

Ultimate Upgrade!

ICND2055 With a Revolution PWM Technology

This year, CHIPONE has launched ICND2055 which is star PWM product and total solution for the issues of fine pitch LED video wall. ICND2055 performs excellent low grayscale, HDR support, energy saving and low EMI and it gets highly praised from main fine pitch LED video wall manufacturers, Especially it has been widely applied in high end export projects as soon as it was launched.

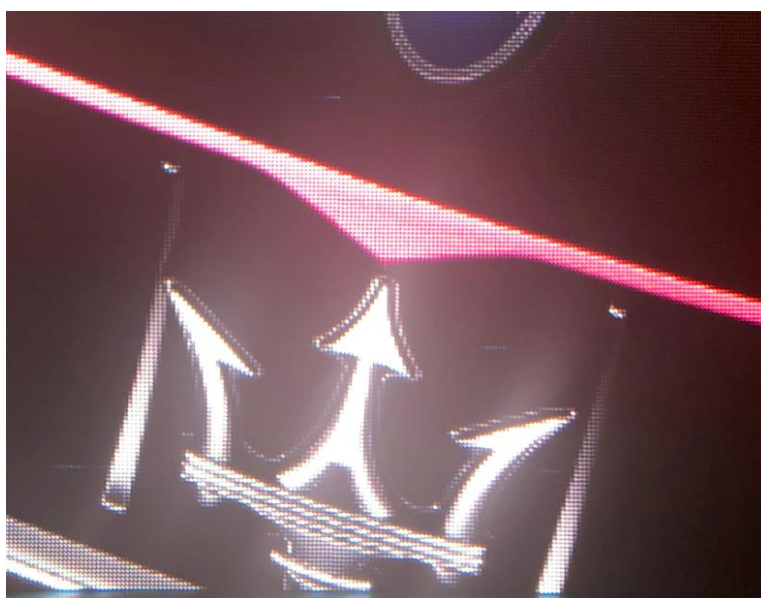
Let us experience real performance of ICND2055 by comparing with main PWM product on the market.

On The Same LED Panel



Color Shift Across PCB

First Bright Line Comparison



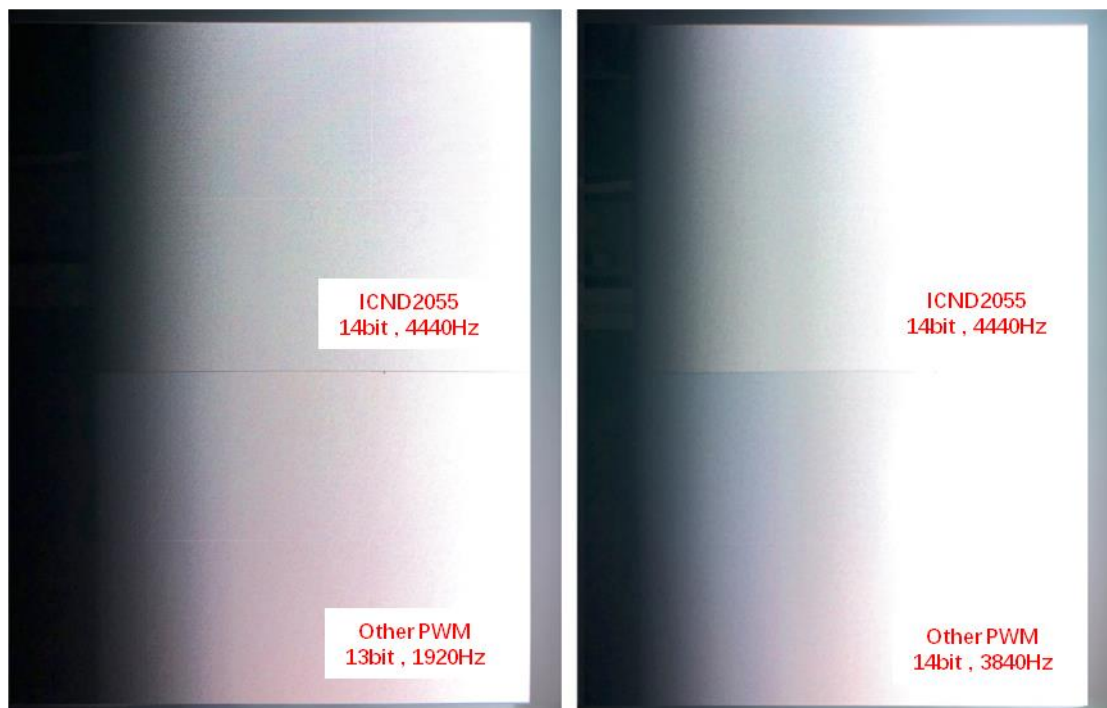
Test Condition

Item	ICND2055	Other PWM Setting A	Other PWM Setting B
Visual Refresh Rate	4440Hz	1920Hz	3840Hz
GCLK Frequency	35Mz	8.3MHz	18.75MHz
Grayscale	14bit	13bit	14bit
Pitch	P1.5mm		
Scan Duty	1/30 Scan		
Resolution	320×240		
White Balance Luminance	800cd/m ²		

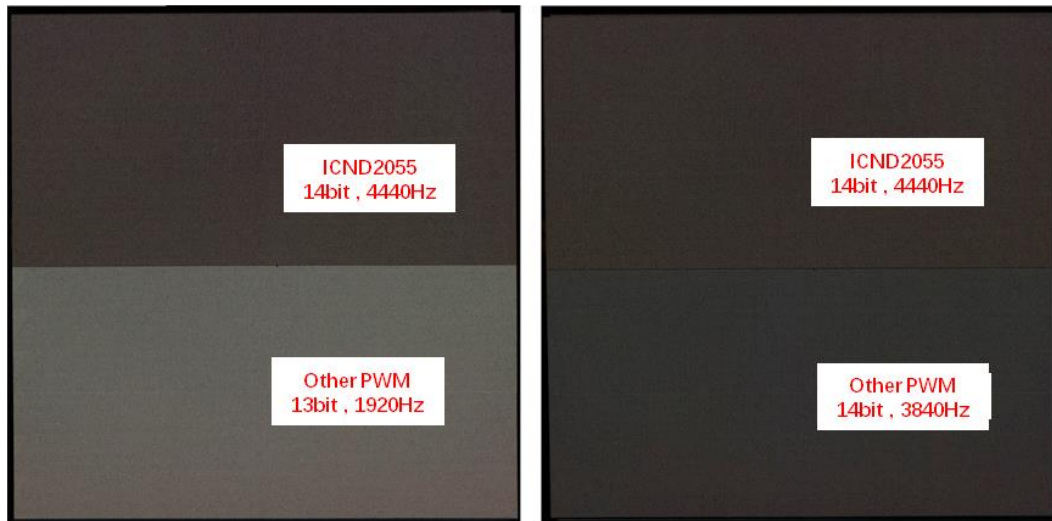
Test Item 1: Differences in Grayscale and Visual Refresh Rate

Test Result:

- a. Under 1920Hz visual refresh rate and 13bit grayscale, ICND2055 has higher contrast and darker low grayscale than the other PWM products.
- b. Under 3840Hz visual refresh rate and 14bit grayscale, ICND2055 has the advantage over low grayscale because of high GCLK frequency.



Grayscale Smoothness Comparison

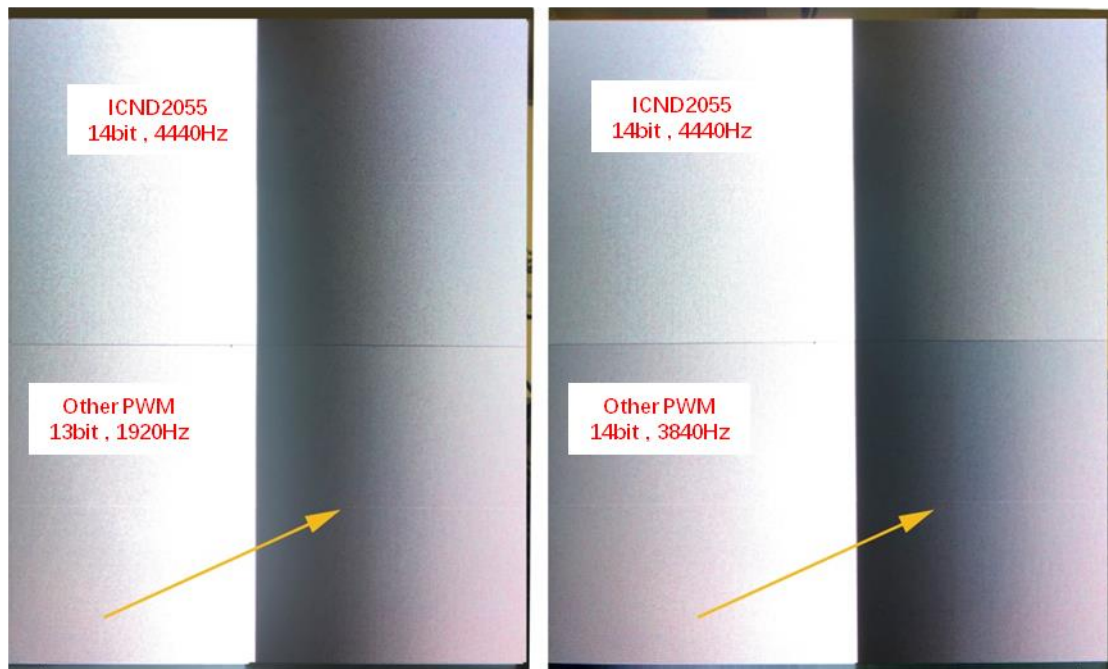


Low Grayscale Comparison

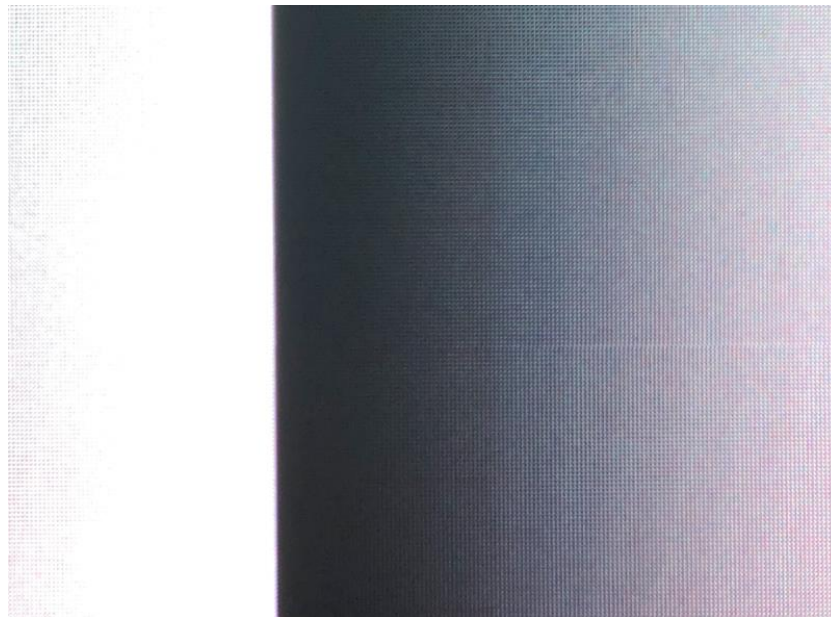
Test Item 2: Color Shift Across PCB Under Different Visual Refresh Rate

Test Result:

- a. The color shift of other PWM products across PCB is slighter but there is first dim line when visual refresh rate is 3840Hz.
- b. There is no color shift across PCB with ICND2055 even visual refresh rate is 4440Hz.



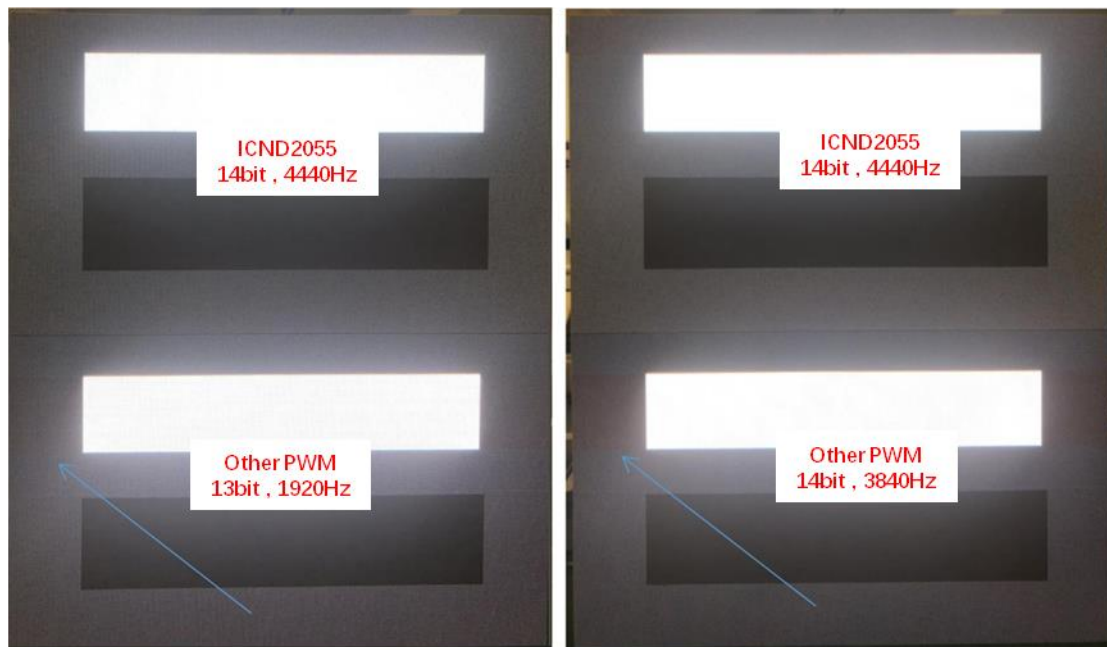
Color Shift Across PCB Comparison



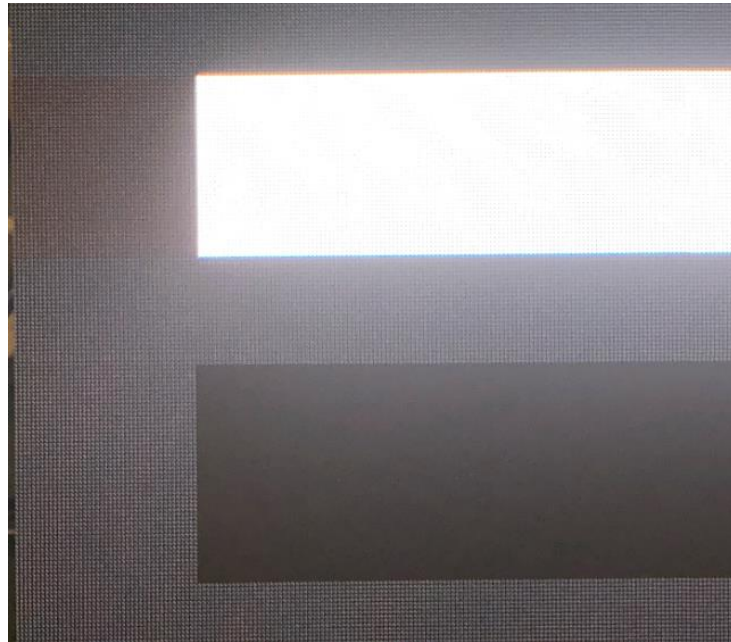
Test Item 3: High Contrast Interference Under Different Visual Refresh Rate

Test Result:

- a. High contrast interference of the other PWM products is slighter in 1920Hz visual refresh rate but it becomes severe when visual refresh rate is 3840Hz.
- b. There is no High contrast interference with ICND2055 even though visual refresh rate is 4440Hz



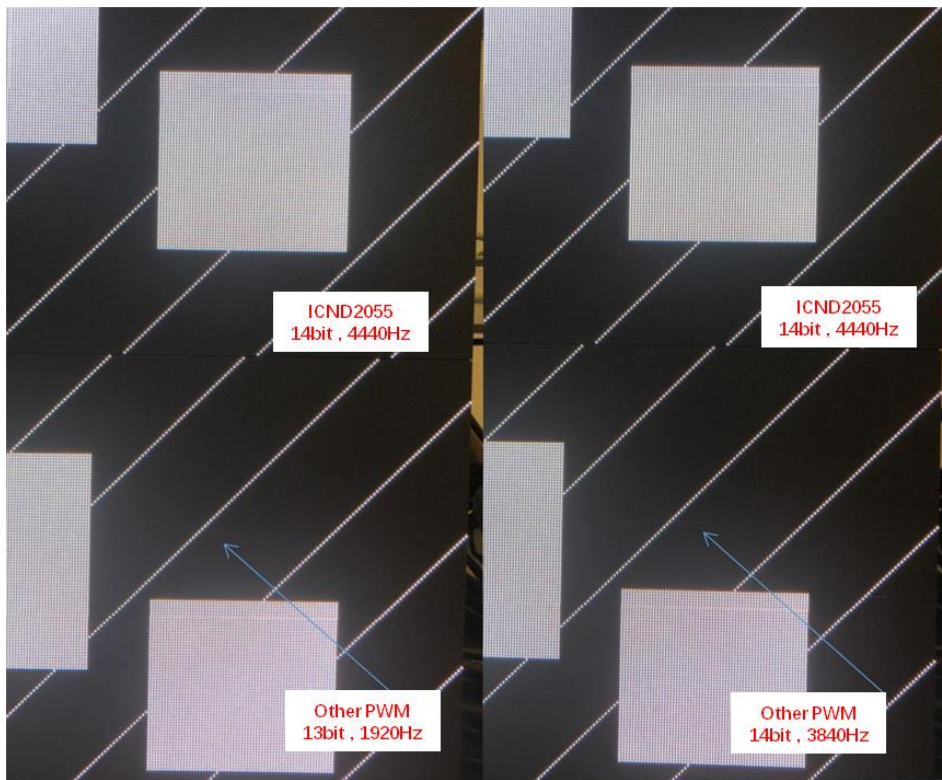
High Contrast Interference Comparison



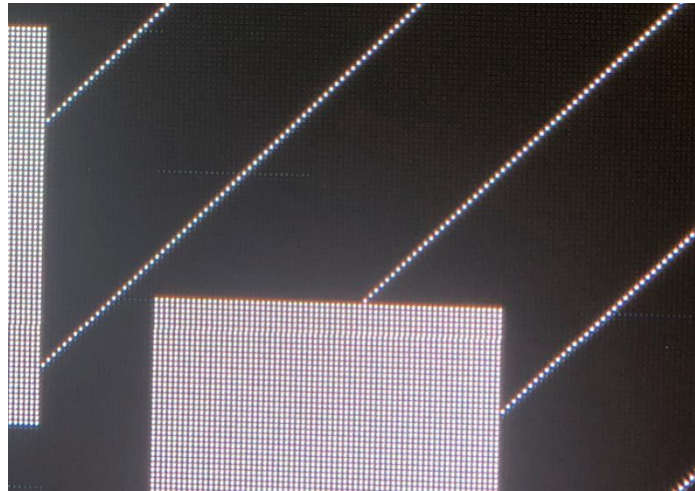
Test Item 4: The First Bright Line Under Different Visual Refresh Rate

Test Result:

- a. The bright first line of the other PWM products is slighter but it becomes severe when visual refresh rate is 3840Hz
- b. There is no first bright line with ICND2055 even though visual refresh rate is 4440Hz



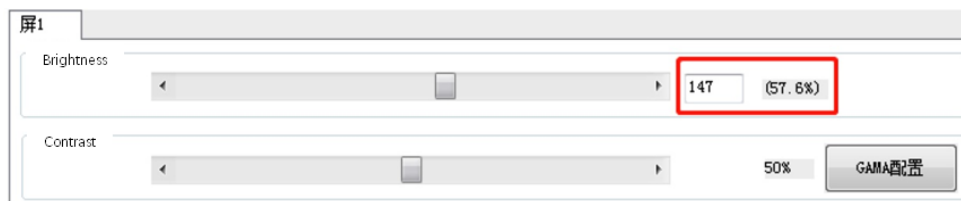
First Bright Line Comparison Between



Test Item 5: The Contrast Maintain and Grayscale Presentation With Lower Brightness

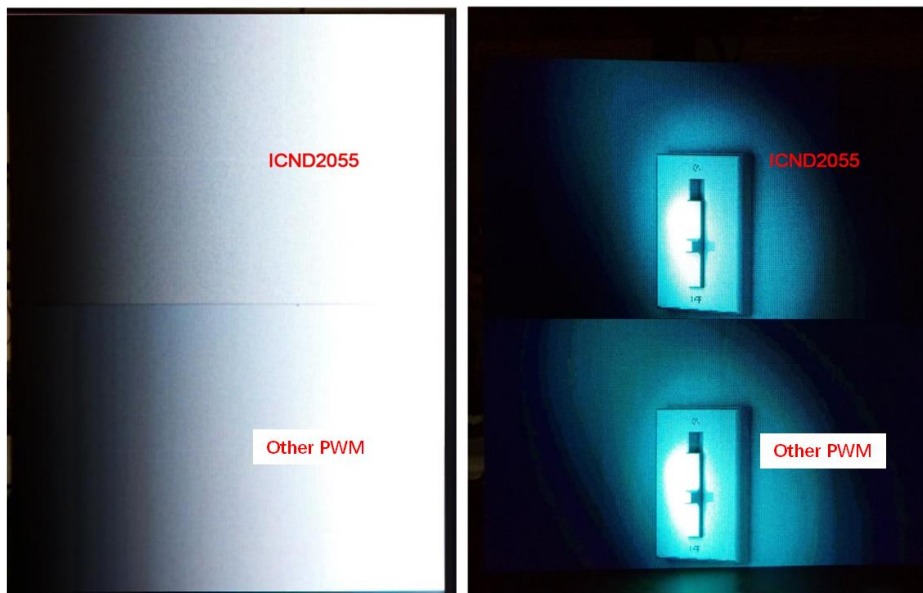
Test Condition:

Brightness is lower than 100% by adjusting software gradually. Observing grayscale smoothness and presentation



Test Result :

Obviously ICND2055 presents perfect grayscale smoothness.



Grayscale Smoothness Comparison With Lower Brightness

Contrast Comparison With Lower Brightness

Through a series of comparison tests, It can obviously be found that the majority of the PWM

products are still unable to effectively solve the above issues which exist in fine pitch LED video wall. However, ICND2055 can resolve the above issues when visual refresh rate is over 4000Hz. Nowadays, 3840Hz is the standard of fine pitch LED video wall and it makes ICND2055 undoubtedly be the best choice.

Power Saving

ICND2055 supports complete power saving function through the following three methods

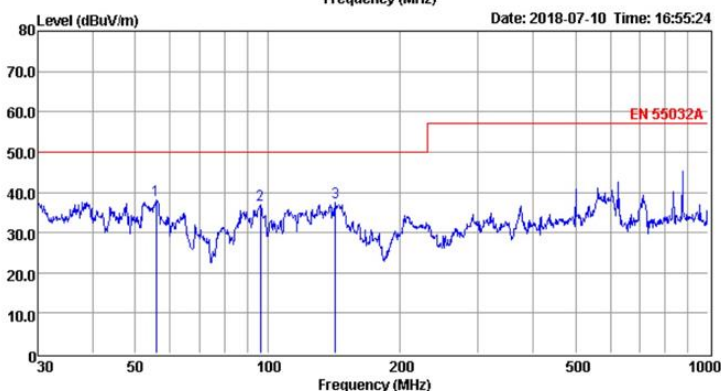
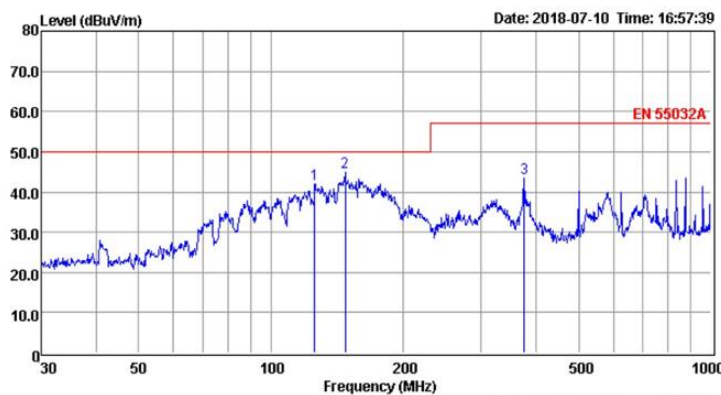
1. Dynamic power saving –According to display content, reduce extra power consumption
2. Black screen power saving – In standby mode, power is saved over 50%
3. Adjustable knee voltage – 4 steps adjustment knee voltage
(0.16V/0.24V/0.32V/0.4V)

The following diagram is comparison tests of power saving in the same cabinet.

Item	Black Screen Standby	Test Pattern 1	Test Pattern 2	Test Pattern 3	Test Pattern 4
ICND2055	9.3W	21.4W	14.9W	20W	15.9W
Other PWM	19.5W	24.8W	21.9W	22W	21.1W
Power Saving	52.3%	13.7%	31.9%	9.1%	24.6%

EMI Improvement

Traditionally, GCLK which is used to display grayscale is provided by controller. ICND2055 can generate GCLK through DCLK which is lower frequency with internal PLL. The following diagrams are test result and it shows that ICND2055 can easily pass class A.



HDR Supports

The request of HDR is 16bit grayscale presentation. For 1:16 scan LED video wall, it needs 65MHz GCLK to present 16bit grayscale at least. If main PWM product on the market is applied, 65MHz

GCLK is big challenge for PCB and in real application is unable to use because of worse display performance. It is easy to achieve 65Mhz–70Mhz GCLK for ICND2055 due to inside PLL. Through experiment, ICND2500 does support HDR.

Conclusion

Through lot of comparison tests and market certification, the performance of ICND2055 is beyond main PWM products on the market substantially and also meets the request of high end customer. CHIPONE has developed more high-end PWM driver ICs based on ICND2055 like 1:32 scan, 1:64 scan, multi-channels driver and distribution multiplexing driver. CHIPONE will keep innovation to provide high performance solution of LED video wall and promote the LED Display technology upgrading.

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