*Technical Article*

How to Rapidly Develop DLP® Pico™ Display Applications Incorporating the Smallest TI DLP 1080p Full-HD Chipset

TEXAS INSTRUMENTS

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Today, we made available the TI DLP® LightCrafter™ Display 4710 evaluation module (EVM) so developers can quickly assess the DLP Pico™ 0.47-inch TRP Full-HD 1080p display chipset. But what exactly does that mean for developers?
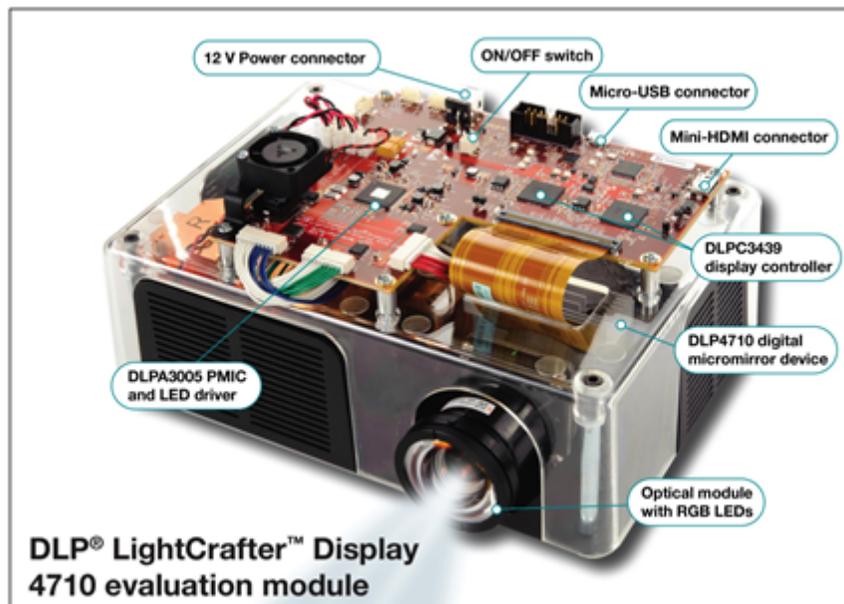
Besides allowing rapid assessment of the smallest DLP Full-HD 1080p chipset, this EVM uses a chipset capable of generating bright, power-efficient full-HD displays using 2,073,600 micromirrors at 1080p resolution from small-form-factor electronics. The EVM also includes mini High Definition Multimedia Interface (HDMI) for plug-and-play functionality, and a simple-to-use micro-USB-based graphical user interface (GUI) for real-time chipset evaluation of features and peripherals. Finally, the EVM comes equipped with a production-quality optical engine to speed the product development cycle.

Walking around the EVM

The DLP LightCrafter Display 4710 EVM combines a wide variety of leading edge TI technology -- all in one simple, easy to use product:

- Optical module with RGB LEDs – The optical module includes all the electronic and mechanical components needed to generate a projected display. It includes the RGB LED light source, optical elements, DLP4710 DMD, and a 50-pin connector to transfer data and power between the EVM and the optical module.
- DLP4710 digital micromirror device (DMD) – This is the heart of the EVM. The DLP4710 DMD's mirror array measures 0.47-inch in diagonal, allowing for extremely small form factor applications. It uses as much as 50 percent lower power consumption compared to previous TI DLP Pico chipset architectures due to improved processing algorithms. The combination of the TRP pixel architecture with the DLP IntelliBright™

algorithms enables as much as 100 percent higher brightness compared to previous DLP Pico chipset architectures, while also incorporating Texas Instruments DLP® Pico™ display technology, based on the same 2014 Academy Award®-winning[*] DMD technology that spawned DLP Cinema® chipsets which power more than eight of 10 digital movie screens worldwide.

- Two (2) DLPC3439 display controllers – Together, the display controllers support reliable operation of the DLP4710 DMD. It provides a convenient, multi-functional interface between system electronics and the DMD. The DLPC3439 component includes pixel data processing.
- Mini-HDMI connector – This interface provides easy connectivity to different device platforms, including smart phones, tablets and laptops.
- Micro-USB connector – This interface is used to transfer information between the EVM and the DLP LightCrafter Display PC-based software.
- 12 V Power connector – This connector provides power to the EVM system, including electronics and DLP chipsets. No additional power sources are required to operate the EVM.
- DLPA3005 PMIC and LED driver – This component is a highly integrated power management integrated circuit (IC) optimized for DLP Pico projector systems. In addition to the high voltage generated for the DMD, it also generates the voltage rails required by the DMD and ASIC, as well as generating the supply voltages for the LED light source and other auxiliary components in the system.

Developers Get the Help They Need

Using this EVM to assess the chipset for digital signage, mobile projectors, screenless TVs, control panels, interactive displays, wearables like head-mounted displays and more should not be a scary, challenging or time consuming task. We believe the DLP LightCrafter Display 4710EVM, optical modules and reference designs can help developers quickly incorporate bright, efficient full-HD projection in compact electronics.

We have just created a new reference design for this EVM release titled, "Full-HD Projection Display using DLP Pico technology." This reference design is now available for download and includes a system block diagram, schematics, board design files, test data and optical engine specifications. Any questions not answered by these two documents can be asked and answered in our e2e forums.

Watch the video below explaining the DLP LightCrafter Display 4710 evaluation module:

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[*] *Dr. Larry Hornbeck received the 2014 Scientific and Technical Academy Award® of Merit (Oscar© statuette) for the invention of the digital micromirror device (DMD) technology as used in DLP Cinema® projection.*

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