



## Test Procedure for the NCL30002LED1GEVB Evaluation Board

### Overview

This procedure describes the calibration and functional testing of the high power factor NCL30002 buck LED driver. There are 4 versions covered by this test procedure.

|                              | Non Dimming      | Dimming          |
|------------------------------|------------------|------------------|
| <b>120V ac Nominal Mains</b> | NCL30002LED1GEVB | NCL30002DIM1GEVB |
| <b>230V ac Nominal Mains</b> | NCL30002LED2GEVB | NCL30002DIM2GEVB |

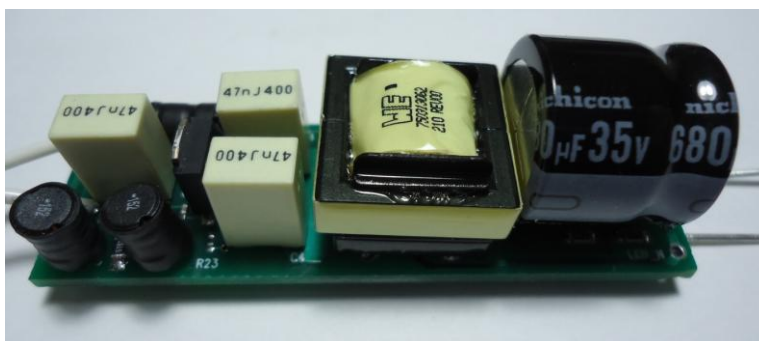
### Basic Specifications

Input Voltage – 100 V ac to 132 V ac or 200V ac to 265V ac

Input Frequency – 50/60 Hz

Output Voltage – 22 V dc to 26 V dc

Output Current – 750 mA dc Nominal





### Equipment Needed

AC Source – 100V ac to 265 V ac 50/60 Hz Minimum 1A ac capability

AC Wattmeter – 30W Minimum, True RMS Input Voltage and Current, Power Factor 0.2% accuracy or better

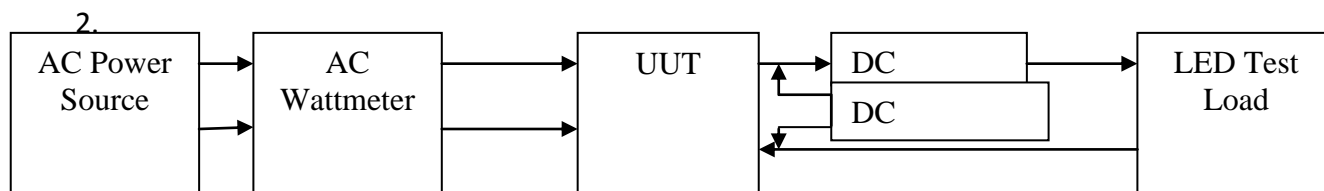
DC Voltmeter – 30V dc minimum 0.1% accuracy or better

DC Ammeter – 1A dc minimum 0.1% accuracy or better

LED Load – 24 V dc nominal (8 LEDs) rated for at least 750 mA dc operation

### Calibration Procedure

1. Connect the Unit Under Test (UUT) per the test set up in Figure 1



**Figure 1 Test Set Up**

3. Set the AC source to 120V  $\pm$ 1V ac RMS 60 Hz or 230V  $\pm$ 2V ac RMS 50 Hz.
4. Adjust R17 such that the output current at 100 V ac and 132 V ac or 200 V ac and 265 V ac are equal or as close as adjustment allows.

**Note:** Unless otherwise specified, all voltage measurements are taken at the terminals of the UUT.



### Functional Test Procedure

NCL30002LED1GEVB / NCL30002DIM1GEVB

120V ac Nominal

Connect the UUT per figure 1

| Test Condition              | Test Variable                                   | Test Limits |       | Pass / Fail<br>(Circle One) |
|-----------------------------|---|-------------|-------|-----------------------------|
|                             |   | Min         | Max   |                             |
| Vin = 120V ac               | Output Current                                  | 713mA       | 788mA | Pass / Fail                 |
| Vin = 100V ac               | Output Current                                  | 713mA       | 788mA | Pass / Fail                 |
| Vin = 132V ac               | Output Current                                  | 713mA       | 788mA | Pass / Fail                 |
| Vin = 120V ac               | Power Factor                                    | 0.9         | -     | Pass / Fail                 |
| Vin = 120V ac<br>Vout = 24V | Non Dimming<br>Efficiency <sup>1</sup>          | 88%         | -     | Pass / Fail                 |
|                             | Dimming <sup>2</sup><br>Efficiency <sup>1</sup> | 83%         | -     | Pass / Fail                 |

NCL30002DIM2GEVB / NCL30002LED2GEVB

230V ac Nominal

Connect the UUT per figure 1

| Test Condition              | Test Variable                                   | Test Limits |       | Pass / Fail<br>(Circle One) |
|-----------------------------|---|-------------|-------|-----------------------------|
|                             |   | Min         | Max   |                             |
| Vin = 230V ac               | Output Current                                  | 713mA       | 788mA | Pass / Fail                 |
| Vin = 200V ac               | Output Current                                  | 713mA       | 788mA | Pass / Fail                 |
| Vin = 265V ac               | Output Current                                  | 713mA       | 788mA | Pass / Fail                 |
| Vin = 230V ac               | Power Factor                                    | 0.9         | -     | Pass / Fail                 |
| Vin = 230V ac<br>Vout = 24V | Non Dimming<br>Efficiency <sup>1</sup>          | 88%         | -     | Pass / Fail                 |
|                             | Dimming <sup>2</sup><br>Efficiency <sup>1</sup> | 83%         | -     | Pass / Fail                 |

$$1. \text{ Efficiency} = \frac{V_{out} \times I_{out}}{P_{in}} \times 100\%$$

2. This measurement is taken without a dimmer in series.

### Dimming Operation

NCL30002DIM1GEVB / NCL30002DIM2GEVB Only

1. Operate the driver through the dimmer on the LED load at nominal line over the full range of the dimmer.

Verify that the LEDs dim smoothly over the full range of control.