

## Experimental Results

### Specifications

- Line Voltage = 88VAC ~ 269VAC
- Line Frequency = 47 ~ 63Hz
- Output voltage regulation
  - +3.3V Rail: +/-10%
  - -3.3V Rail: -10% to +50%
- Output ripple voltage
  - +3.3V rail : < 30mV
  - -3.3V rail : < 150mV
- Output load Current
  - Minimum load current
    - +3.3V Rail: 10mA (relay off, 31xx in idle connected, incl LED)
    - -3.3V Rail: 2mA < 150mV for -3.3V rail.
  - Normal load current
    - +3.3V Rail: 300mA (incl relay)
    - -3.3V Rail: 4mA
  - Maximum load current
    - +3.3V Rail: 600mA (incl relay)
    - -3.3V Rail: 6mA
- Efficiency = > 75%
- Topology: Single-stage flyback

### 1 Efficiency

1.1.1 No Load Input Power		115Vac	10.75mW
		230Vac	18.7mW
Overall Efficiency at Minimum Load	> 75%, For +3.3V Rail: 10mA (relay off, 31xx in idle connected, incl LED) For -3.3V Rail: 2mA	115Vac 230Vac	57.66% 55%
Efficiency at Nominal Load	> 75%	115Vac 230Vac	72.46% 70.4%
Efficiency at Maximum Load	> 75%	115Vac 230Vac	72.71% 71.29%

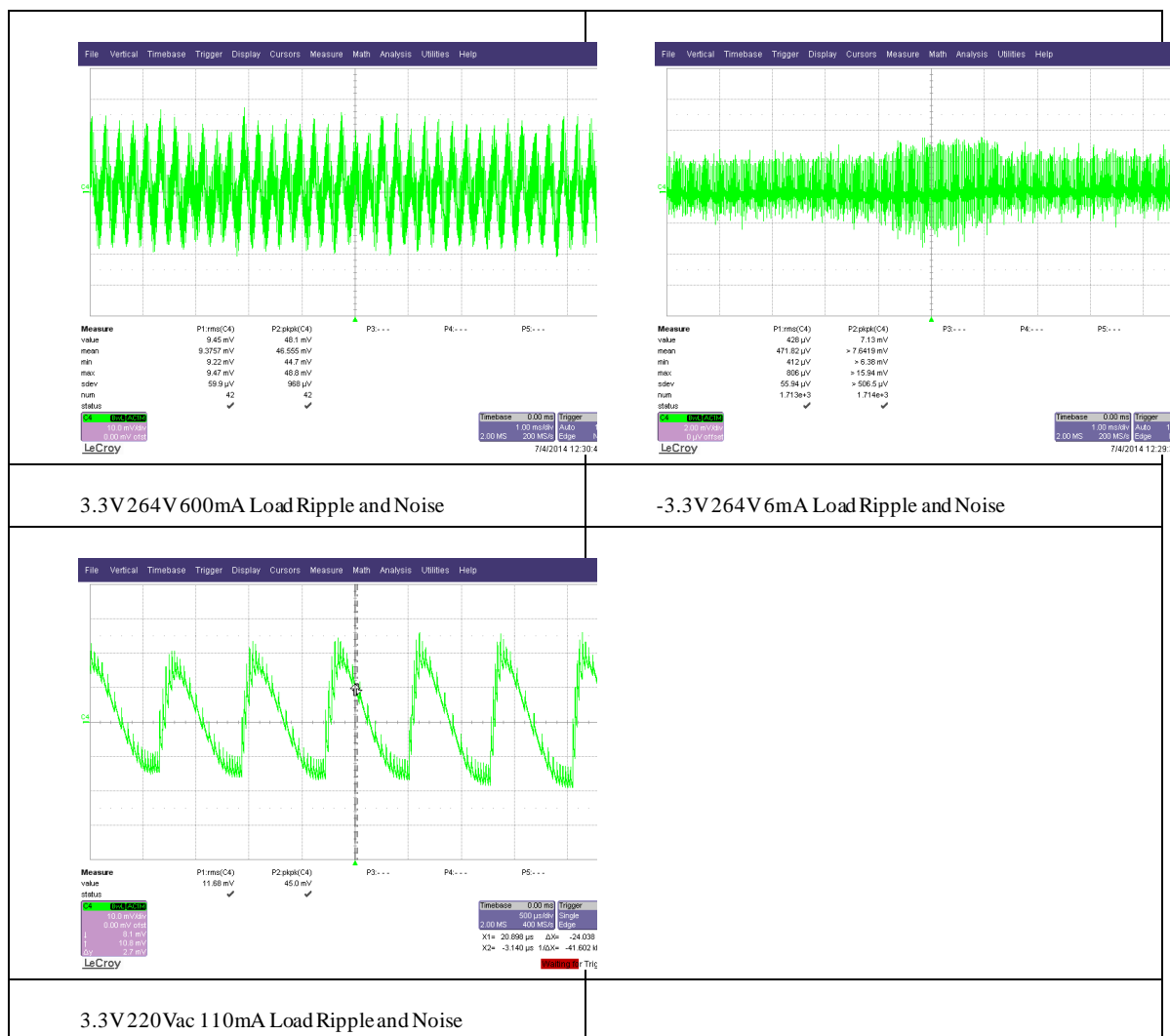
## 2 Output Voltage regulation

2.1.1 Nominal Voltage	<b>+3.3V and -3.3V</b>		
Regulation Tolerance	For +3.3V Rail: +/-10% For -3.3V Rail: -10% to +50%		
Minimum Current	For +3.3V Rail: 10mA (relay off, 31xx in idle connected, incl LED) For -3.3V Rail: 2mA	90Vac 115Vac 230Vac 264Vac	3.23/-3.196 3.24/-3.198 3.23/-3.189 3.23/-3.188
Nominal Current	For +3.3V Rail: 300mA (incl relay) For -3.3V Rail: 4mA	90Vac 115Vac 230Vac 264Vac	3.23/3.58 3.235/3.58 3.23/-3.58 3.23/-3.58
Maximum Current	For +3.3V Rail: 600mA (incl relay) For -3.3V Rail: 6mA	90Vac 115Vac 230Vac 264Vac	3.249/-3.735 3.248/-3.733 3.25/-3.74 3.25/-3.754

## 3 Output ripple Voltage

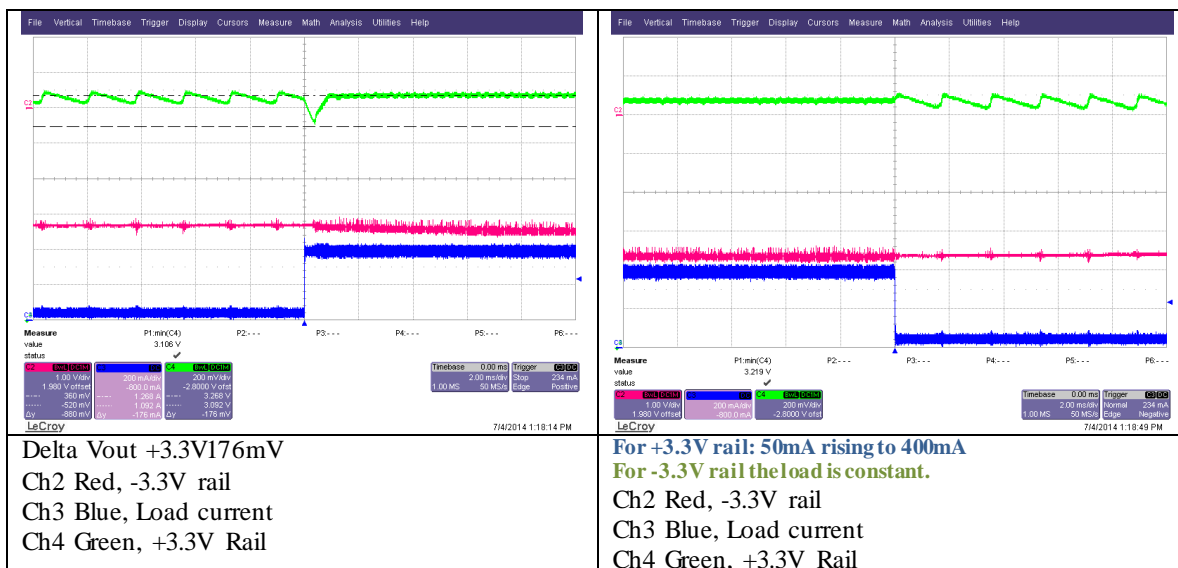
Ripple (mVpp – 1MHz) Maximum Load	< 30mV for +3.3V rail.	90Vac 115Vac 230Vac 264Vac	40mV 39.7mV 45mV 45.3mV
	< 150mV for -3.3V rail.	90Vac 115Vac 230Vac 264Vac	5mV 5.1mV 6.5mV 7.9mV
	LF Worst Case Ripple, 110mA load +3.3V	220Vac	45mV

#### 4 Output ripple voltage waveform



## 5 Dynamic Load Regulation

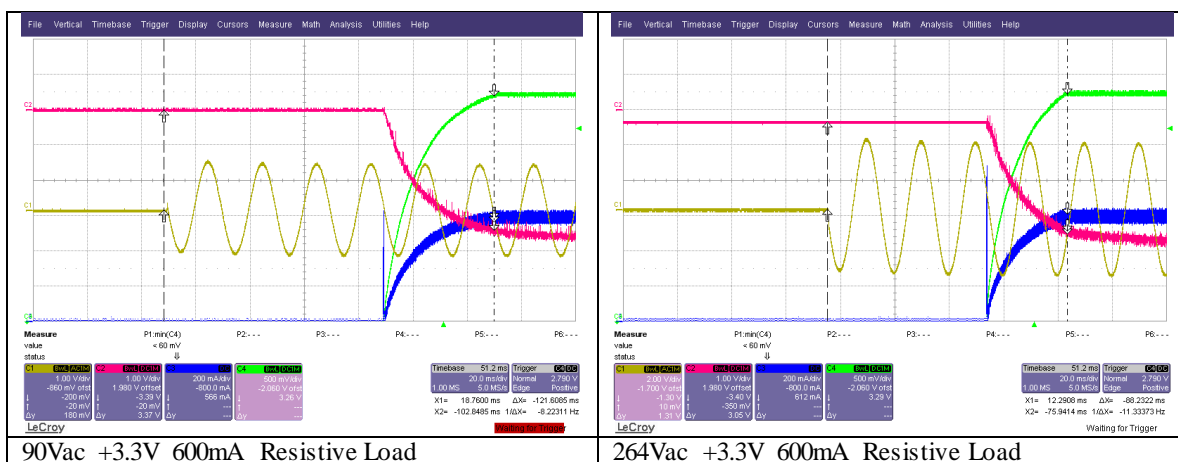
Dynamic Load Regulation (mV)	< 100mV for +3.3V rail for 50mA to 400mA step < 300mV for -3.3V rail.		
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## 6 Turn-on Time

Turn-on Time	<0.5sec	90Vac	120ms
Maximum Overshoot at Turn-on	Within 3.7V for +3.3V rail. Within 6V for -3.3V rail.	3.3V <4V	

Current Limit	650mA	680mA	
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Turn-on Time	<0.5sec	90Vac	120ms
Maximum Overshoot at Turn-on	Within 3.7V for +3.3V rail. Within 6V for -3.3V rail.	3.3V <4V	

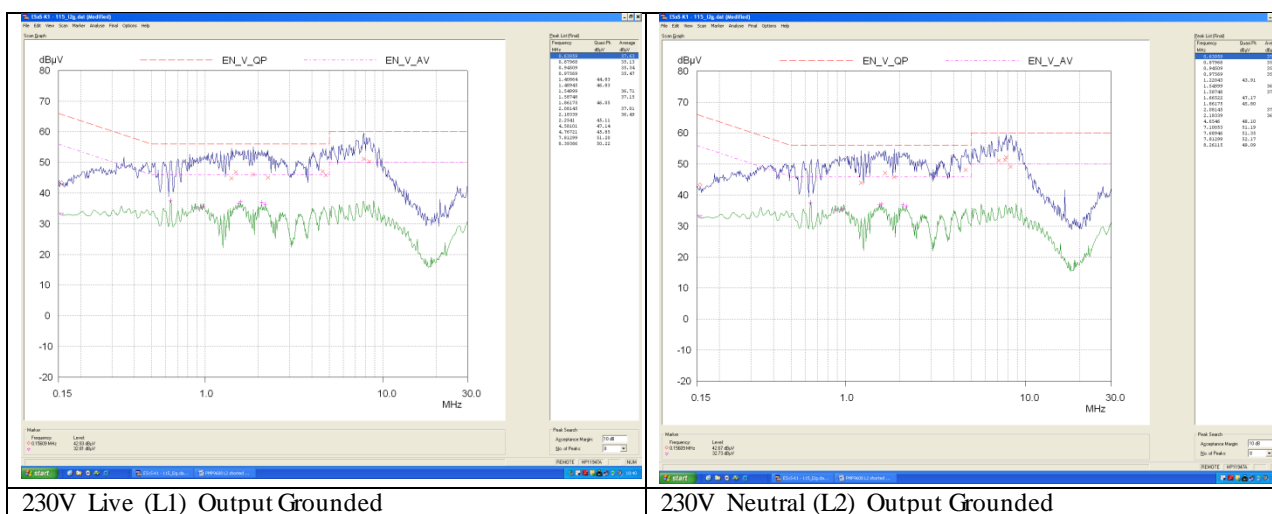
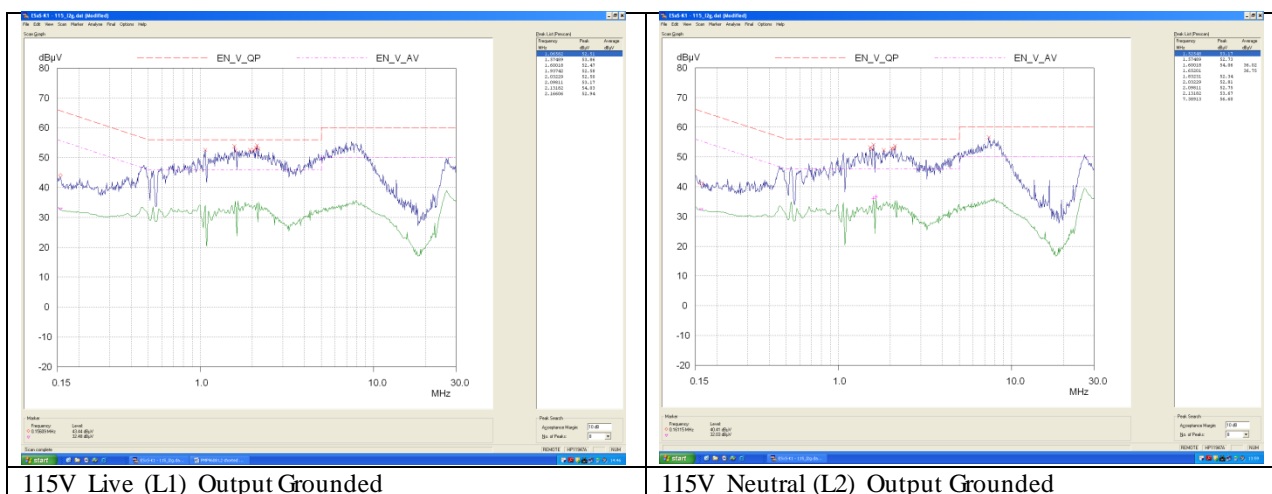
## 7 Agency Approvals

Designs will be designed but not tested for specified agency approvals.

7.1.1 Safety	
EMI	EN61000-4-5, EN61000-4-12
Other	Cispr22 conducted & radiated

## 8 Conducted EMC

Würth Transformer rev 02



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