**Texas Instruments**

**PMP4334 Test Procedure**

**China Power Reference Design**

**4/23/2013**

# 1 GENERAL

## 1.1 PURPOSE

To provide detailed data for evaluating and verifying the PMP4334, which uses TI new BCM PFC Controller UCC28810 and 6 channel LED Driver LM3463.

## 1.2 REFERENCE DOCUMENTATION

Schematic PMP4334_SCH.PDF
Assembly PMP4334_PCB.PDF
BOM

## 1.3 TEST EQUIPMENTS

Power-meter: YOKOGAWA WT210
Multi-meter(Voltage): Fluke 8845A
AC Source: Chroma 61503
E-Load: Chroma 63103A module

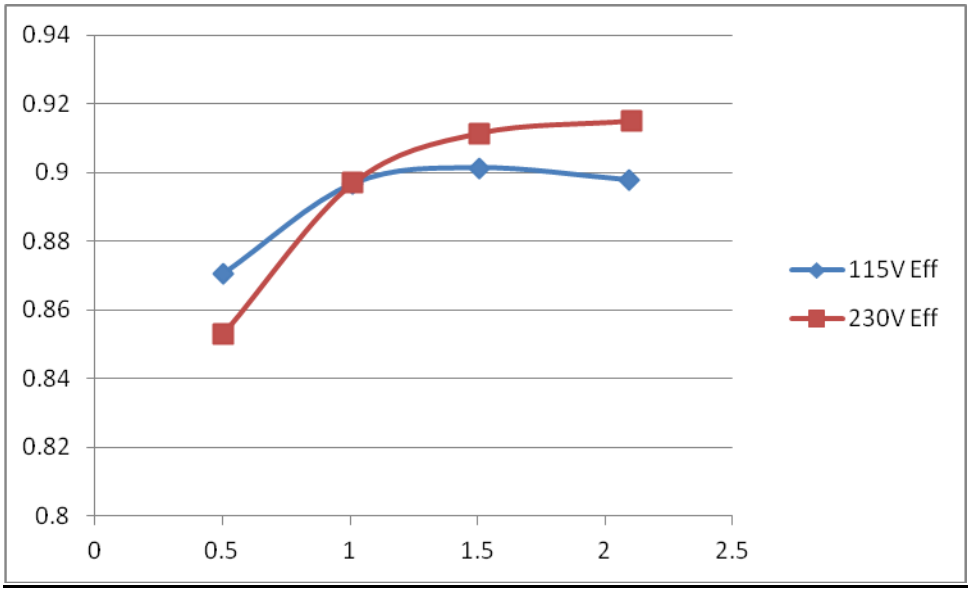
# 2 INPUT CHARACTERISTICS

**Otherwise Specified, the test is under the condition With CC Load (Chroma 63103A).**

## 2.1 EFFICIENCY

**Eff over Io (Vin:115Vac&230V/50Hz)**

| | Pin | PF | Vo | Io | Eff |
|---|---|---|---|---|---|
| | 29.3 | 0.977 | 50.82 | 0.502 | 0.870704 |
| | 57.22 | 0.9881 | 50.8 | 1.01 | 0.896679 |
| | 84.94 | 0.9881 | 50.8 | 1.507 | 0.90129 |
| 115Vac | 118.6 | 0.9834 | 50.8 | 2.096 | 0.897781 |
| | 29.91 | 0.7096 | 50.82 | 0.502 | 0.852947 |
| | 57.33 | 0.9 | 50.81 | 1.012 | 0.896908 |
| | 84.01 | 0.952 | 50.81 | 1.507 | 0.911447 |
| 230Vac | 116.84 | 0.967 | 50.79 | 2.105 | 0.915037 |

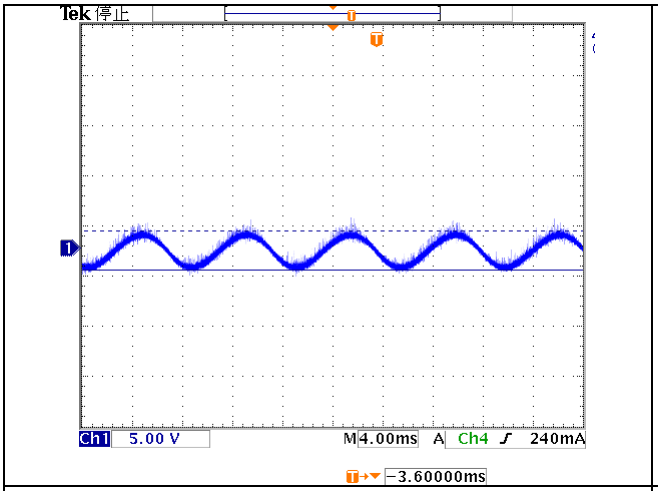



### 2.2 PF

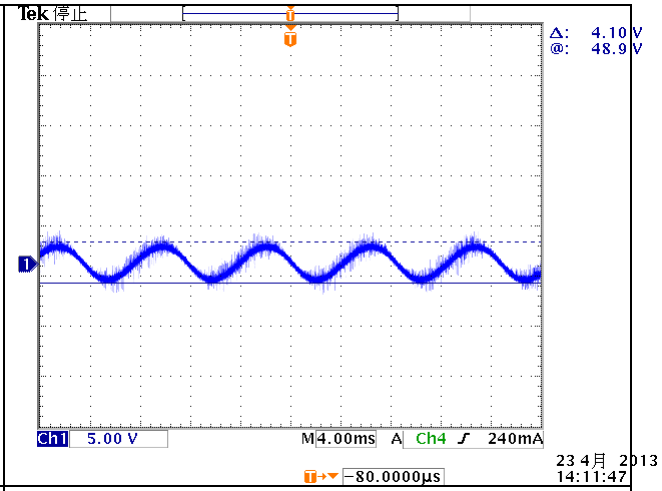
| Vin(Vac) | Freq(Hz) | PF | Pass/Fail |
|---|---|---|---|
| 90 | 60 | **0.975** | |
| 115 | 60 | **0.983** | |
| 230 | 60 | **0.967** | |
| 264 | 60 | **0.952** | |

# 3 OUTPUT CHARACTERISTICS

## 3.1 OUTPUT VOLTAGE RIPPLE (full load)

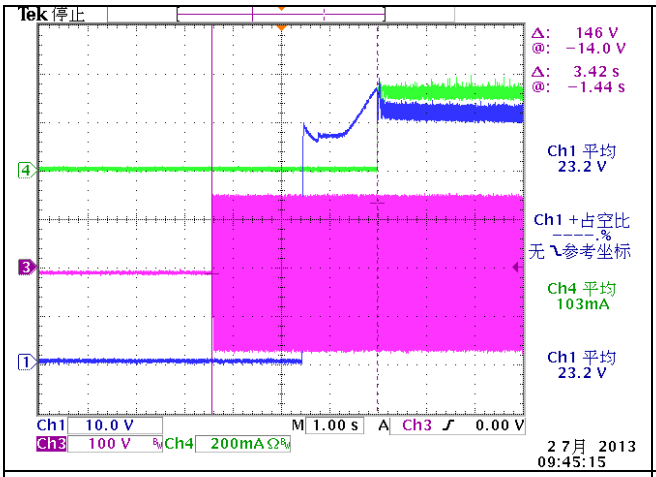



115Vac Full load ripple

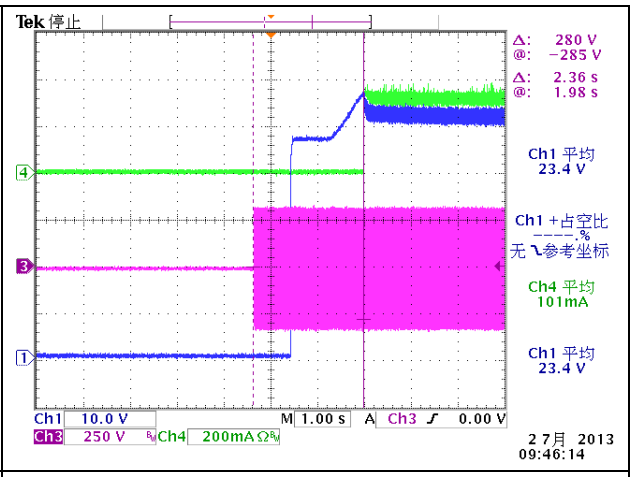



230Vac Full load ripple

## 3.2 Start up

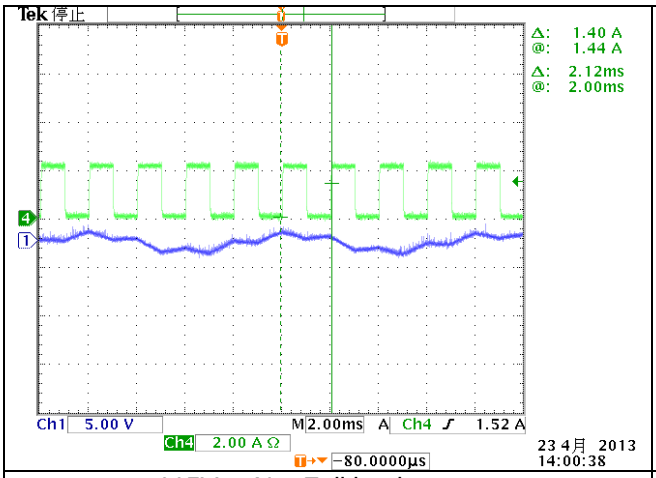



115Vac full load start up Ch1:Vo CH3:Vin Ch4:Io

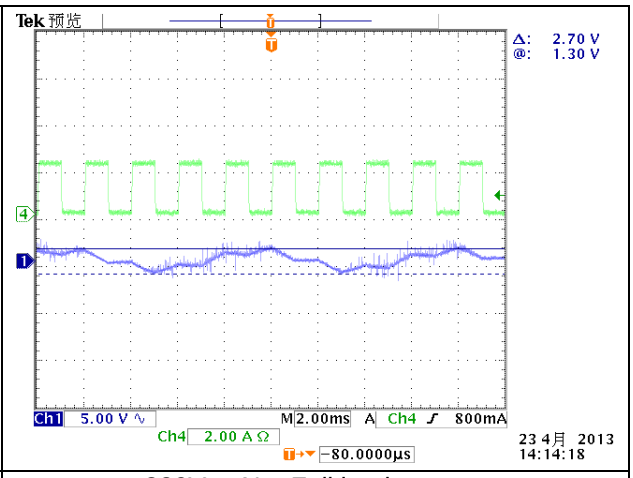



115Vac full load start up Ch1:Vo CH3:Vin Ch4:Io

## 3.3 Load Transient

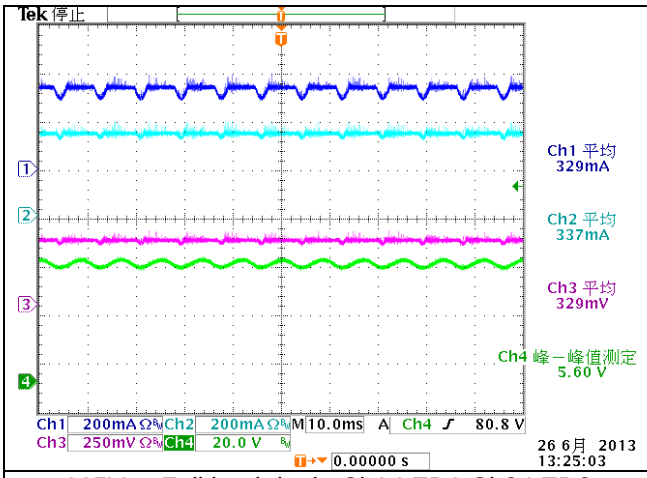



115Vac No~Full load start up

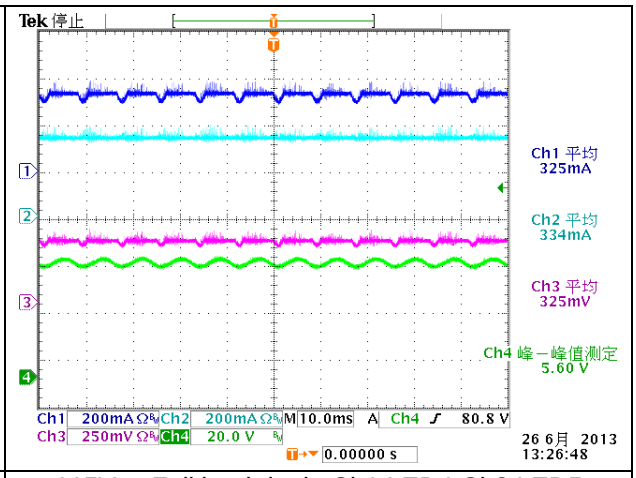



230Vac No~Full load start up

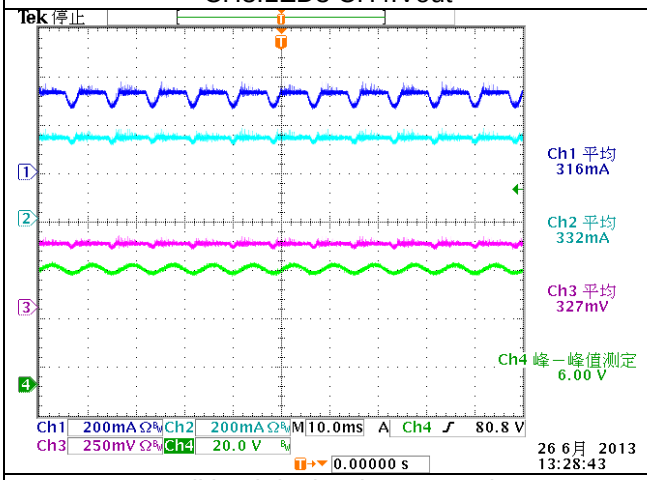
## 3.4 Current Ripple



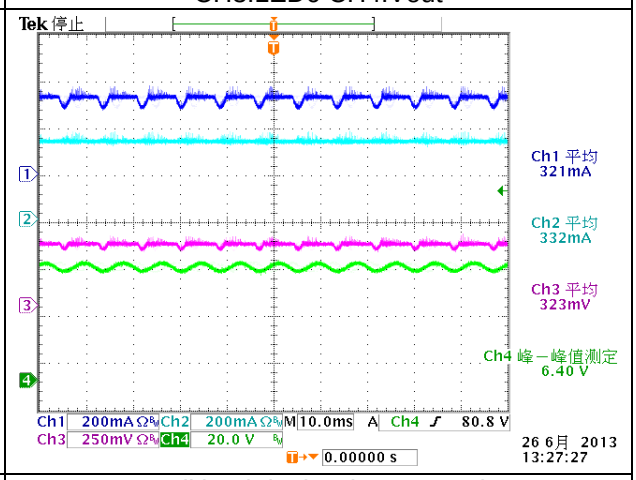

115Vac Full load ripple Ch1:LED1 Ch2:LED2 CH3:LED3 CH4:Vout




115Vac Full load ripple Ch1:LED4 Ch2:LED5 CH3:LED6 CH4:Vout

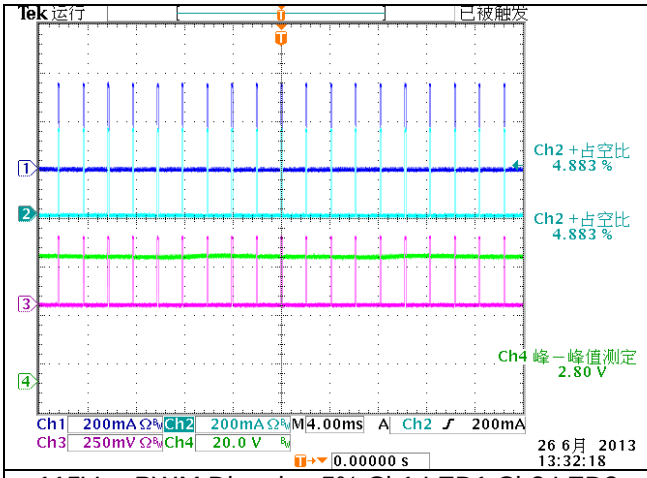



230Vac Full load ripple Ch1:LED1 Ch2:LED2 CH3:LED3 CH4:Vout

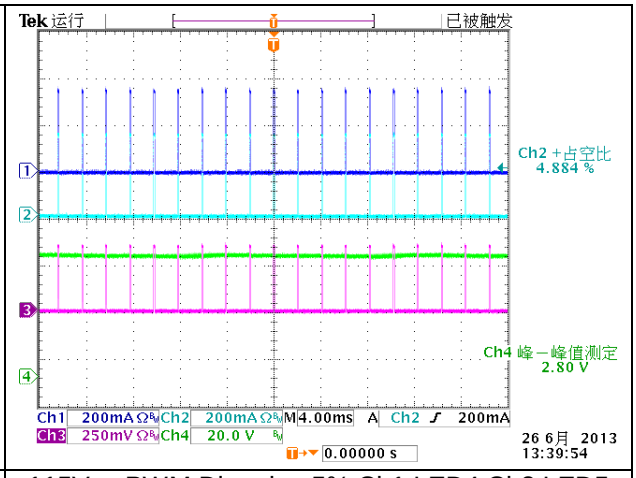



230Vac Full load ripple Ch1:LED4 Ch2:LED5 CH3:LED6 CH4:Vout

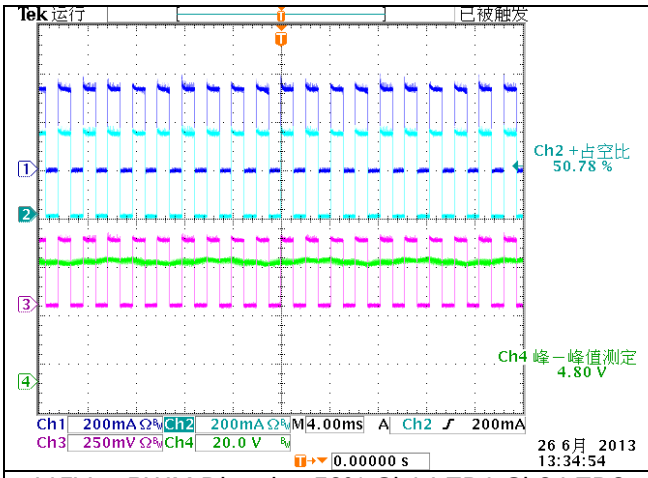
## 3.5 Dimming Function



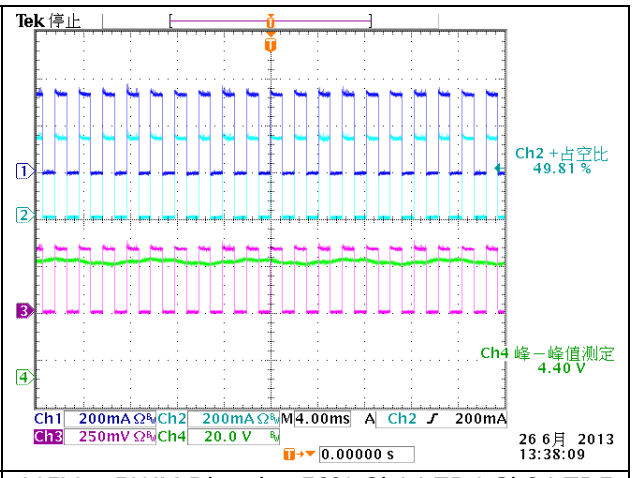

115Vac PWM Dimming 5% Ch1:LED1 Ch2:LED2 CH3:LED3 CH4:Vout



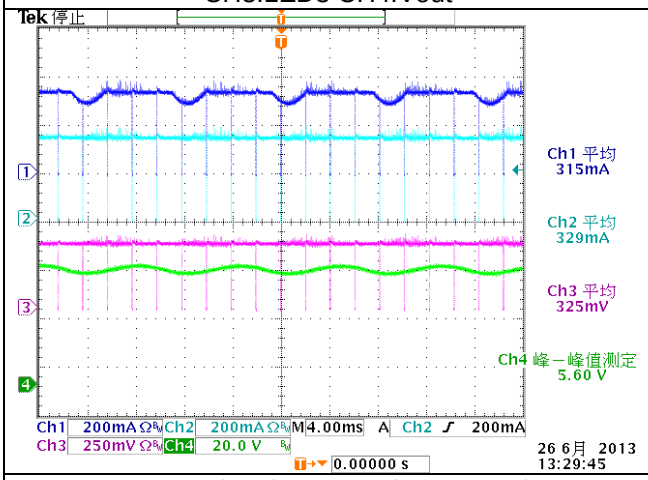

115Vac PWM Dimming 5% Ch1:LED4 Ch2:LED5 CH3:LED6 CH4:Vout



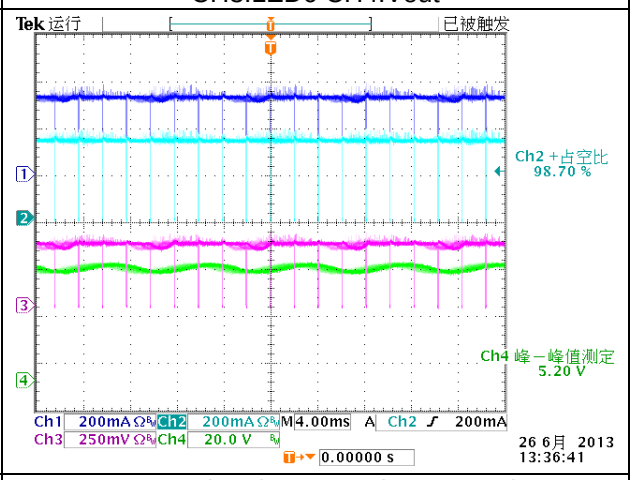

115Vac PWM Dimming 50% Ch1:LED1 Ch2:LED2 CH3:LED3 CH4:Vout



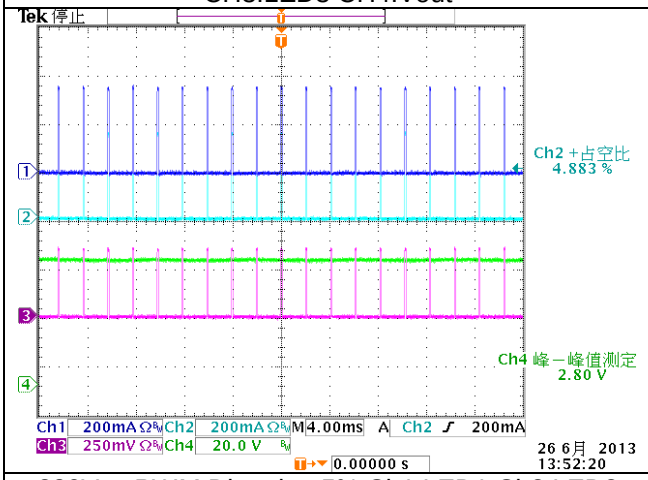

115Vac PWM Dimming 50% Ch1:LED4 Ch2:LED5 CH3:LED6 CH4:Vout



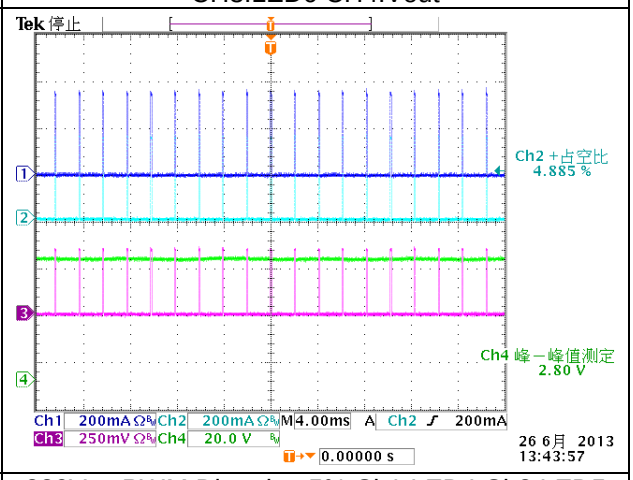

115Vac PWM Dimming 99% Ch1:LED1 Ch2:LED2 CH3:LED3 CH4:Vout



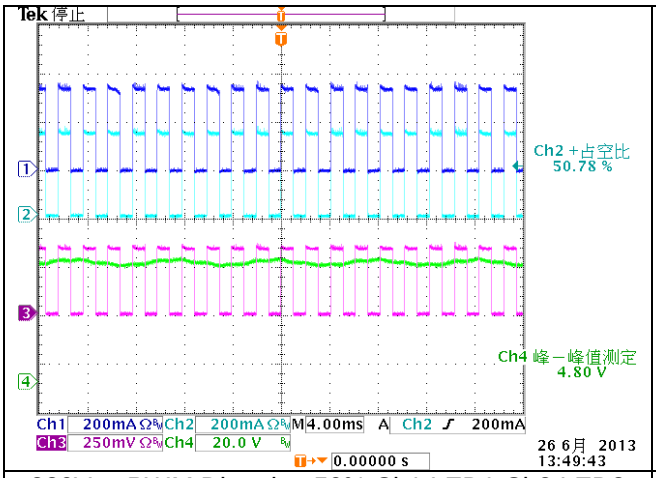

115Vac PWM Dimming 99% Ch1:LED4 Ch2:LED5 CH3:LED6 CH4:Vout



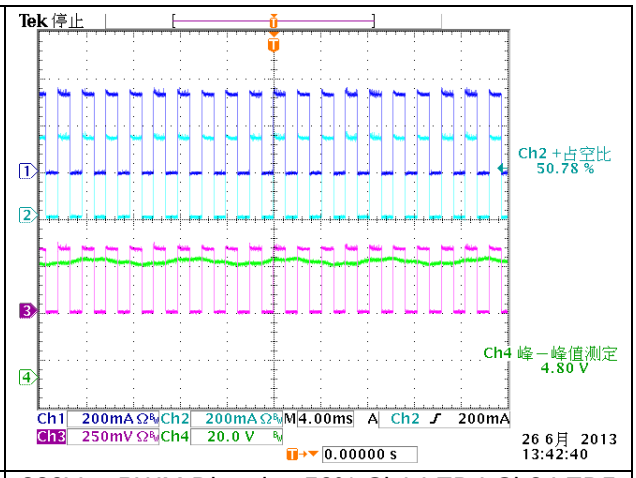

230Vac PWM Dimming 5% Ch1:LED1 Ch2:LED2 CH3:LED3 CH4:Vout



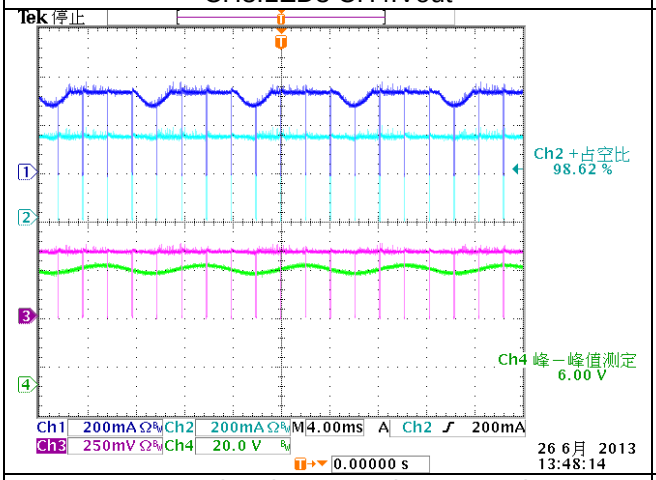

230Vac PWM Dimming 5% Ch1:LED4 Ch2:LED5 CH3:LED6 CH4:Vout



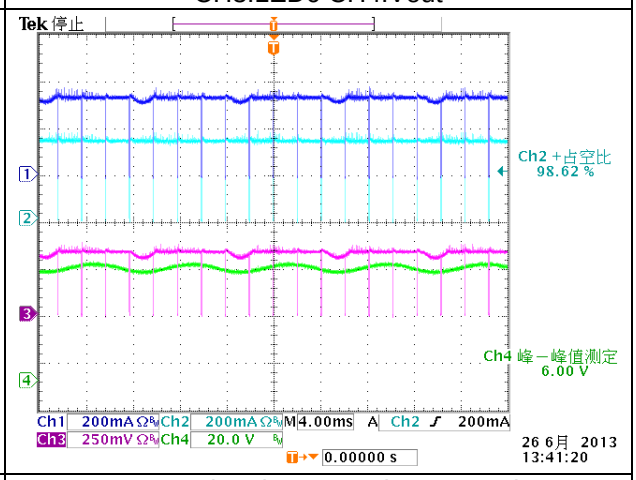

230Vac PWM Dimming 50% Ch1:LED1 Ch2:LED2 CH3:LED3 CH4:Vout




230Vac PWM Dimming 50% Ch1:LED4 Ch2:LED5 CH3:LED6 CH4:Vout




230Vac PWM Dimming 99% Ch1:LED1 Ch2:LED2 CH3:LED3 CH4:Vout



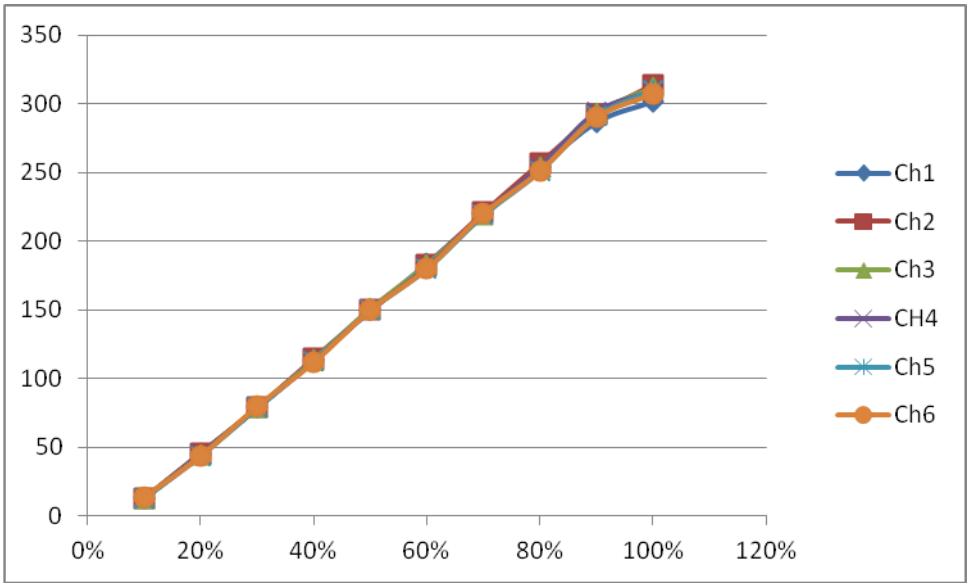

230Vac PWM Dimming 99% Ch1:LED4 Ch2:LED5 CH3:LED6 CH4:Vout

## 3.6 Linear Stage Efficiency

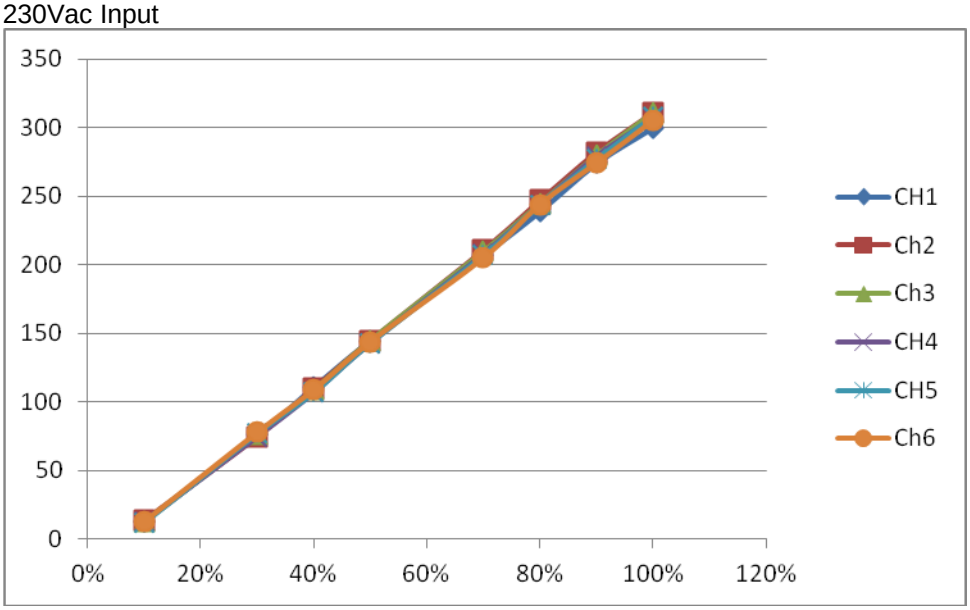
| Vo | VLED(1~6) | Iled(1~6) | eff |
|---|---|---|---|
| 50.4 | 48.9 | 0.329 | 0.958611051 |
| | 48.3 | 0.337 | |
| | 48.3 | 0.329 | |
| | 48.5 | 0.325 | |
| | 47.5 | 0.334 | |
| | 48.4 | 0.325 | |

## 3.7 Current match between 6 Channels

115Vac Input




230Vac Input




Note: The current is measured by the same one current probe to show current matching between 6 channels. the current probe has some offset which may affect the test data.

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265