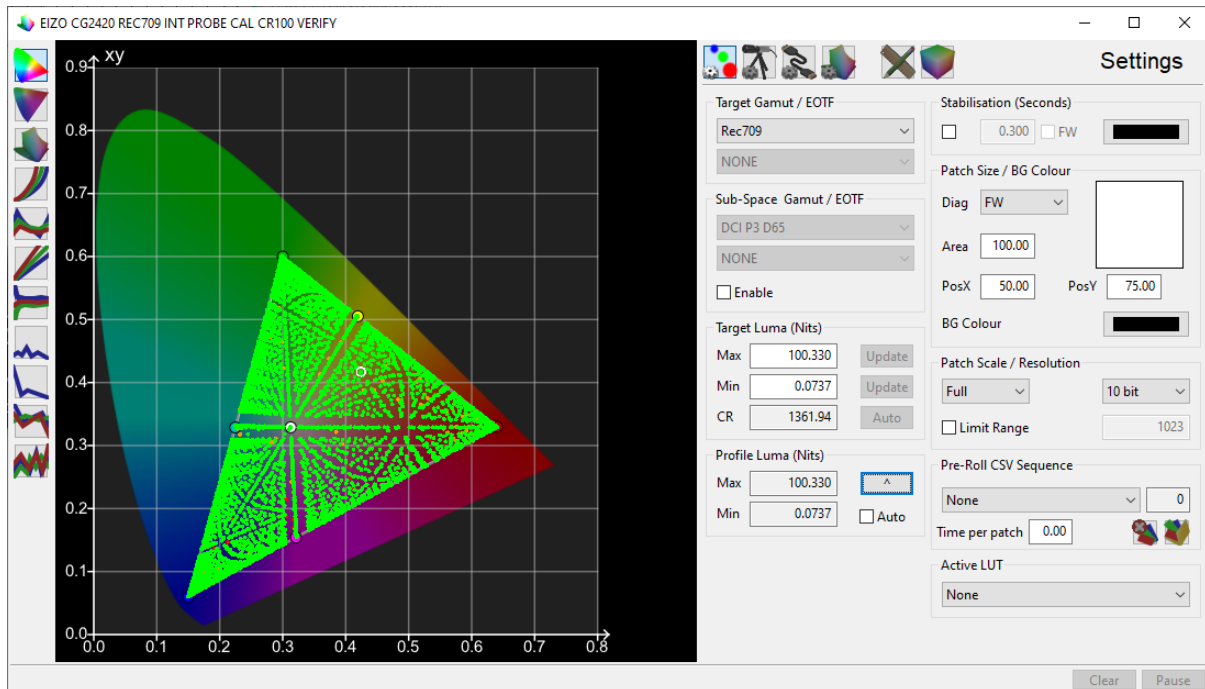
Figure 12 Preset sRGB $u'v'$ and 3D view

ColorNavigator 7 Rec.709 Calibration

The CG2420 has an in-built sensor (probe) for calibration. 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 CG2420 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 17[^]3 patch run (4913 colours) to evaluate the colour volume.



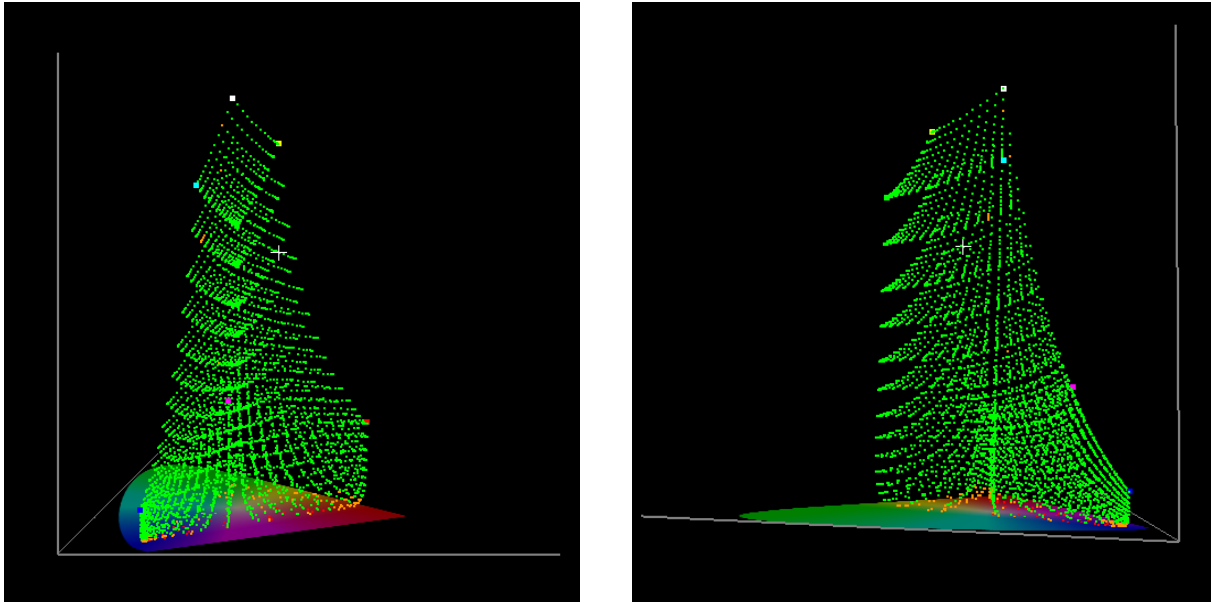


Figure 13 Rec.709 Verification Views

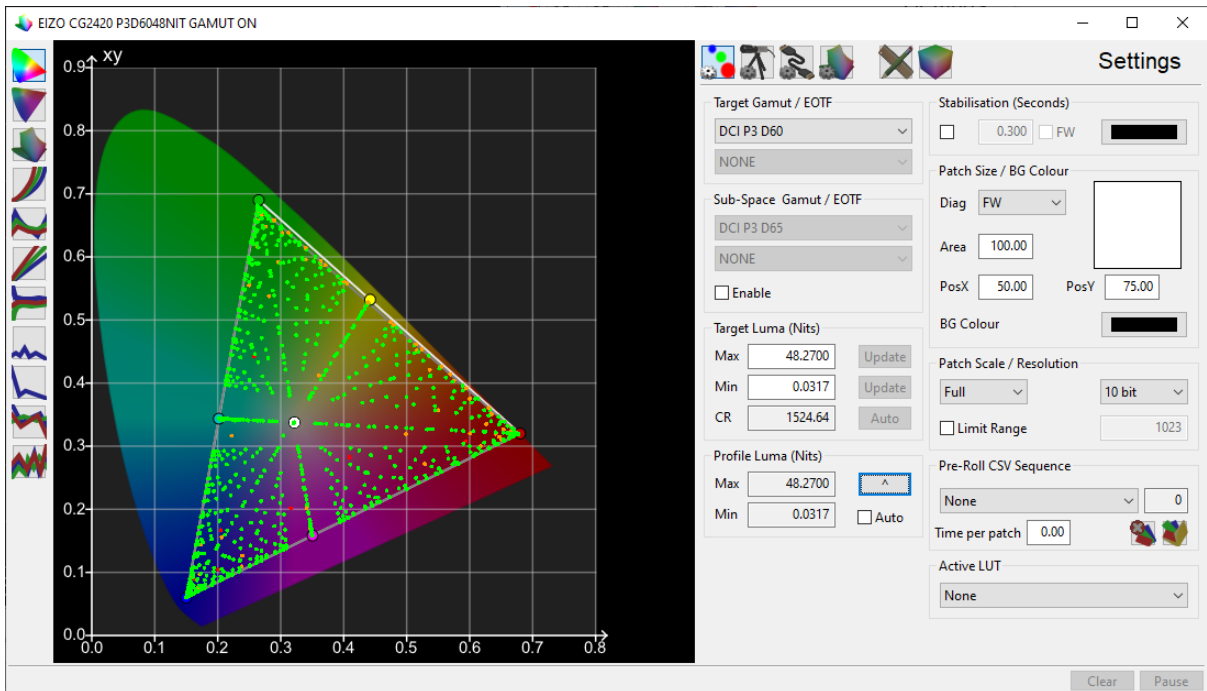


Figure 14 2DCI-3 D60

Resolution

Observing resolution tests charts such as EBU Test Pattern 7 and other test signals the CG2420 showed no signs of aliasing or other artefacts.

Summary

The CG2420 is an excellent choice for media and entertainment post-production, vfx and editing uses. Colour accuracy and the greyscale response was very good. 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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