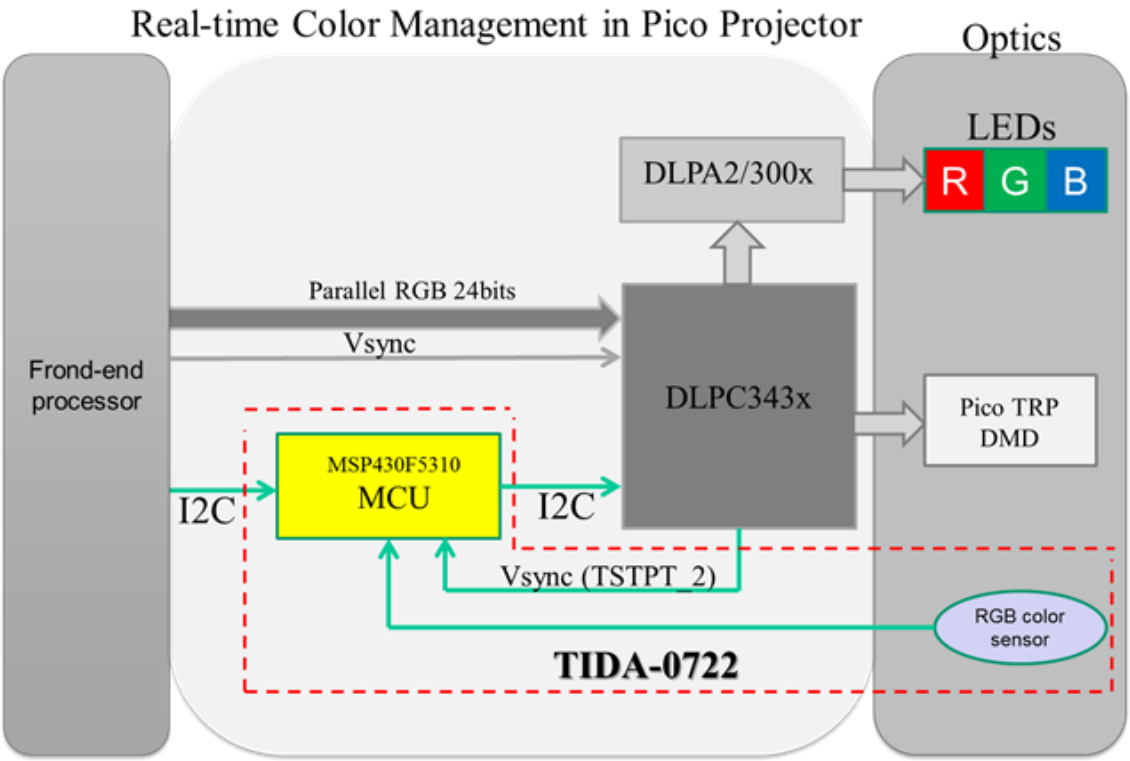
About Test Results

Test results of the TIDA-00722 reference design are performed using the DLP® dual DLPC3439 1080p EVM but can be also verified with any other DLP Pico display. This EVM incorporates the DLP 0.47" 1080p chipset comprising of the DLP4710 DMD plus the optical engine, DLPC3439 controller, DLPA3005 PMIC/LED Driver, and MSP430F5310 MCU.



MSP430F5310 MCU runs the real-time color management algorithm as the critical role that interacts with DLPC3439 for LED current correction and updating color–related registers based on color sensor feedback in frame-basis per the given desired color targets. Please note that performance will vary across EVMs due to variations in manufacturing. The performance data is not guaranteed.

If You Need Assistance

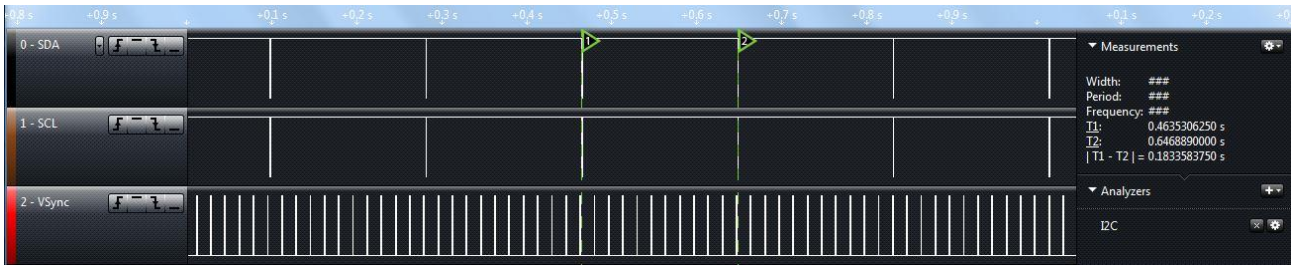
Refer to the DLP and MEMS TI E2E Community support forums:
https://e2e.ti.com/support/dlp__mems_micro-electro-mechanical_systems

This test reports provides following test data:

1. I2C vs. Vsync waveform
2. Color sensor feedback vs. Vsync waveform
3. Comparison of actual and desired white point
4. Color measurement setup

1. I2C vs. Vsync waveform

In default software setting, MSP430 MCU performs LED current and color-related register adjustments via I2C to DLPC3439 every 10 frames.



2. Color sensor feedback vs. Vsync waveform

The color sensor constantly feedback pulses to MSP430 with 3 independent GPIO interrupt pins by red, green, and blue sensors. Higher the light intensity to the sensor, more pulse counts in a given frame time.

3. Comparison of actual and desired white point

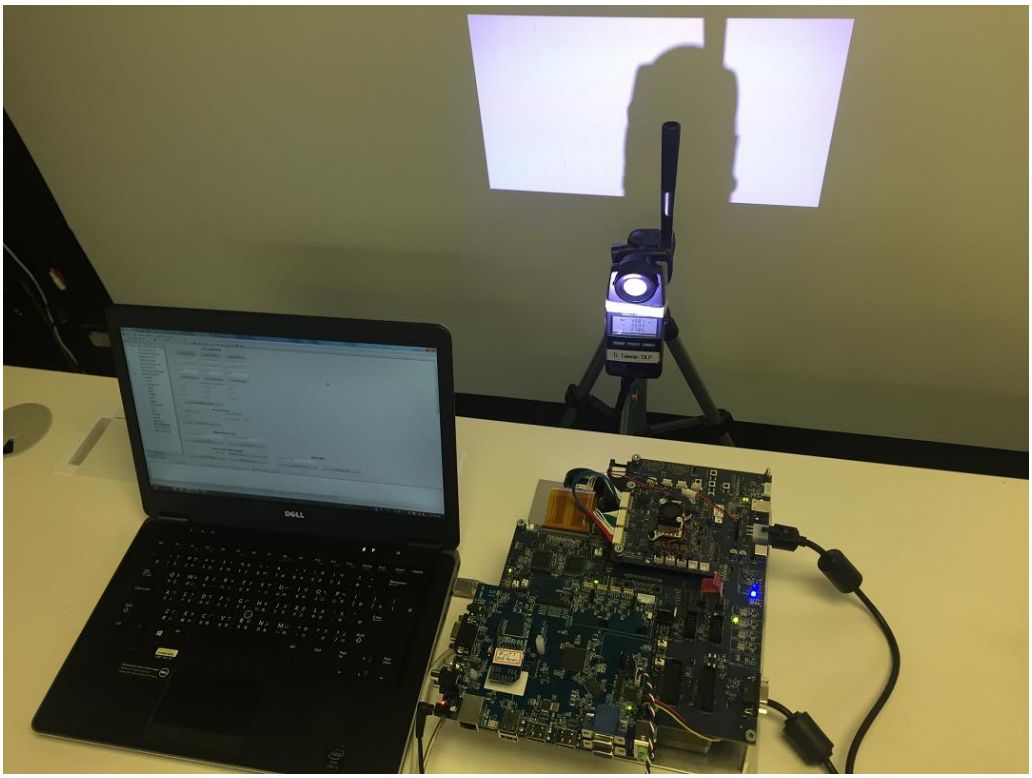
In order to verify the accuracy of the real-time color management system, the following table shows the actual white point vs. desired white points along with the error from the target. Please note that performance will vary across EVMs due to variations in manufacturing and the LED calibration quality.

Desired white point (x,y)	(0.333, 0.348)	(0.313, 0.329)	(0.299, 0.315)	(0.283, 0.297)	(0.276, 0289)
Desired color temperature(°K)	5500°K	6500°K	7500°K	9300°K	10500°K
Actual white point (x,y)	(0.332,0.348)	(0.313, 0.328)	(0.298,0.314)	(0.283,0.296)	(0.277,0.287)
Error(x,y)	(0.001,0)	(0,0.001)	(0.001,0.001)	(0,0.001)	(-0.001,0.002)
Red LED current	736	569	707	437	352
Green LED current	958	983	694	959	807
Blue LED current	466	605	983	983	983

Note: LED current is in digital scale where 0~1023 represents 0~16A

4. Color measurement setup

The color measurement experiment is done with the following set up. The color meter (Minolta CL-200) is placed in front of DLPC3439 1080p EVM with full-on-white test pattern. A computer with projector control program is connected with the EVM via I2C interface.



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