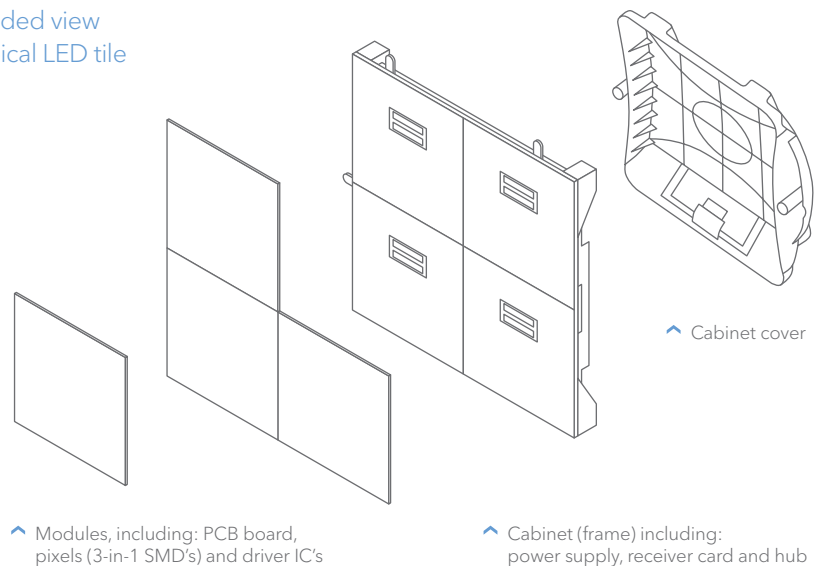# The questions you must ask before buying an LED display

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A video wall is only as good as the sum of its parts. Just one component can impact overall visual performance, and it's important to spot the red flags. With changing standards and wide range of product quality, questioning the available solutions will ensure you make the best choice.

Here are the top questions you must ask before buying an LED display.

Exploded view of typical LED tile

^ Cabinet cover

^ Modules, including: PCB board, pixels (3-in-1 SMD's) and driver IC's

^ Cabinet (frame) including: power supply, receiver card and hub

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1 Do all pixels come from the same bin?

Because the creation process is so complex, it's impossible to make identical pixels. The best manufacturers sort pixels by brightness and color. This process is called binning.

Using pixels within a tightly controlled bin range, we can ensure a better quality display. Since all pixels are unique, it's impossible to match them exactly—but choosing from a narrow range of color and brightness allows manufacturers to achieve a more uniform picture throughout the screen while maximizing power efficiency.
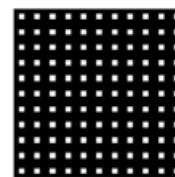
2 What is the fill factor of your screens?

How much of the screen is covered by light-emitting pixels? That's your fill factor. It's impossible to achieve a fill factor of 100%, but this number should be high (at least 40%) to achieve the crispest and most vibrant picture.
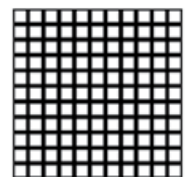
3 Do you use black surface-mounted-device (SMD) LED packages?

Throughout an LED display, each pixel is held in place by an SMD package. For the deepest levels of black and highest contrast, these packages should be constructed with a dark encapsulation material, typically an epoxy resin. Be sure to ask for black SMD LEDs.

Fill factor
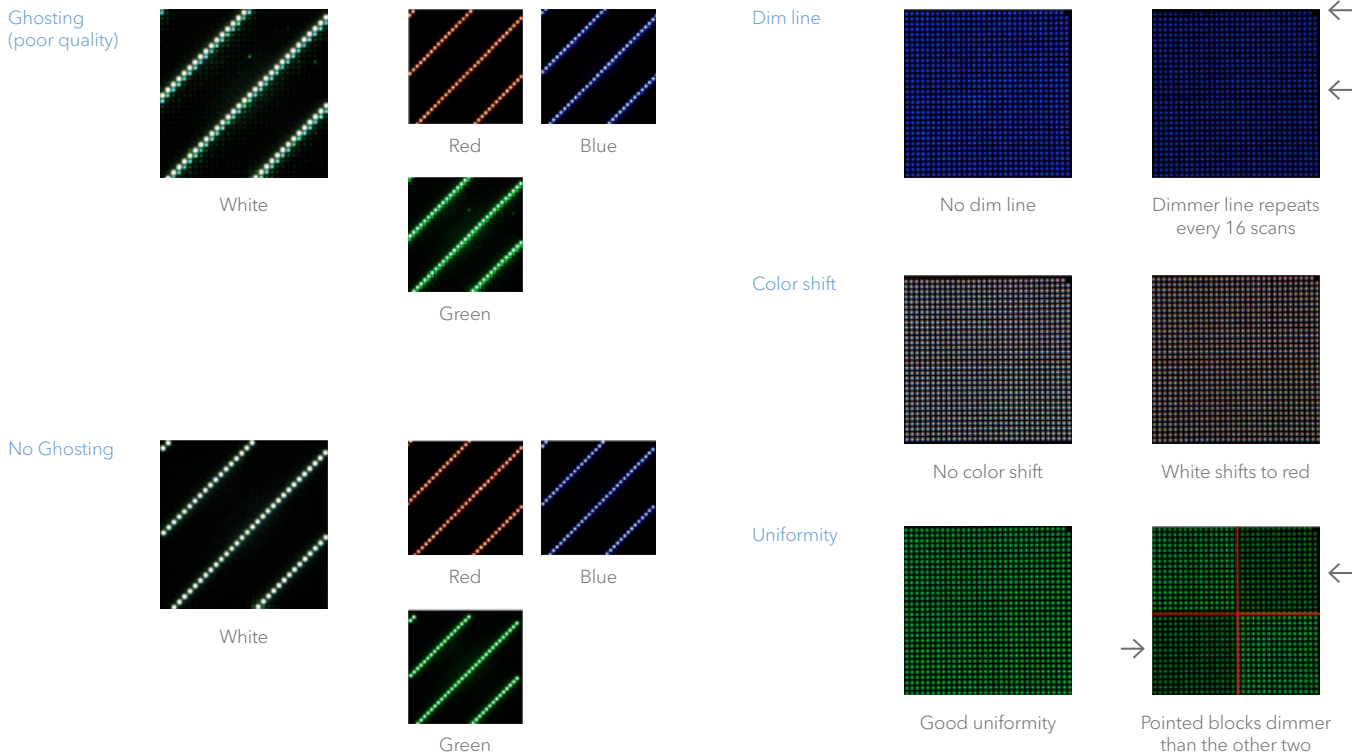(high fill factor = better quality image)

16% coverage   38% coverage

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4 Who manufactures your driver and switch integrated circuits (ICs)?

ICs are integral to the performance of your display. Without quality driver and switch ICs, the pixels in your display may not receive the best control. This will affect brightness and color uniformity. Over time, you can easily see the impact of low-quality ICs: the screen could show ghosting, dim lines, and color shifts.

Ghosting
(poor quality)

White

Red

Blue

Green

No Ghosting

White

Red

Blue

Green

Dim line

No dim line

Dimmer line repeats every 16 scans

Color shift

No color shift

White shifts to red

Uniformity

Good uniformity

Pointed blocks dimmer than the other two

5 How does the display stay cool?

Quality LED cabinets allow heat to escape the display, so that it can cool passively (instead of using an active fan). This decreases the overall size of the display, and opens more possibilities for your design and installation. It also provides noise-free operation, which is critical in many applications—especially if the viewing distance is close.

The cabinet has a huge impact on how you can use an LED display. Without the proper cooling or easy accessibility, your installation could be limited. Keep your plans in mind when asking about the LED cabinet, and ask if those display ideas are possible.

6 Where are the serviceability points?

The best designs allow for full access from the front, so tiles can be replaced and electronics can be repaired without deconstructing your installation. Most products will also require rear access for certain components. It's important that you understand which components can be accessed, and from which side of the tile. The best products allow individual tiles to be replaced from the front of the LED video wall, without having to remove the entire cabinet, dramatically reducing service time and operational costs.

7 Can we see your product in action?

Attending industry trade shows or requesting a live demonstration with multiple vendors will help you ensure top visual quality. Keep in mind, many vendors will offer their own content to maximize impact and minimize deficiencies. If possible, use a consistent package of visual images (and, preferably, video) to compare the vendors. Make sure to choose content that is representative of your specific application.

When viewing the images:

› look for a uniform image across all modules

› check for ghosting, ripping, or other anomalies

› use a light meter to test brightness

8 Is your display certified at the system-level?

When LED components are used together, their interactions can cause additional concerns, such as EMC emission levels that may not meet standards. Completing a system-level certification ensures that the entire system is safe and provides you with a peace of mind. If an LED product is purchased and installed without a system-level certification, a site certification may be required to complete your installation. Ask each potential vendor if site certifications are required, as these will increase installation costs and cause project delays.

9 Can you provide a complete solution?
Do you offer additional services and products?

The best suppliers will work with you to create a solution that turns your vision into a reality. Ask if they offer additional products, like structures, processing and content management. The right mix of technologies and services will help create an entire experience for your audience.

Make sure that your manufacturer will stand behind their product and make the installation right, should any problems arise.

A name you can trust

Christie® LED solutions are designed for the best uniformity and performance. By combining high-quality components, and extensive list of solutions, and dedicated professional services, Christie will help make your vision come to life.

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