



**Texas Instruments**  
**China Power Reference Design**  
**PMP4326 Test Procedure**

**REV A**

**02/21/12**

**Preliminary Version**

## 1. General

### 1.1 PURPOSE

To provide detailed data for evaluating and verifying the PMP4326 DLP application, Control 3 series LED with 1 syn-buck converter, which use TI TPS54620.

The operating frequency is setting at 800 KHz for small size.

### 1.2 REFERENCE DOCUMENTATION

Schematic PMP4326\_RevA.Sch

Assembly PMP4326\_RevA.PCB

BOM

### 1.3 TEST EQUIPMENTS

Oscilloscope: DPO4104

Current Probe: TCPA300

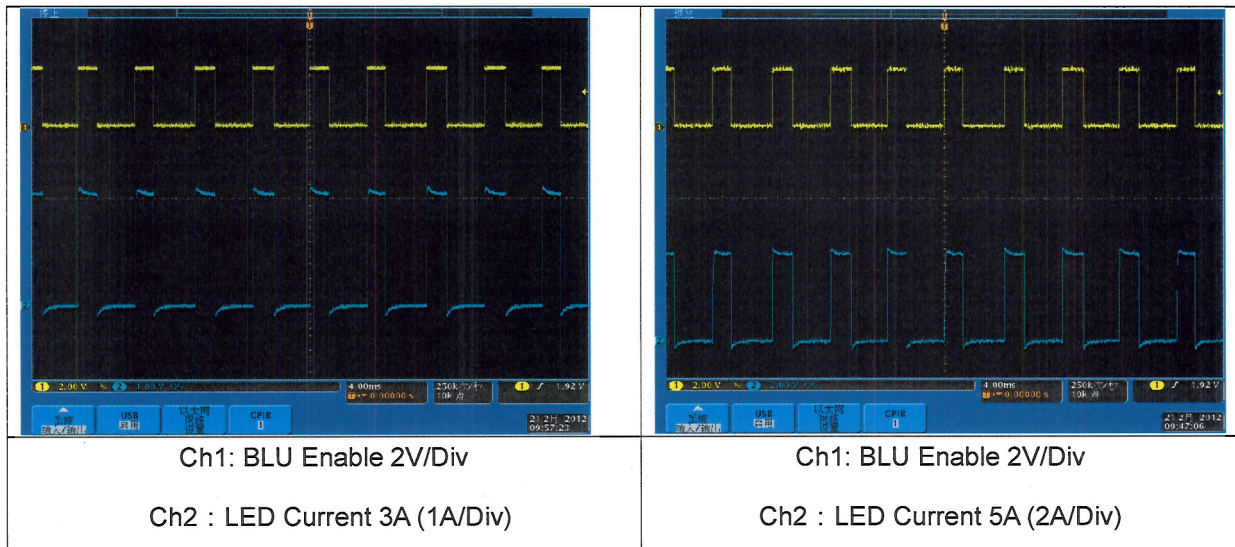
Voltage Probe: P6139B

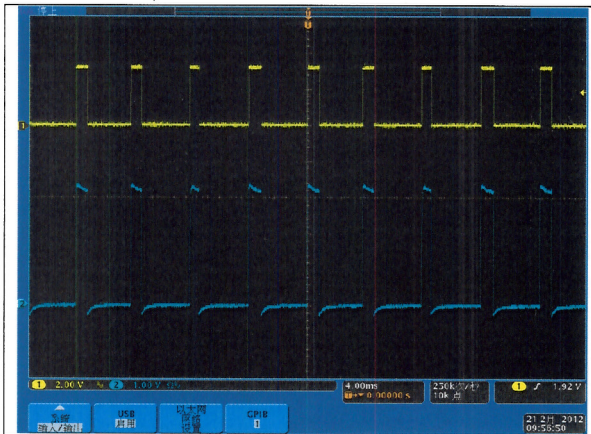
Current Meter: Fluke 287;

Voltage meter: Agilent 34401A

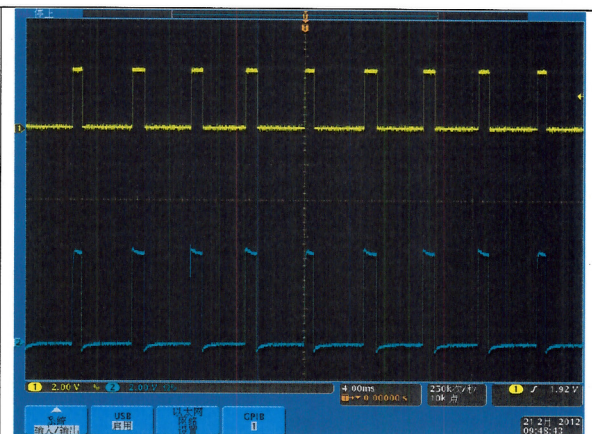
## 2 Electric Performance

### 2.1 Current&Enable

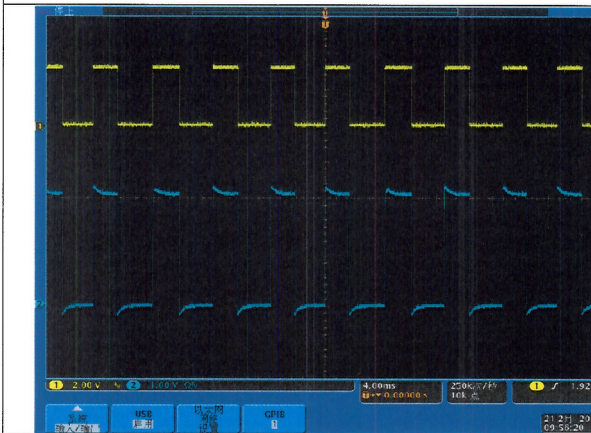




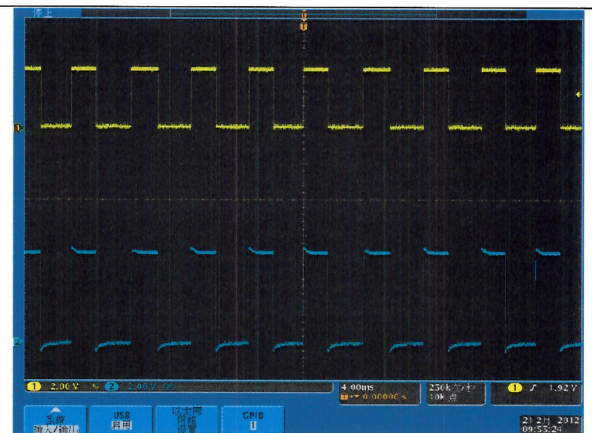
Ch1: GRN Enable 2V/Div  
Ch2 : LED Current 3A (1A/Div)



Ch1: GRN Enable 2V/Div  
Ch2 : LED Current 5A (2A/Div)

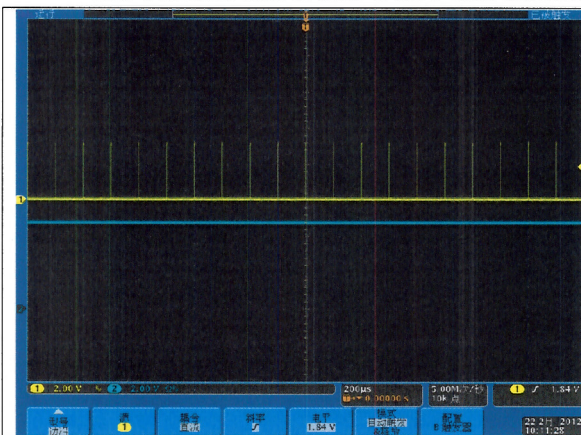


Ch1: Red Enable 2V/Div  
Ch2 : LED Current 3A ( 1A/Div)

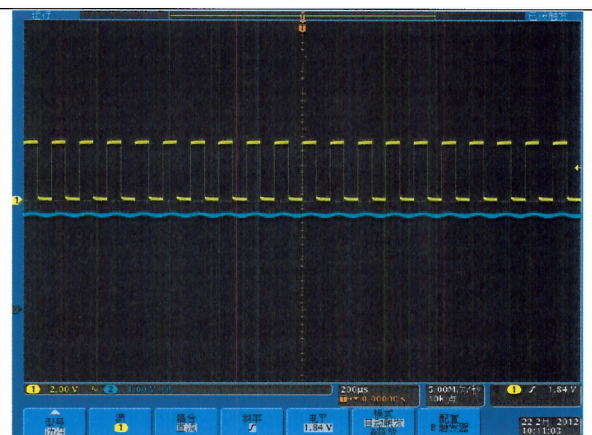


Ch1: Red Enable 2V/Div  
Ch2 : LED Current 5A ( 2A/Div)

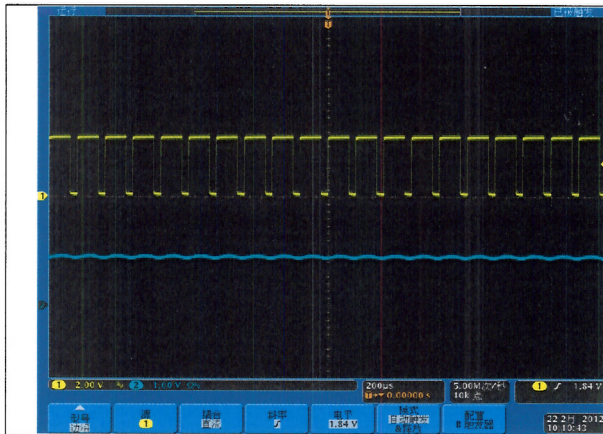
## 2.2 Current waveform with PWM Dimming



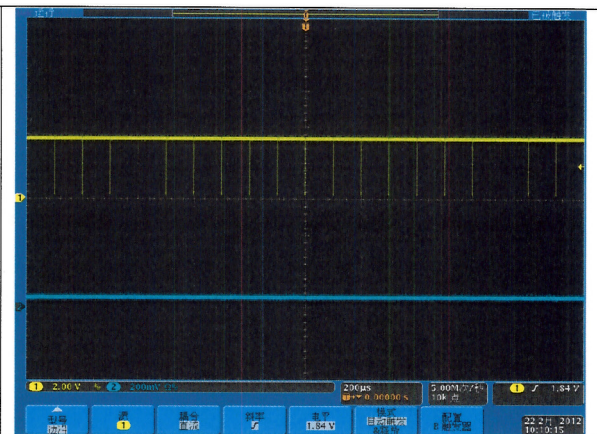
Ch1: PWM Signal 1%  
Ch2 : LED Current (2A/Div)



Ch1: PWM Signal 50%  
Ch2 : LED Current(1A/Div)

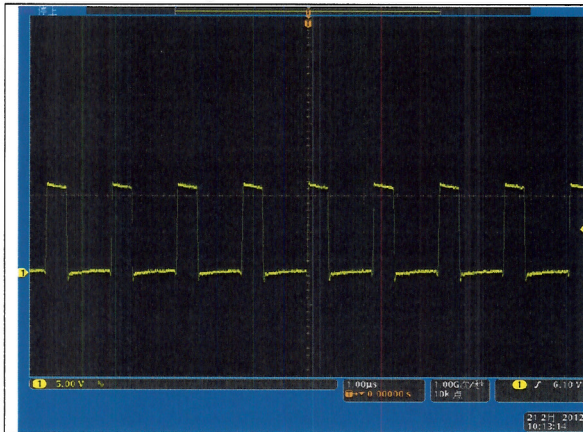


Ch1: PWM Signal 75%  
Ch2 : LED Current(1A/Div)

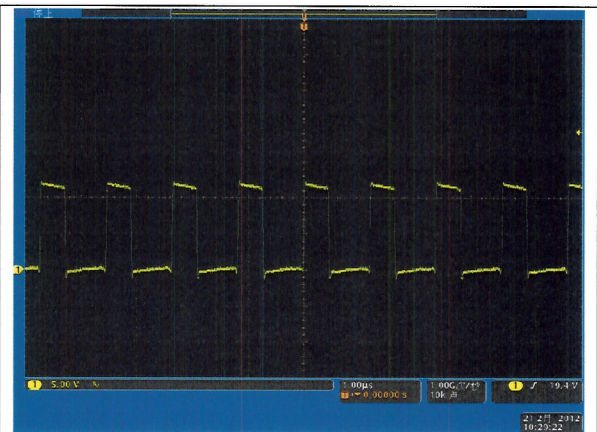


Ch1: PWM Signal 99%  
Ch2 : LED Current(200mA/Div)

### 2.3 Voltage Stress of TPS54620



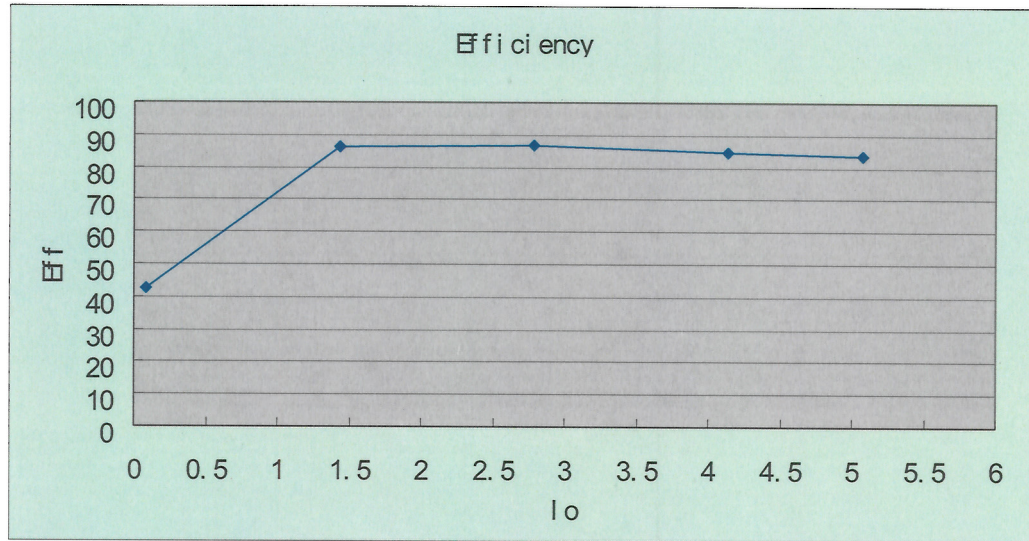
VPH@12Vin&3Alo 5V/Div



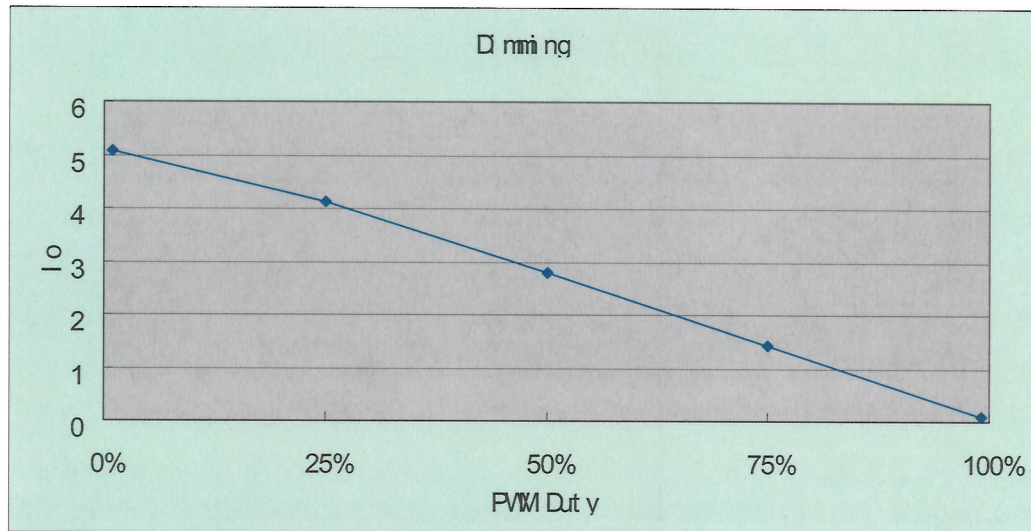
VPH@12Vin&5Alo 5V/Div

### 2.4 Efficiency

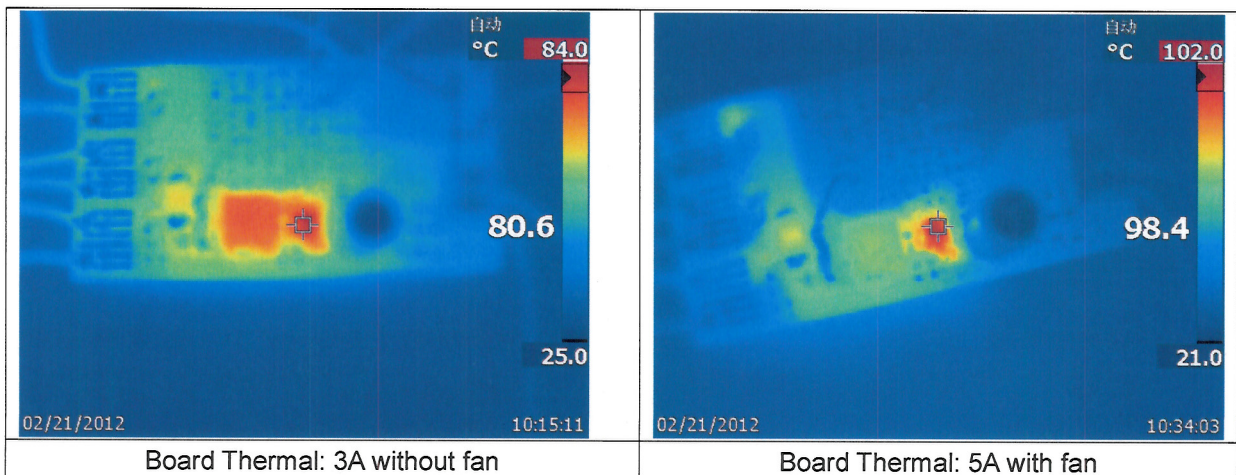
| PWM | Vin    | Iin    | Pin    | Vo    | Io     | Po     | Eff    |
|-----|--------|--------|--------|-------|--------|--------|--------|
| 1%  | 11.15  | 2.0619 | 22.99  | 3.786 | 5.0725 | 19.204 | 0.8353 |
| 25% | 11.41  | 1.5484 | 17.667 | 3.627 | 4.13   | 14.98  | 0.8479 |
| 50% | 11.78  | 0.9292 | 10.946 | 3.406 | 2.7887 | 9.4983 | 0.8677 |
| 75% | 12.01  | 0.432  | 5.1883 | 3.11  | 1.4386 | 4.474  | 0.8623 |
| 99% | 12.125 | 0.0445 | 0.5396 | 2.634 | 0.0876 | 0.2307 | 0.4276 |



## 2.5 PWM Dimming



## 2.6 Thermal



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|                               |                                                                                          |
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