Technical Article

How to Manage Projection Brightness, Contrast and Power Consumption in Portable Display Applications Using TI DLP® IntelliBright™ Algorithms

TEXAS INSTRUMENTS

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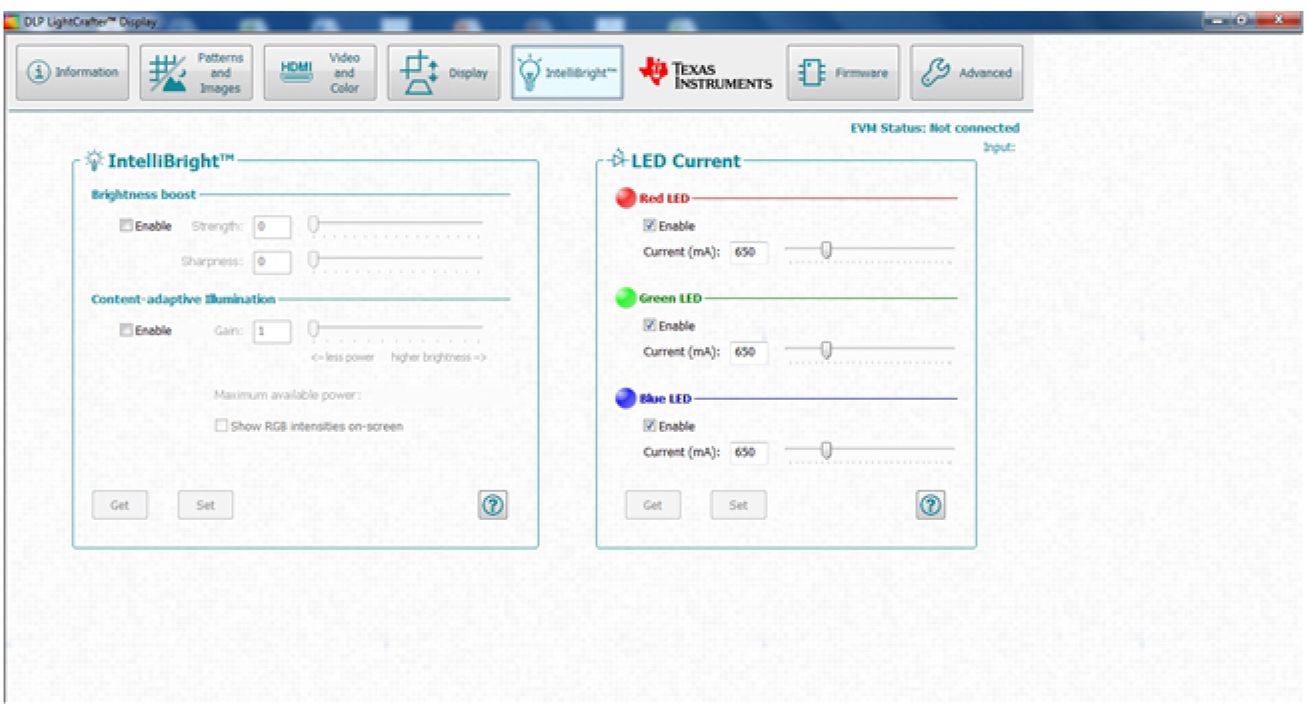
TI DLP® Pico™ technology is a versatile display technology capable of projecting bright images on virtually any surface from small devices, and is good fit for any application requiring a display with high resolution, high brightness, high contrast, small size, and low power. DLP Pico display products are used in a wide range of applications such as head-mounted displays, smart home displays, pico projectors, mobile Smart TVs, tablet projectors and interactive projectors.

Brightness and power consumption are two key, but opposing, factors in several applications. DLP IntelliBright™ technology was created to intelligently manage the combination of projector brightness, image contrast, and projector power consumption.

The DLP IntelliBright suite of algorithms analyze image content in real-time, and can be configured to optimize brightness and contrast without increasing power consumption, or can be configured to maintain brightness and contrast while maximizing power savings.

For consumers, DLP IntelliBright technology delivers clearer, more vivid images in bright lighting conditions, and longer battery life in low-light conditions. For manufacturers, DLP IntelliBright technology offers further flexibility to tailor product performance to the specific needs of customers and markets.



A screen shot showing the DLP IntelliBright graphical user interface (GUI) of a DLP LightCrafter Display EVM.

Let's take a closer look at the two algorithms in the DLP IntelliBright solution. Local Area Brightness Boost (LABB) creates brighter, more dynamic images by adaptively enhancing dim regions of an image on a frame-by-frame basis. Content Adaptive Illumination Control (CAIC), meanwhile, allows you to set the optimal balance of brightness, contrast and power consumption tailored to your specific needs.

Figure 1. LABB Boosts Local Areas of an Image (simulated image)

These algorithms can be configured through I2C software commands to the DLPC343x controller, or via the DLP LightCrafter Display EVM graphical user interface (GUI).

Download our free white paper, TI DLP® IntelliBright™ Algorithms for the DLPC343x Controller, which includes full details about how the DLPC343x controller and these two independent algorithms can help you intelligently manage projection brightness, contrast and power consumption. We also have more information about getting started with TI DLP Pico technology available for download here.