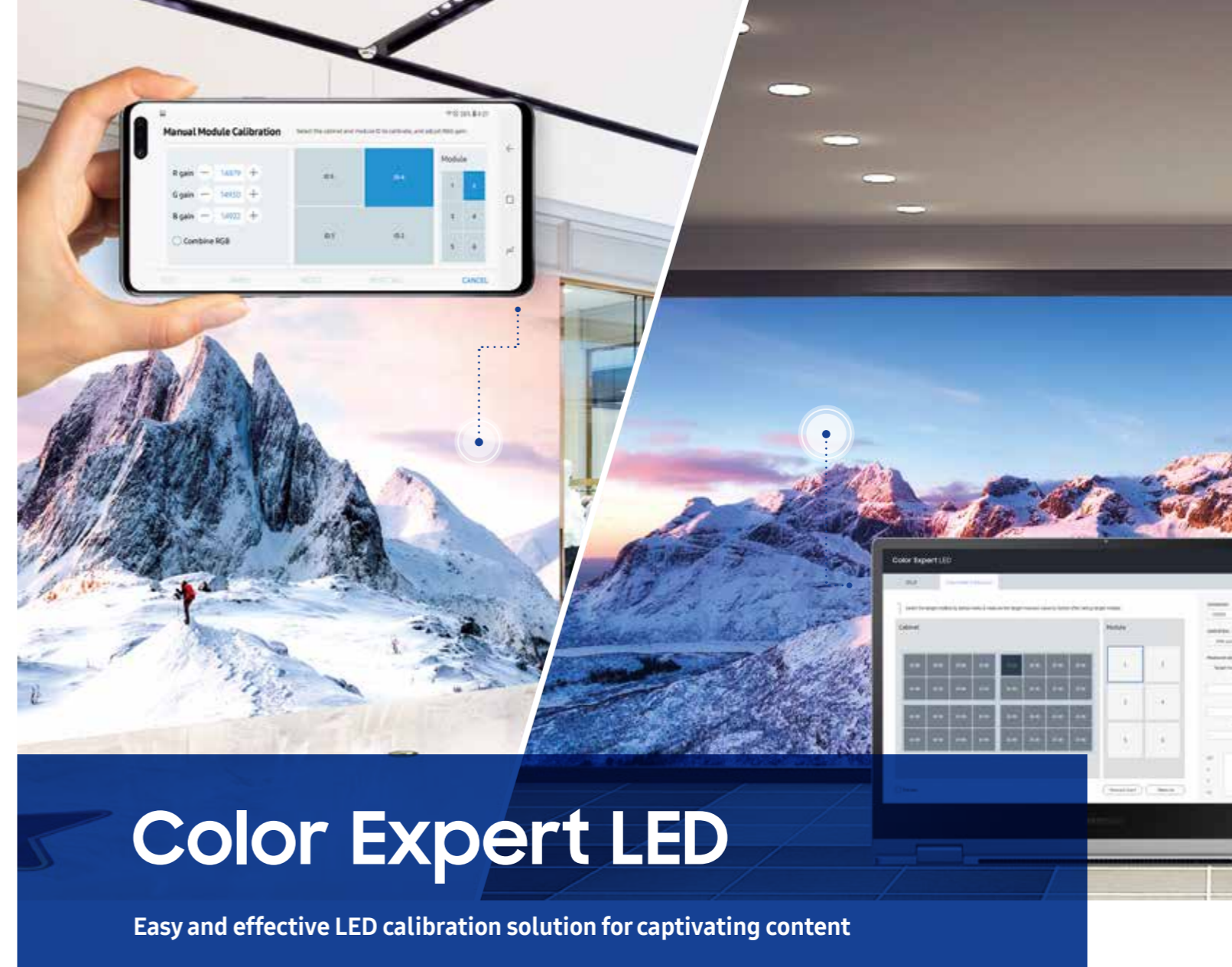


Calibrator Compatibility	
Konica Minolta	CA310 CA410
Canon	7D

System Requirement	Samsung LED Signage Compatibility
Color Expert LED	Windows 7 32bit/64bit, Windows 8 32bit/64bit, Windows 10 32bit/64bit A calibrator is required to use the Samsung Color Expert LED software. Customers must purchase the calibrator separately.
Color Expert LED Mobile	Samsung Galaxy phone only - Samsung Galaxy S7/S8/S9, Galaxy Note8/9
Color Expert LED Cinema	Windows 7 32bit/64bit, Windows 8 32bit/64bit, Windows 10 32bit/64bit A calibrator is required to use the Samsung Color Expert LED Cinema software.



Color Expert LED

Easy and effective LED calibration solution for captivating content

About Samsung Electronics Co., Ltd.

Samsung Electronics Co., Ltd. inspires the world and shapes the future with transformative ideas and technologies. The company is redefining the worlds of TVs, smartphones, wearable devices, tablets, cameras, digital appliances, medical equipment, network systems, and semiconductor and LED solutions. For the latest news, please visit the Samsung Newsroom at news.samsung.com.

Samsung Color Expert LED

For more information about Samsung Color Expert LED, visit www.samsung.com/business or www.samsung.com/displaysolutions

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2019-05

Samsung SMART LED signage delivers bright, compelling content to keep customers engaged with innovative, customizable displays. Maintaining the picture quality of this cutting-edge technology requires careful and accurate calibration. Samsung's new versatile solution includes a PC Version, providing precise adjustment down to the pixel-level as well as a simple and effective mobile version. Samsung Color Expert LED and Color Expert LED Mobile allow users to easily customize LED signage for specific business needs. Color Expert LED Cinema including a three-step factory calibration and on-site tuning ensures Onyx to deliver accurate picture quality as the director intended.

Color Expert LED	Color Expert LED <small>Mobile</small>	Color Expert LED <small>Cinema</small>
<ul style="list-style-type: none"> Pixel-level precision Complete customization Simple set up and easy user-interface 	<ul style="list-style-type: none"> Wireless solution Automatic calibration Fast and effective process 	<ul style="list-style-type: none"> Rigid three-step factory calibration On-site white balance and edge correction

Why is LED signage calibration essential?

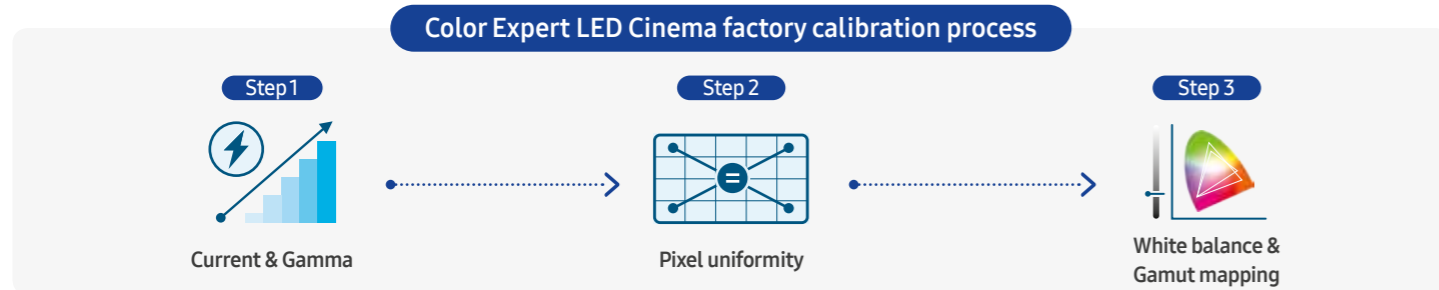
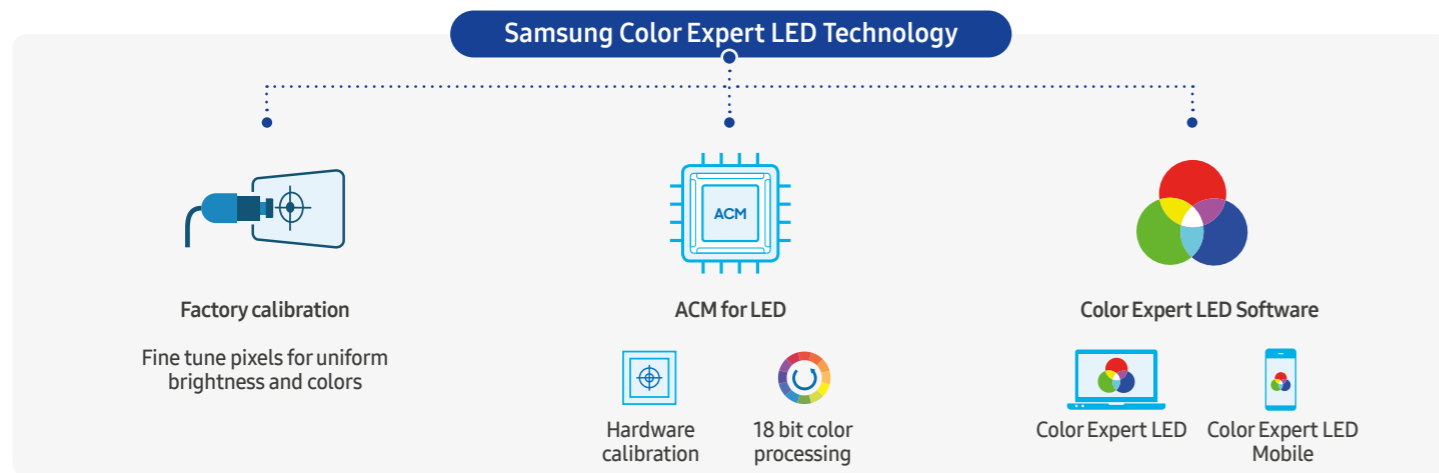
For industry-leading businesses, the transition to digital media across communication channels is well under way. As advances in technology have made LED signage more affordable and practical, vivid and bezel-free LED signage has become the new norm for many commercial applications with brighter, larger and more customizable screens.

In order to provide the most immersive and engaging viewing experience possible with LED signage, customized visual settings and accurate display calibration are essential. Beyond initial installation and setup, the long lifespan of LED displays sometimes necessitates module replacements requiring additional calibration to ensure a completely uniform picture that keeps customers engaged.

What is Samsung Color Expert LED?

Samsung's Color Expert LED technology is a complete calibration solution to ensure LED displays maintain picture quality from the factory through the full lifetime of the display. The technology contains three elements to guarantee optimal picture quality. Factory-tuning individual pixels ensures uniform color and brightness. Each display is also embedded with ACM for LED to enable precise calibration with 18-bit color processing. Color Expert LED is a critical final step to finely tune color and other features at installation and for maintenance.

The Color Expert LED Cinema solution for Onyx cinema LED displays involves a detailed three-step factory calibration so all Onyx displays meet the DCI certification requirements and deliver accurate and uniform display directly from the factory. Color Expert LED Cinema offers on-site calibration including white balance and edge correction.



The Color Expert LED solution includes two versatile tools for common LED signage, allowing customers to select what best suits their needs.

Color Expert LED

Based on PC software, Color Expert LED provides users a way to adjust color temperature and white balance, perform gamut mapping and more. Utilizing a colorimeter and LED color algorithms, it allows users to calibrate LED signage all the way down to the pixel-level.

Color Expert LED Mobile

The mobile version of Color Expert LED provides users a faster and more cost-efficient method of calibration via mobile phone.

Samsung LED signage calibration solution

Samsung provides a comprehensive calibration solution for everything from initial display setup and installation to customizing color settings and fixing module uniformity as required during display operation and maintenance.

	Technology type	Benefits	Calibration features	How to calibrate	When to use
Color Expert LED	<ul style="list-style-type: none"> PC software Calibration with professional devices 	More precise calibration and customized settings	<ul style="list-style-type: none"> White balance Gamut mapping Color temperature Pixel-level uniformity 	Program matches target area's color and brightness to target data or reference area	<ul style="list-style-type: none"> Customized color presentation needed Pixel-level calibration required
Color Expert LED <small>Mobile</small>	<ul style="list-style-type: none"> Mobile application Calibration with mobile camera 	Quick and convenient calibration without needing professional devices	<ul style="list-style-type: none"> White balance Module & screen-level uniformity 	Program uses photo of reference area from mobile device to auto-adjust target area	<ul style="list-style-type: none"> Quick fixes After maintenance or module replacement
LSM <small>(LED Signage Manager)</small>	<ul style="list-style-type: none"> PC software 	Manage display layout and settings for initial installation	<ul style="list-style-type: none"> White balance Edge correction 	Manually enter desired values into software program	<ul style="list-style-type: none"> Initial installation Seam correction as needed

Color Expert LED

Color Expert LED is a software application that allows users to fine-tune the calibration of Samsung LED displays to provide an optimal viewing experience for their audience. Using advanced technology, Color Expert LED can align the brightness and color of a whole screen to uniform conditions through three key features.

- 1. Customized calibration fit to any customer need:** Color Expert LED offers extensive customization and color calibration through a range of performance tools including gamut mapping, color temperature, white balance and screen uniformity control.
- 2. Advanced picture quality with pixel-level tuning:** Pixel-level uniformity accomplished with professional calibration devices brings more precise and refined picture quality to life and enhances even the subtlest details.
- 3. Simple setup with easy-to-use UI:** Color Expert LED enables simple, straightforward setup process with a user-friendly interface.

Color Expert LED Mobile

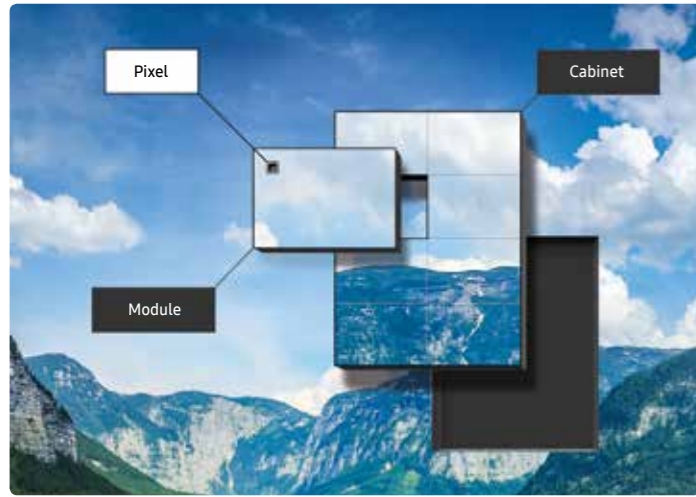
Businesses need to move more quickly than ever in today's fast-paced environment. Samsung's Color Expert LED Mobile application allows users to easily adjust their LED signage on-the-go with three key benefits.

- 1. Instant calibration with mobile phone:** Requiring nothing more than a mobile phone and a Wi-Fi network, calibration is instant and efficient and doesn't require any additional expensive professional devices. Automatic calibration means Color Expert LED Mobile does not miss any subtle differences in color and brightness that the human eye might miss, creating a more accurate and uniform picture.
- 2. Catch minute details with automatic calibration:** Color Expert LED Mobile does not miss even the subtlest variations in color and brightness thanks to automatic calibration which creates a more accurate and uniform picture.
- 3. Save time and money with efficient tool:** Color Expert LED Mobile provides drastic savings in time and money compared to conventional, manual calibration.

* LSM (LED Signage Manager)

LED Signage Manager (LSM) is a software solution giving users the ability to manage and configure display layout and adjust settings as part of the initial signage setup and installation process. The LSM solution can adjust white balance and do edge correction.

Key features



Pixel-level uniformity

Video display walls are an impactful way to engage with customers, but they must have total color uniformity to maximize and maintain engagement. Samsung's Color Expert LED provides pixel-level uniformity, bringing more precise and refined picture quality to life, when compared with module-level uniformity. Using professional calibration devices, the uniformity is accurate and flawless, enhancing even the subtlest details and catching the attention of customers with stunning visuals.

Complete customization of calibration

Color Expert LED offers convenient color and brightness calibration, through a range of powerful performance capabilities including gamut mapping, color temperature, white balance and screen uniformity. These all allow for detailed customization and accurate color presentation, offering businesses the opportunity to communicate important messages to each and every customer.

Simple setup with easy UI

Color Expert LED offers a simple, step-by-step Windows wizard-based setup process, designed to make the installation process as seamless as possible. Its user-friendly interface, which is easy to follow and calibrate as needed, means users will have no difficulty when setting up and utilizing the solution. By simplifying the setup process, Samsung allows users to implement the solution quickly and efficiently, maximizing the benefits for both the business and its customers.

Color Expert LED

Key features



Wireless connection capabilities

Using just a mobile phone camera and Wi-Fi network, calibration with Color Expert LED Mobile can be done without the need for additional, expensive professional devices. When an existing module must be replaced, Color Expert LED Mobile can be used to reach a resolution from anywhere, any time. Samsung's innovative remote capabilities provide businesses the perfect solution to instantly and efficiently calibrate on-site, meaning no downtime for the display and maximum engagement with customers.

Automatic calibration

When replacing modules on a LED display wall, engineers traditionally compare new and existing modules with the human eye, increasing the likelihood that more nuanced issues are missed. Color Expert LED Mobile calibrates automatically based on a target area ensuring it does not miss any subtle differences in color and brightness. This creates a more accurate and uniform picture, bringing stunning pictures to life in vivid color and detail.

Fast and effective calibration

Color Expert LED Mobile provides dramatic time saving capabilities when compared to conventional, manual calibration, which can take up to an hour to finish. This simplifies onsite maintenance, but ensuring any issue is fixed quickly, not impacting the business or interactions with customers. In addition, by making adjustments based on a standard target figure, as opposed to needing an engineer, Color Expert LED Mobile is a time and cost-efficient solution for businesses looking to stand out.

Gamut mapping
Customize gamut mapping for any customer need

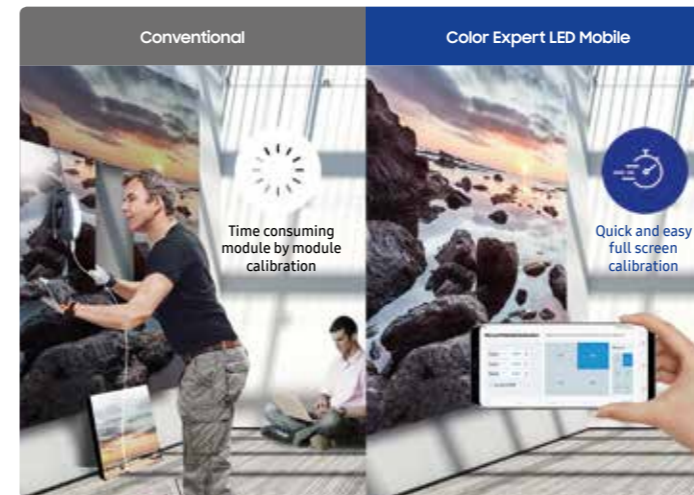
White balance
Accurate and finely tuned white color

Color temperature
Modify color temperature based on ambient light

Screen uniformity
Calibrate for consistent luminance across displays



Conventional	Color Expert LED Mobile
<p>Manual calibration Human eye based adjustment</p> <p>Manual setting</p>	<p>Auto calibration Hassle-free uniformity validation via mobile</p> <p>Calibration target setting</p>



Step 1.
Connect LED signage to the computer

Step 2.
Install Color Expert LED and LSM on the computer

- Color Expert LED and LSM is available for download at: www.secslm.com or displaysolutions.samsung.com
- Users must log in as a partner, navigate to help and search "LSM" or "Color Expert LED"
- For system authorization, please contact your Samsung account manager

Step 3.
Connect colorimeter or DSLR camera to computer using USB cable

Step 4.
Confirm LED signage is using latest firmware, update if necessary

Step 5.
Select and measure data of target module to be calibrated

Step 6.
Select existing calibrated module as reference or enter target setting data

Step 7.
Run calibration

- If using DSLR camera, upload calibration results to LED signage through LSM

Step 1.
Connect mobile phone to LED signage

Step 2.
Install Color Expert LED Mobile on mobile phone

- Color Expert LED Mobile is available for download at: www.secslm.com or displaysolutions.samsung.com
- Users must log in as a partner, navigate to help and search "Color Expert LED Mobile"
- For system authorization, please contact your Samsung account manager

Step 3.
Confirm LED signage is using latest firmware, update if necessary

Step 4.
Select target module to be calibrated and existing calibrated module as reference

Step 5.
Run calibration