ColorBox Lighting Analysis Software Launched: Spectral Measurements, Automated Light Testing, SSI, TLCI, and More

DResearch Lab has officially released ColorBox Lighting Analysis, a professional macOS application for measuring, analyzing, and comparing light sources. It supports instruments from multiple manufacturers and brings together advanced color science, automated lighting control, spectral design tools, and customizable dashboards.

For cinematographers, gaffers, lighting reviewers, and researchers who want to understand what their lights are actually producing, ColorBox has quite a lot to offer.



Beyond CRI and Color Temperature

When evaluating a cinema light, specifications such as CCT, CRI, TLCI, and SSI are usually among the first things people look at. But those numbers don't always tell the whole story.

Two lights can have exactly the same color temperature while producing very different spectra. A fixture might have an excellent CRI score but struggle with certain saturated colors. And even a good light can change its color characteristics considerably as it warms up or gets dimmed.

ColorBox was built to make these differences easier to measure and understand.

Connect a compatible spectrometer, spectroradiometer, spectrophotometer, take a measurement, and ColorBox calculates a wide range of metrics depending on what the instrument can measure.

These include CCT, Duv, illuminance, luminance, CRI, TM-30, SSI, TLCI, TLMF, and many others. Users can inspect the complete spectral power distribution, examine color rendering characteristics, and compare measurements side by side.

For cinematographers, SSI and TLCI are particularly useful. SSI measures how closely a light's spectrum resembles a reference illuminant, while TLCI estimates how a light is expected to reproduce colors in a standardized television camera system.

Instead of relying on one score, ColorBox lets you dig into the actual spectral information and see why two fixtures might behave differently.



Comparing Lights and Monitoring Performance

One of the most practical things you can do with ColorBox is compare measurements and track how a light behaves over time.

Let's say you're reviewing an LED fixture. You measure it at 100%, 50%, 25%, and 10% brightness. Does the color temperature remain stable? Does the light shift toward green or magenta? Does color rendering change as you dim it?

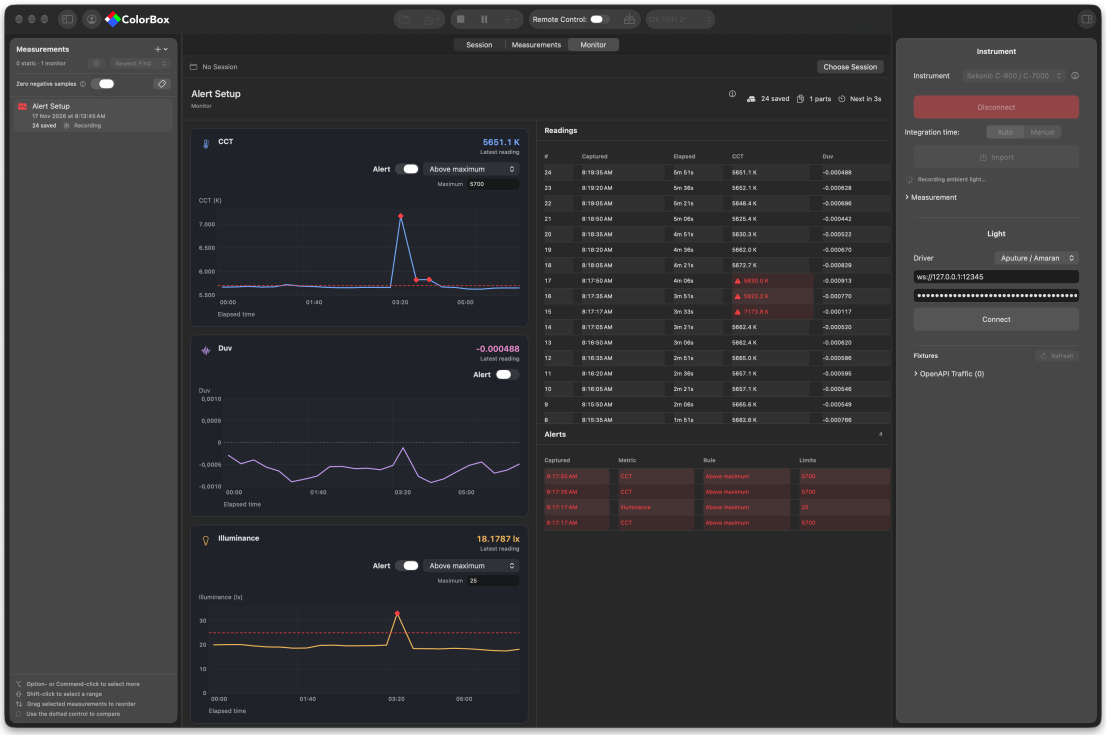
And what happens after the fixture has been running for an hour?

ColorBox can capture individual measurements or record continuously, at timed intervals, or at manually selected checkpoints.

Its time-series tools let you follow illuminance, CCT, Duv, CRI, TM-30, and other supported metrics, making it easier to investigate warm-up behavior, output stability, and color drift.

You can also add markers and notes during a recording, so it's clear what changed and when.

For longer tests, ColorBox includes monitoring alerts. Set acceptable tolerances for a measurement, and the software can warn you when a value moves outside those limits.



For reviewers and manufacturers, this means being able to document how a fixture actually performs instead of relying on a handful of measurements.

Automated Lighting Control and Test Sequences

This is where things get particularly interesting.

ColorBox doesn't just measure lights. It can also control them.

The software supports compatible fixtures from Aputure, amaran, Godox, and Philips Hue, along with lighting systems using DMX, Casambi, Matter, Zigbee, and DALI.

Depending on the fixture and protocol, you can adjust brightness, color temperature, and other supported parameters directly from ColorBox while measuring the results.

Its Sequences feature lets you automate much of the testing process.

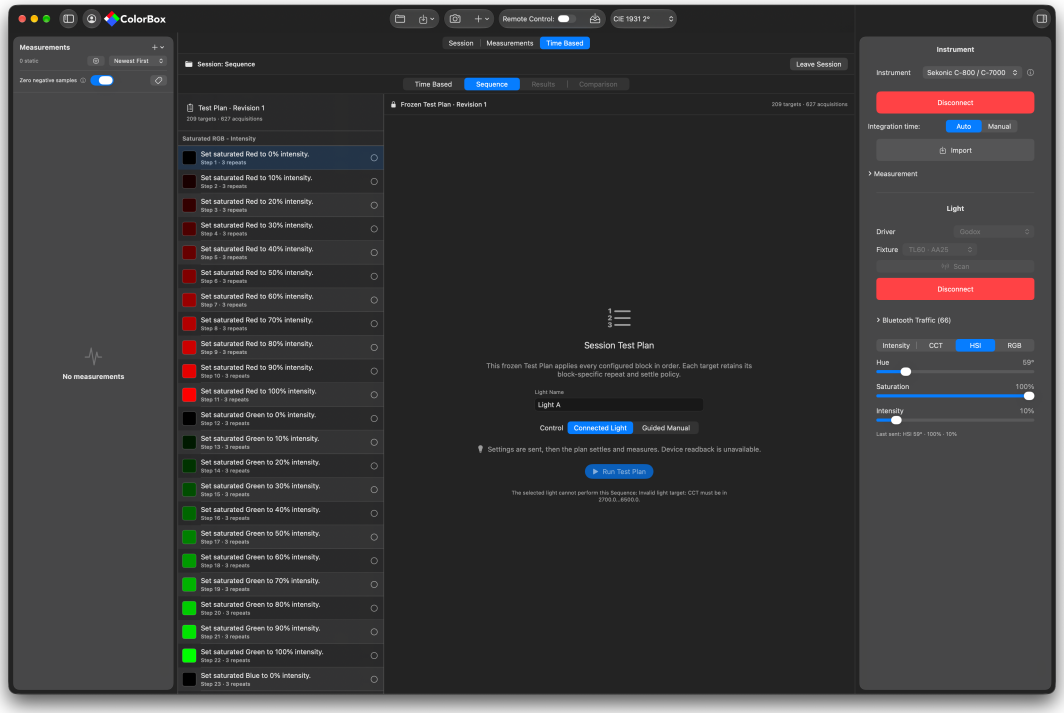
Imagine comparing several fixtures across the same range of brightness settings. Instead of manually adjusting every light, taking a reading, recording the result, and repeating the process, you can create a sequence.

ColorBox adjusts compatible fixtures, captures the measurements, and keeps each result associated with the corresponding lighting settings.

Sequences can also include changes in color temperature and other supported parameters.

And if a fixture doesn't support automatic control, you can still use guided sequences. ColorBox walks you through the adjustments and captures the measurements at each step.

For anyone regularly reviewing lighting equipment, this could save a considerable amount of repetitive work while helping keep tests consistent.



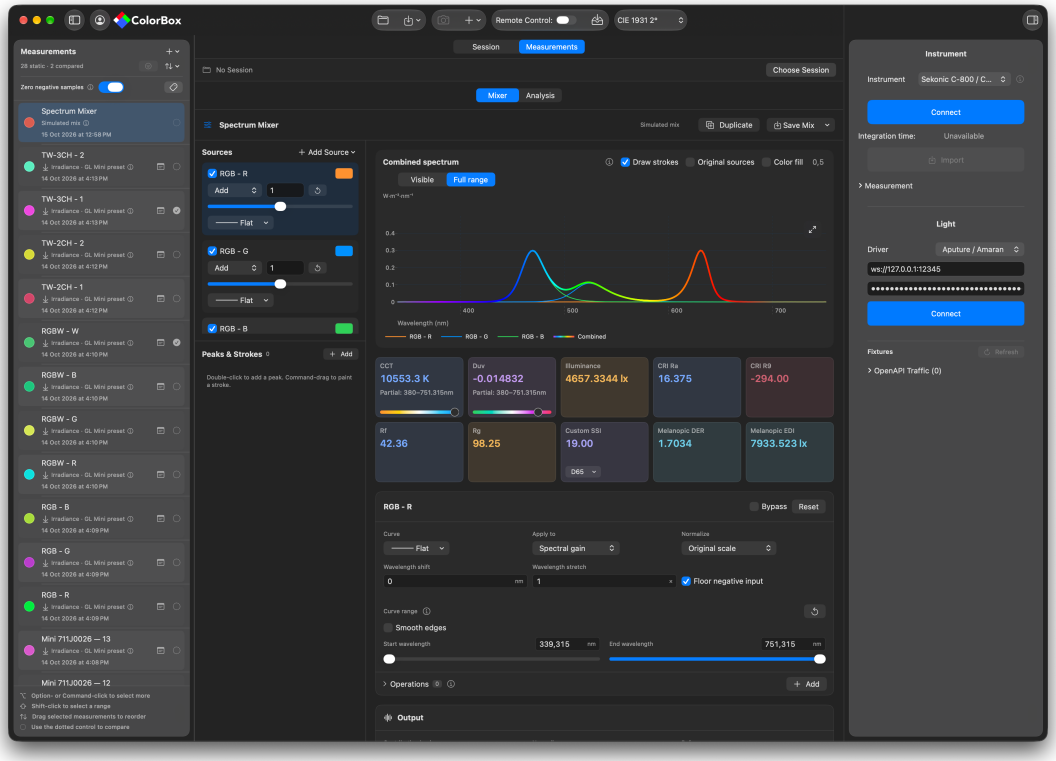
Designing Your Own Spectra and Finding LEDs to Reproduce Them

Measuring existing lights is one thing. But what if you could design your own spectrum?

ColorBox includes a Spectral Mixer that lets you do exactly that.

You can create a spectrum by clicking and dragging directly on a graph, shape individual spectral peaks, or combine spectra from actual measurements and LED sources.

As you make changes, ColorBox recalculates metrics such as CCT, Duv, CRI, TM-30, SSI, and melanopic EDI/DER in real time.



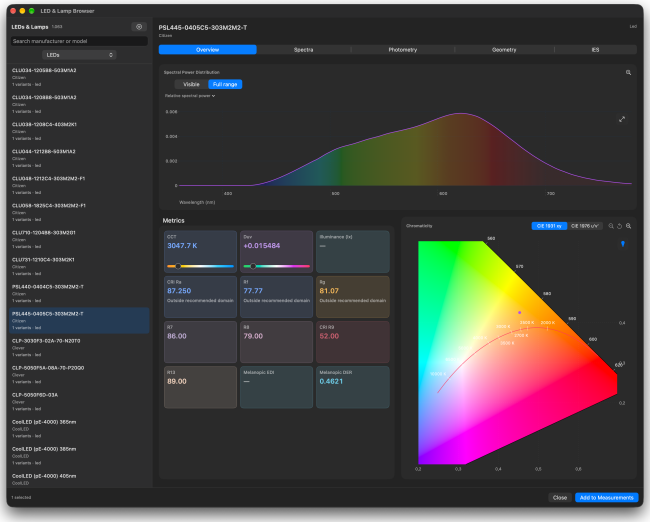
Watch the Spectral Mixer demo (MP4)

Finding LEDs with Spectral Match

There's also Spectral Match, which takes this concept a step further.

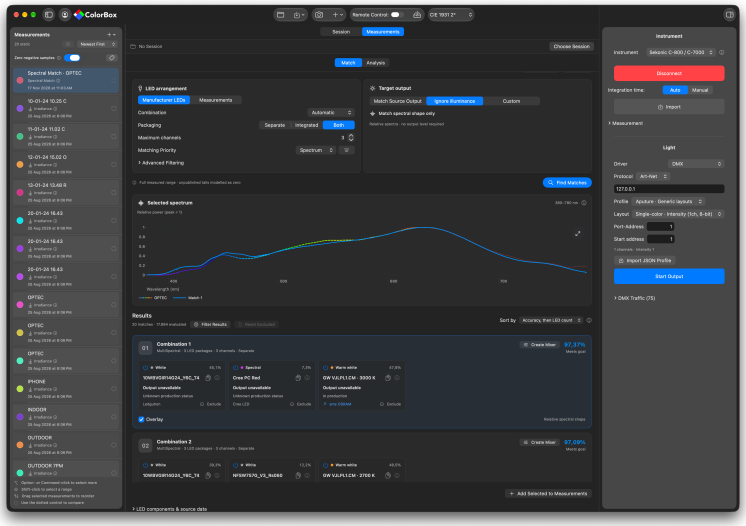
Start with a measured spectrum, an imported file, a standard illuminant, or something you've designed in the Mixer. ColorBox searches for LED combinations that can approximate your target.

The application includes a database of 339 LED spectra from 38 manufacturers, including ams OSRAM, Lumileds, Nichia, Cree LED, and Seoul Semiconductor.



You can search for single-channel, bi-color, RGB, RGBW, RGBWW, or more complex multispectral configurations with up to 12 channels.

The resulting combinations can be compared and transferred back into the Spectral Mixer for further adjustments.



For LED manufacturers, lighting engineers, and researchers, this opens up some interesting possibilities. You can experiment with spectral designs and investigate suitable components before building a physical prototype.

Support for Instruments from Multiple Manufacturers

Anyone who works with professional measurement instruments will be familiar with the problem of manufacturer-specific software.

You buy an instrument, install its application, and learn its particular workflow. Add another instrument from a different manufacturer, and you may need an entirely different application.

ColorBox takes a different approach.

It brings compatible measurement instruments into one environment, allowing users to capture, analyze, compare, and export data through a consistent interface.

The current compatibility list includes:

- X-Rite i1Pro 2 and i1Pro 3
- Sekonic C-800 and C-7000
- UPRtek CV600
- JETI specbos 1501, 1511, 2501, and 2511
- Konica Minolta CS-2000 and CS-3000 series
- LIT DUO 1
- GL Optic Spectis Mini
- Colorimetry Research CR-250 and CR-300
- Barbieri SpectroLFP qb

The broader ColorBox platform also includes calibration-related support for colorimeters from X-Rite, Calibrite, Colorimetry Research, and Klein, including the X-Rite i1Display 3 and Colorimetry Research CR-100.

Naturally, the measurements and calculations available depend on the connected instrument, its measurement range, and any relevant accessories.

DResearch Lab is also working with instrument manufacturers to expand compatibility.



More Than a Cinema Lighting Tool

Although ColorBox has plenty to offer filmmakers and lighting reviewers, it wasn't designed exclusively for cinema.

The same spectral measurements can be used to investigate lighting in many different industries.

In human-centric lighting, for example, ColorBox can calculate melanopic equivalent daylight illuminance (EDI) and related metrics that help characterize the potential circadian stimulus of a light source.



In horticulture, metrics such as photosynthetic photon flux density (PPFD), yield photon flux density (YPFD), and far-red measurements help researchers and growers evaluate lighting intended for plant growth.

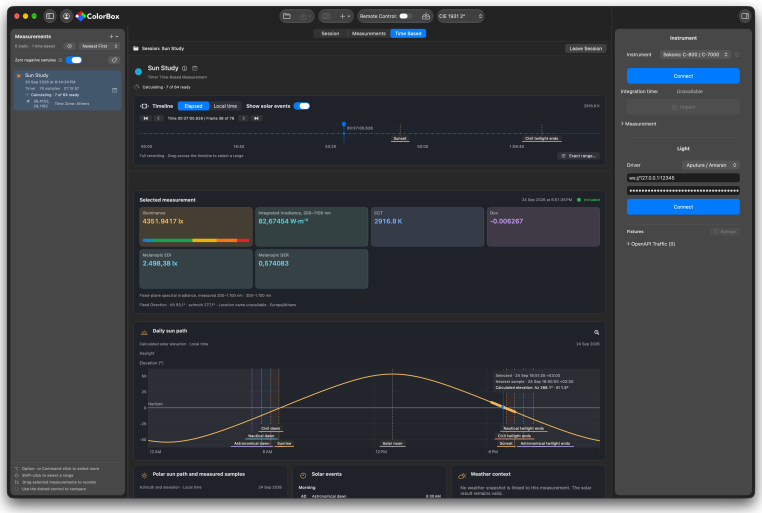
LED manufacturers can use ColorBox to examine spectral consistency, output stability, and color performance across different operating conditions.

Other applications include poultry lighting, aquaculture, architectural lighting, museum and gallery illumination, printing and color management, and scientific research.

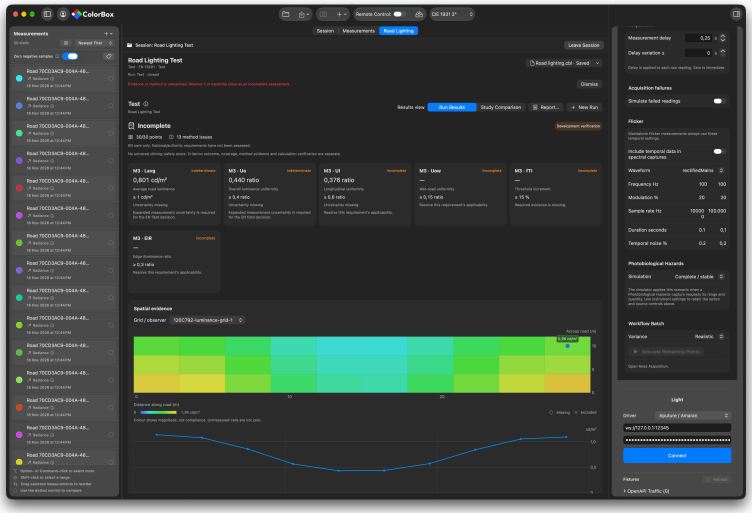
Sun Studies and Road Lighting

The software also has some more specialized tools.

Sun Studies connects measurements with geographic location, solar position, and available weather conditions. This makes it possible to investigate how daylight changes throughout the day, whether for cinematography, architecture, horticulture, or research.



Road Lighting provides measurement grids and assessment profiles based on EN 13201, helping users evaluate luminance, illuminance, and uniformity.



There are also photobiological hazard assessment tools based on IEC 62471:2006 and IEC 62471-7:2023, allowing users to examine supported UV, blue-light, and thermal hazard metrics against applicable exposure limits.

These assessments require suitable instruments and measurement data, but they demonstrate how far ColorBox's capabilities extend beyond conventional color measurements.

Custom Dashboards and Reporting

Not everyone measuring light needs to see the same information.

A cinematographer might be interested in SSI, TLCI, TM-30, and spectral comparisons. Someone working in horticulture might care more about PPFD, YPFD, and far-red radiation.

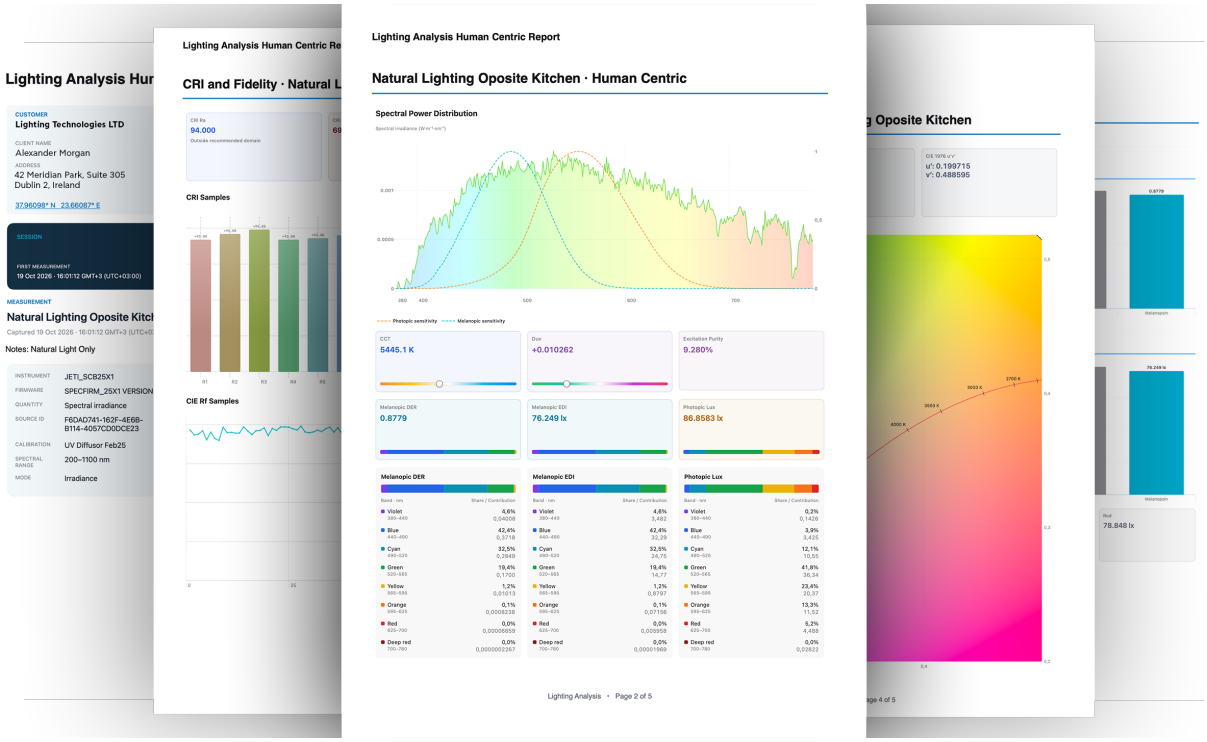
ColorBox includes dashboards tailored to different applications, including cinema, lighting review, manufacturing, horticulture, human-centric lighting, print viewing, and research.

There's also a Dashboard Designer for anyone who wants to create their own workspace.

Using a drag-and-drop interface, you can arrange spectral graphs, measurement tables, colorimetric metrics, and other visualizations to suit the job you're doing.

Once measurements are complete, ColorBox offers several ways to export the results.

Data can be exported in CSV, TSV, and CGATS formats, while PDF reporting covers individual measurements, comparisons, sequences, time-series recordings, and specialized dashboards.



Charts can also be exported as PNG or JPEG images at resolutions up to 8K, with options for light or dark styling and transparent backgrounds.

For reviewers creating videos or technical articles, having publication-ready graphs directly from the measurement application is a useful addition.

Built Natively for macOS

ColorBox is a native macOS application, and quite a bit of work has gone into its underlying technology.

It uses a custom color science and metrology engine for calculating measurement metrics, along with Metal-accelerated 2D and 3D visualizations designed to run smoothly at up to 60 FPS.

The goal is to make the application responsive and comfortable to use, even when working with complex spectral data and detailed graphs.

The interface is intended to feel like a modern macOS application rather than traditional laboratory software.

ColorBox Remote for iPhone and iPad

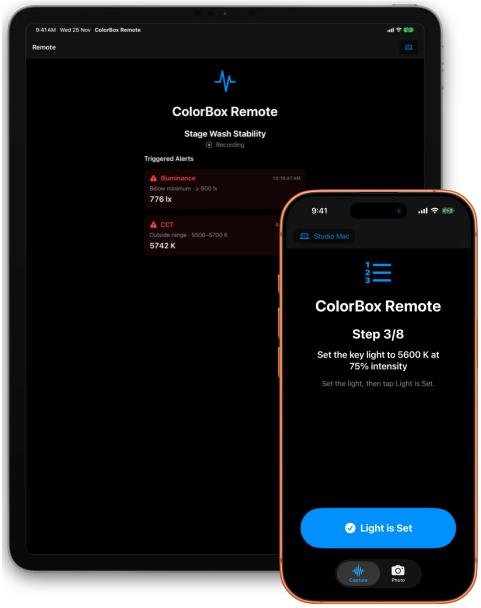
DResearch Lab also offers ColorBox Remote for iPhone and iPad.

Download on the App Store

The companion app lets you trigger measurements, follow sequences, monitor alerts, and collect reference information while standing next to the light or instrument.

It connects to ColorBox over the local network without requiring an account or collecting data through a cloud service.

This is particularly useful when measuring fixtures installed high above a set, performing outdoor studies, or working in a laboratory where the instrument and computer aren't necessarily next to each other.



Price and Availability

ColorBox Lighting Analysis is available now for macOS.

The application requires macOS 26 or later and supports compatible Apple silicon and Intel Macs.

DResearch Lab offers a fully functional 7-day trial, allowing users to explore the application and test it with their own measurement equipment before purchasing.

Licensing options, pricing, supported instruments, and additional product information can be found on the official website:

https://dresearchlab.com/colorbox/

ColorBox covers an unusually broad range of lighting measurement workflows, from taking a quick reading and comparing two fixtures to automated testing, long-term monitoring, spectral design, and specialized lighting assessments.

For cinematographers and lighting reviewers, the combination of spectral analysis, fixture control, and repeatable testing is probably the most immediately useful part.

For engineers, manufacturers, and researchers, the Spectral Mixer, Spectral Match, instrument compatibility, and specialized measurement tools offer considerably more room to experiment.

The Lighting Analysis module is also part of a larger ColorBox project, with further development planned in calibration, image analysis, and other areas of color science.

If you're regularly measuring lights or reviewing lighting equipment, ColorBox is certainly worth a closer look.

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