

CaIMAN Setup Guide

OSEE Monitors

3D LUT Calibration

Rev. 1.1

Introduction

CalMAN Display Calibration Software can automatically create optimized calibration 3D LUTs for OSEE monitors. CalMAN creates a custom LUT file, optimized to calibrate the OSEE monitor to the selected performance standard.

The 3D LUT calibration file can then be manually loaded into the OSEE monitor.

OSEE Monitors with 3D Calibration LUTs

The following OSEE models support calibration 3D LUTs.

- XCM250
- XCM240
- BCM230
- BCM215
- BCM170
- BCM156

CalMAN Required Software

- CalMAN Ultimate, CalMAN Studio, or CalMAN Studio with an OSEE license can be used to create 3D LUTs for OSEE monitors.

CalMAN Required Workflow

- Color Cube (3D LUT)

OSEE Monitor Control Port

- Ethernet RJ-45 port (rear panel)

Network Setup

For a CalMAN computer to control an OSEE monitor over a network connection, the computer and the monitor must both be connected to the same local network, on the same subnet. The first three sections of the monitor's IP address must match that of the local network (i.e. 192.168.1.xx).

You can check the monitor's IP address on its Status screen. If the monitor's IP address is not the same subnet as the local network, the monitor's IP address can be changed through the monitor's web interface.

If the CalMAN computer is connected to multiple networks, or has VMware Fusion or Parallels installed, you may be unable to connect CalMAN to the monitor.

Create 3D LUT File

CalMAN 3D LUT Monitor Calibration

Follow this procedure to create an optimized software 3D LUT calibration file, ready to be manually loaded into an OSEE monitor:

1. In CalMAN, load the "Color Cube (3D LUT)" workflow.
2. Proceed through each step of the workflow in the normal fashion, using the following notes for OSEE-specific procedures on the indicated workflow pages.

Initial Setup section

In the *Initial Setup* section of the *Color Cube (3D LUT)* workflow (Figure 1), step through the following pages:

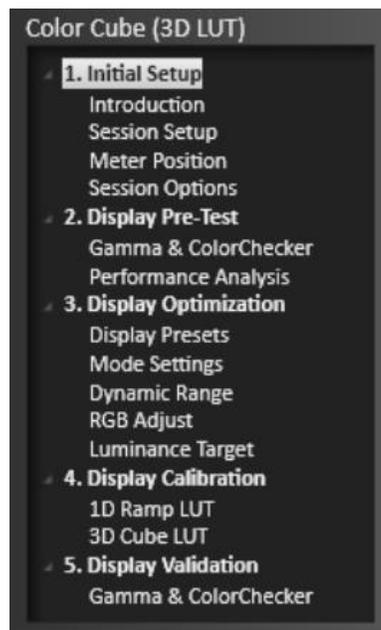


Figure 1. CalMAN workflow outline for the Color Cube (3D LUT) workflow.

Session Setup - Meter Connect

1. Connect your color meter to the CalMAN computer.
2. On the *Session Setup* page, click the *Find Meter* button.
3. On the *Find Meters* dialog, select your meter if it is listed, then click *Search*. If your meter is not listed on the *Find Meters* dialog, just click *Search*.

Session Setup - Source Connect

1. On the *Session Setup* page, click the *Find Source* button.

2. On the *Find Source* dialog (Figure 2), under *Manufacturer*, select 'OSEE.'



Figure 2. CalMAN Find Source dialog, for connecting to the OSEE monitor internal pattern generator.

3. Under *Model*, select 'OSEE - Pattern Generator.'
4. Enter the OSEE monitor's IP address.
5. Click *Connect*.
6. On the CalMAN *Source Settings* tab (Figure 3), check the "Disable 3D LUT" box.

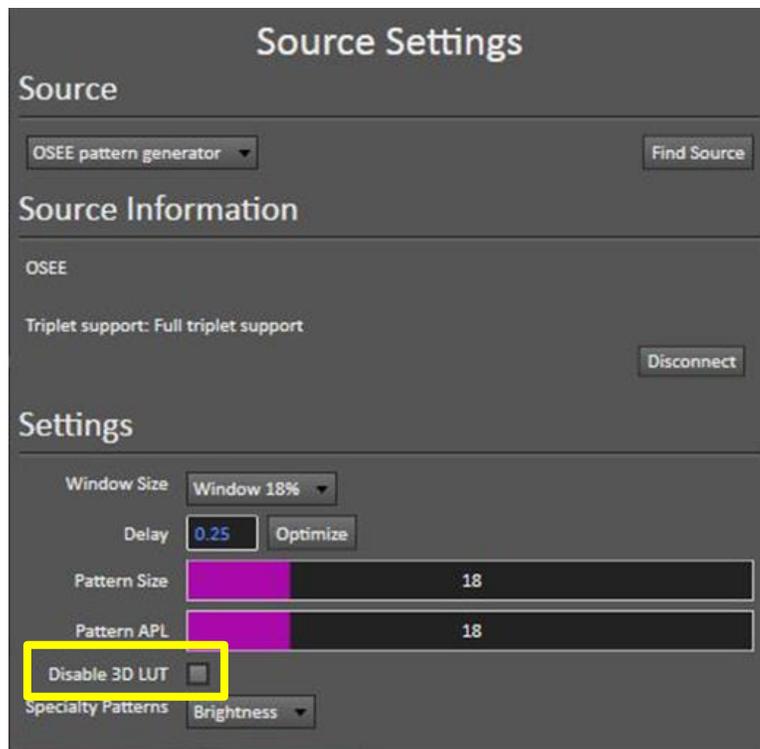


Figure 3. CalMAN Source Settings tab, for selecting options for the test pattern source.

Note: If you disconnect the CalMAN connection to the OSEE monitor, before you reconnect to the monitor you need to power cycle the monitor with the rear panel power switch. Otherwise, test pattern control will be unreliable or non-functional.

Every time the source generator in the monitor is accessed, the monitor is placed in “Native” mode, so we do not want the source to be disconnected and reconnected during any CalMAN operation.

Session Setup - LUT Device Setup

1. On the *Session Setup* page, click the *Find 3D LUT Device* button.
2. On the *Find Display* dialog (Figure 4), under *Manufacturer*, select ‘SpectraCal.’
3. Under *Model*, select ‘SpectraCal - Cube Generator (OSEE).’
4. Click *Connect*.

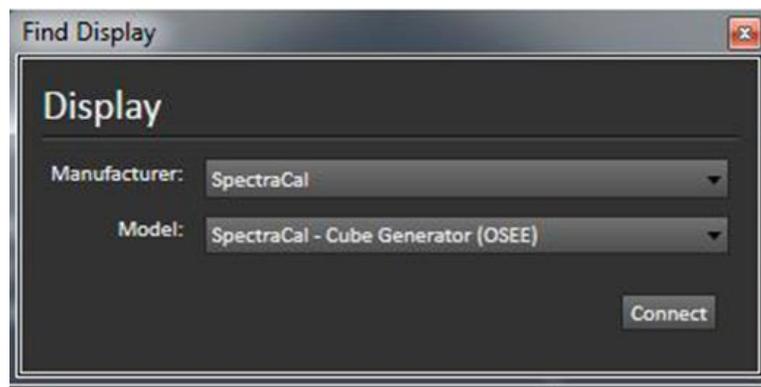


Figure 4. CalMAN Find Display dialog, for connecting to the Cube Generator function for 3D LUT creation.

Session Options page

On the *Session Options* page, under *Input Signal Levels* (Figure 5), select ‘PC (0-255).’

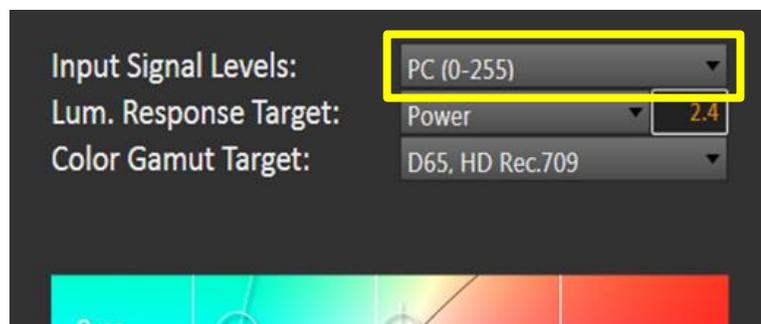


Figure 5. Portion of CalMAN Session Options page, showing Input Signal Levels selection.

Display Pre-Test section

In the *Display Pre-Test* section of the Color Cube workflow, you can measure the performance of the monitor before you calibrate it.

- On the *Gamma & ColorChecker* page, click the *Read Series* button to measure the monitor's pre-calibration performance.

Display Optimization section

Skip the entire *Display Optimization* section of the workflow. Skip directly to the *3D Cube LUT* page in the *Display Calibration* section.

Display Calibration section

In the *Display Calibration* section of the Color Cube workflow, there are provisions for calibrating both a 1D RGB LUT (1D Ramp LUT page) and a 3D cube LUT (3D Cube LUT page). When you are calibrating an OSEE monitor with a 3D LUT, skip the *1D Ramp LUT* page (1D RGB LUT) and use only the *3D Cube LUT* page.

1D Ramp LUT page

Skip the CalMAN *1D Ramp LUT* page (a 1D LUT does not need to be created for the OSEE monitor).

3D Cube LUT page

1. On the *3D Cube LUT* page, click the *AutoCal* (rotating arrows) button at the right end of the meter action buttons. The *AutoCal Setup* dialog then appears (Figure 6).

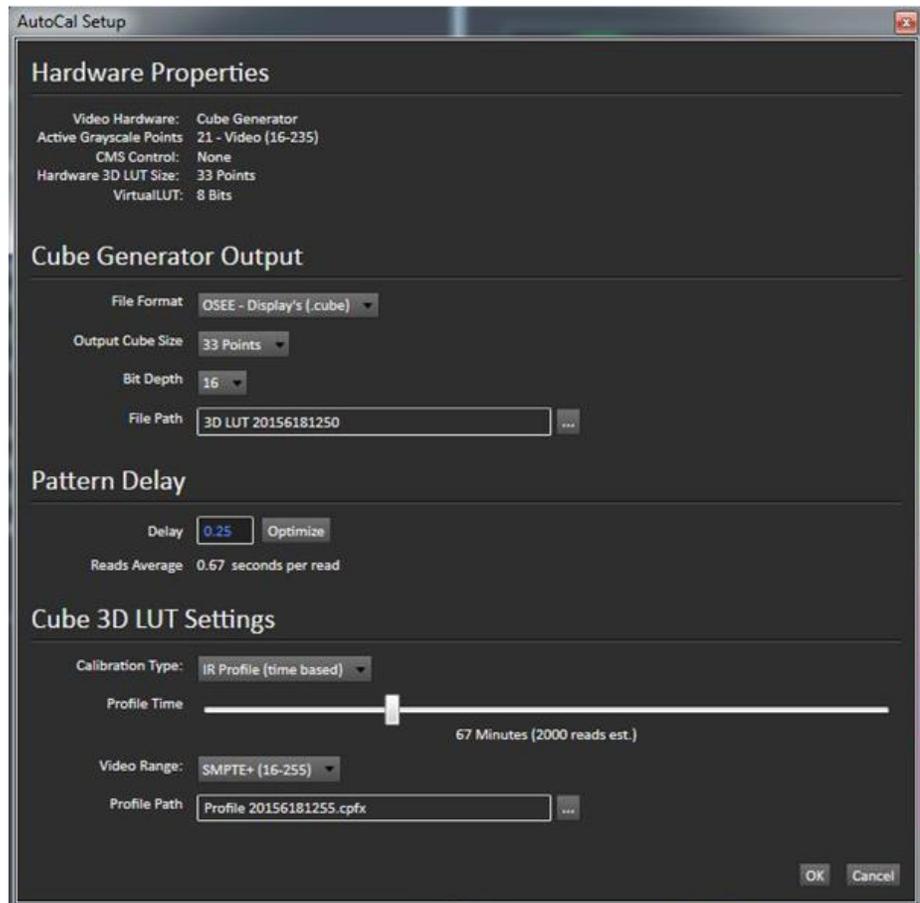


Figure 6. CalMAN AutoCal Setup dialog, for selecting options for 3D LUT creation.

2. Under *File Path*, select the desired directory path and provide a name for the LUT file that CalMAN will create (e.g. monitor ID and date).

Note: The default location where CalMAN saves LUT files that it creates is: `\Documents\SpectraCal\CalMAN xxx\LUTs`.

3. Under *Calibration Type*, select your desired type of 3D LUT calibration process.
 - **IR Profile (time based):** Creates the best quality display calibration 3D LUT possible in the selected period of time. You select how much display quality you have time for, from 30 minutes to maximum display quality (6,000 points max). Uses Intelligent Resolution Profiling to search out the most nonlinear color space areas and correct those first.
 - **IR Profile (point based):** Creates the best quality display calibration 3D LUT possible with the selected number of measurement points (1,000 - 10,000 points). Uses Intelligent Resolution Profiling to search out the most nonlinear color space areas and correct those first.
 - **Lightning LUT:** Creates a display calibration 3D LUT in five minutes or less. Produces a very high quality result on professional displays with

moderate linearity. Displays with significant nonlinearity may produce marginal results.

4. Click *OK*.

Upon completion of the AutoCal 3D software LUT calibration process, CalMAN automatically saves the optimized LUT calibration data to an OSEE 33x33x33 .cube format LUT file in your selected drive location.

OSEE Monitor 3D LUT Load

When CalMAN completes its automatic 3D LUT calibration, the created LUT file is ready to be manually loaded into the OSEE monitor. Use the OSEE-supplied utility to load the software 3D LUT calibration .cube file into the monitor.

After loading the CalMAN generated LUT:

1. With the monitor's internal web server, toggle the monitor's required color space and color temp Off, then On.
2. On the CalMAN *Source Settings* tab, uncheck the "Disable 3D LUT" box.

Display Validation section

After you have loaded the 3D calibration LUT into the OSEE monitor, you can test the performance of the monitor, to validate the accuracy of the monitor with the 3D calibration LUT loaded.

1. On the CalMAN *Source Settings* tab, un-check the "Disable 3D LUT" box.
2. On the *Gamma & ColorChecker* page, in the *Display Validation* section of the Color Cube workflow, click the *Read Series* button to measure the monitor's post- calibration performance.
3. If you wish, you can switch back to the *Gamma & ColorChecker* page, in the *Display Pre-Test* section of the workflow, to compare to the monitor's pre-calibration performance.

DONE – OSEE 3D LUT calibration and setup is complete.

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About Portrait Displays

Portrait Displays, Inc., since 1993, is a leading application software provider (ASP) for PC, smartphone, and tablet displays. The Portrait Displays team now includes **SpectraCal**, the world's leading provider of video display calibration software. The combined companies offer value-added, feature-rich solutions to both OEM display manufacturers and end users seeking improved accuracy and manageability of their displays.

Portrait Displays, an Intel Capital Portfolio company, is a private corporation with headquarters in Pleasanton, California, USA with representatives in Europe, Taiwan, China, Japan, and Korea.

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