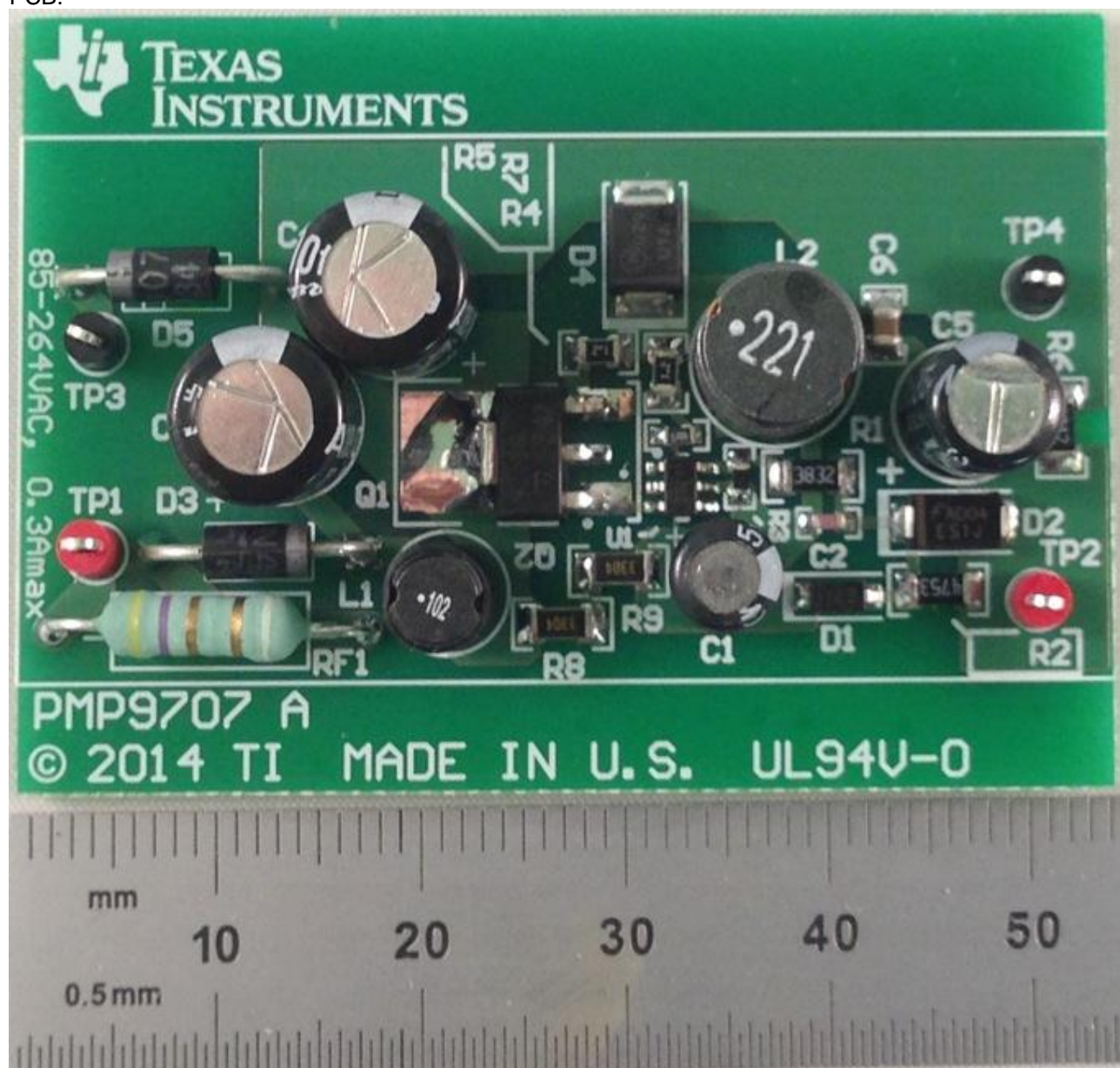


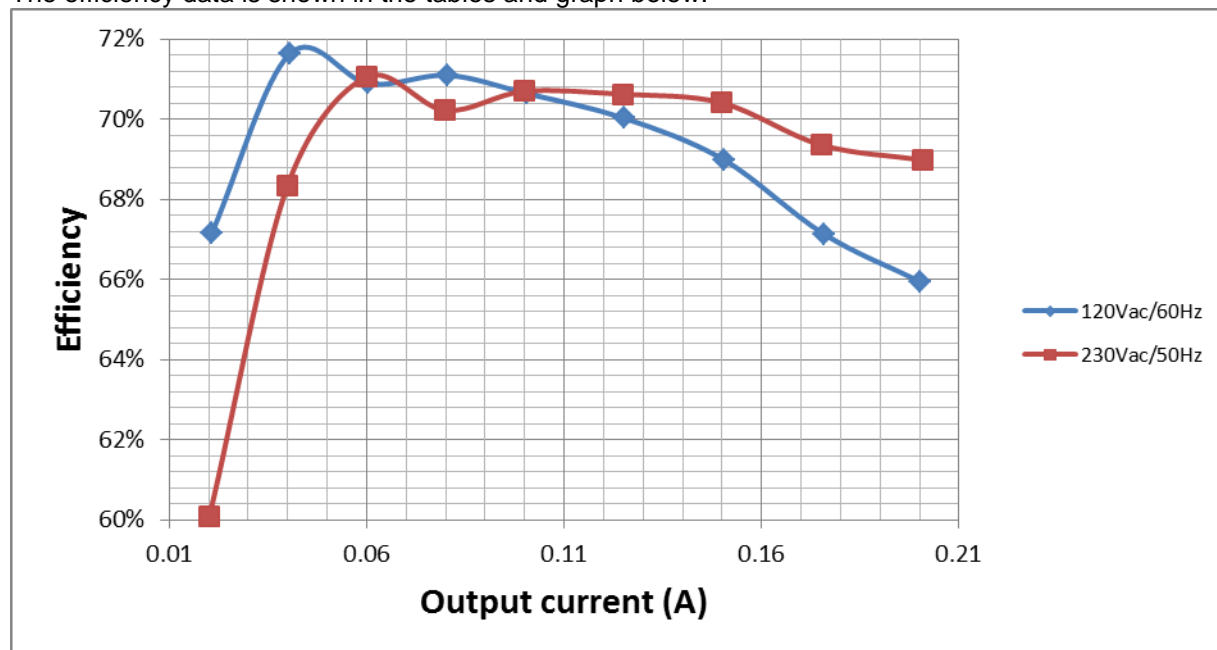
## 1 Photo

The photographs below show the PMP9707 Rev A assembly. This circuit was built on a PMP9707 Rev A PCB.



## 2 Converter Efficiency

The efficiency data is shown in the tables and graph below.



**V<sub>in</sub>=120V<sub>AC</sub>/50Hz**

Vin(V)	Iin(mA)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
120.05	83.64	3.811	12.56	0.2001	2.513256	1.297744	65.95%
120.06	73.97	3.287	12.56	0.1757	2.206792	1.080208	67.14%
120.06	63.67	2.736	12.55	0.1504	1.88752	0.84848	68.99%
120.06	54.24	2.244	12.54	0.1253	1.571262	0.672738	70.02%
120.06	45.14	1.784	12.54	0.1005	1.26027	0.52373	70.64%
120.06	37.47	1.421	12.55	0.0805	1.010275	0.410725	71.10%
120.06	29.78	1.072	12.56	0.0605	0.75988	0.31212	70.88%
120.06	21.38	0.7107	12.57	0.0405	0.509085	0.201615	71.63%
120.06	12.956	0.3897	12.6	0.02077	0.261702	0.127998	67.15%
120.06	1.661	0.02239	12.62	0	0	0.02239	0.00%

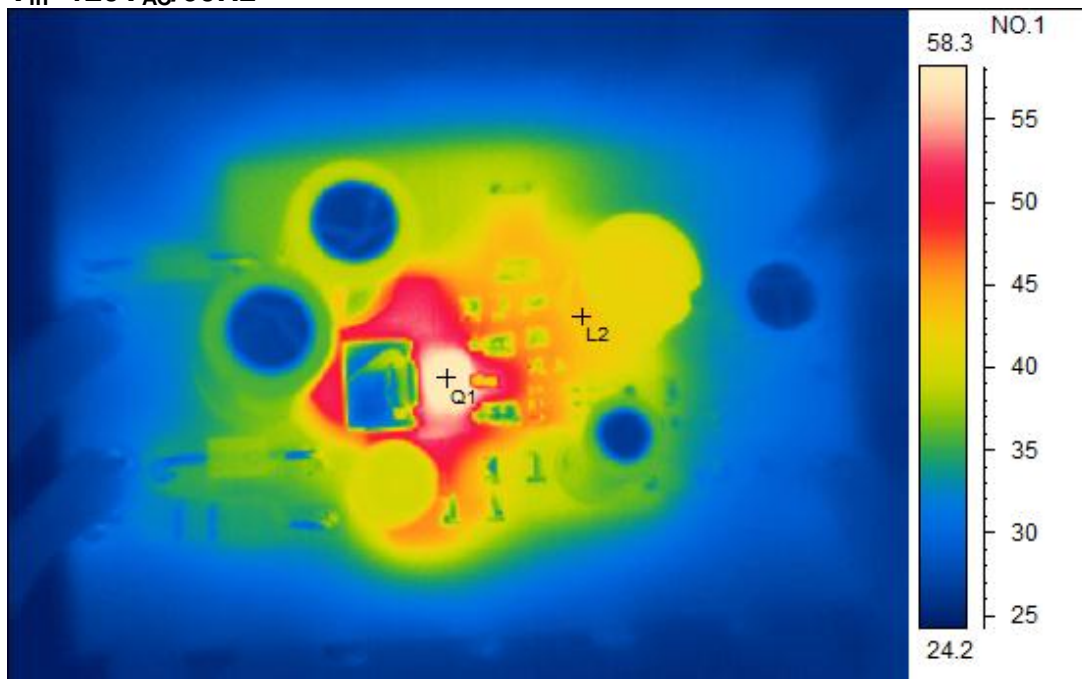
**Vin=230V<sub>AC</sub>/50Hz**

Vin(V)	Iin(mA)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
230.2	53.26	3.661	12.57	0.2009	2.525313	1.135687	68.98%
230.2	47.47	3.169	12.56	0.175	2.198	0.971	69.36%
230.2	41.46	2.67	12.55	0.1498	1.87999	0.79001	70.41%
230.2	35.71	2.216	12.54	0.1248	1.564992	0.651008	70.62%
230.2	29.84	1.772	12.54	0.0999	1.252746	0.519254	70.70%
230.2	25	1.428	12.55	0.0799	1.002745	0.425255	70.22%
230.2	19.719	1.058	12.55	0.0599	0.751745	0.306255	71.05%
230.2	14.698	0.735	12.56	0.04	0.5024	0.2326	68.35%
230.2	9.379	0.4219	12.59	0.02013	0.253437	0.1684633	60.07%
230.2	1.373	0.03467	12.59	0	0	0.03467	0.00%

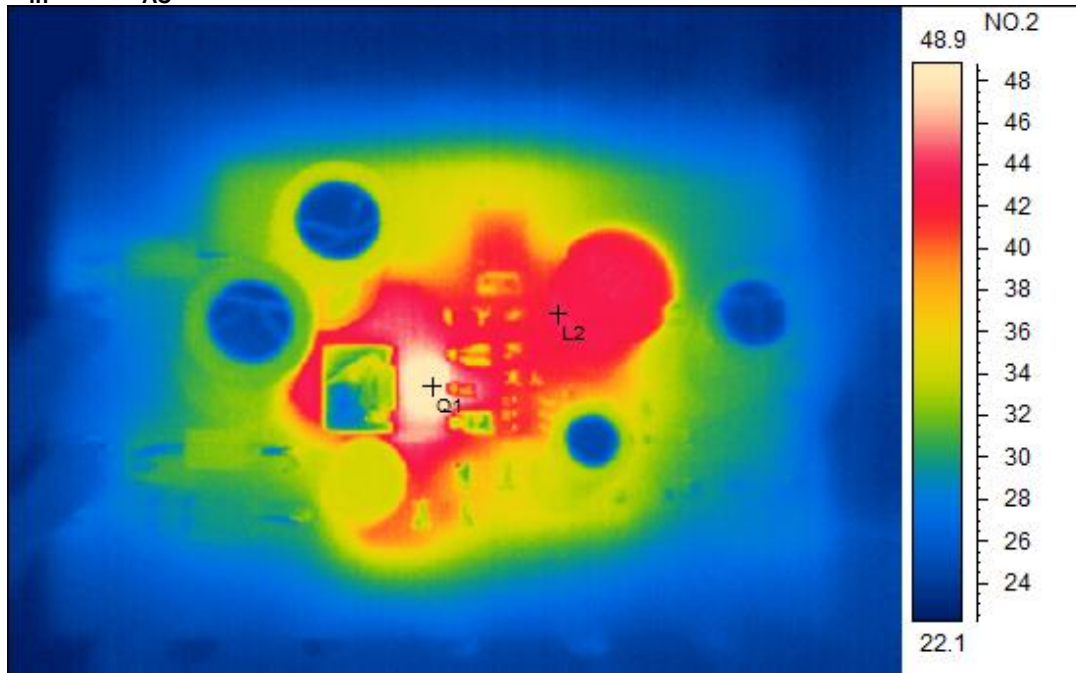
### 3 Thermal Images

The thermal images below show a top view and bottom view of the board under 120V<sub>AC</sub>/60Hz and 230V<sub>AC</sub>/50Hz input conditions. The ambient temperature was 20°C with no forced air flow. The output was at 12V/0.2A.

**V<sub>in</sub>=120V<sub>AC</sub>/60Hz**



Spot analysis	Value
Q1Temperature	61.1°C
L2 Temperature	44.3°C

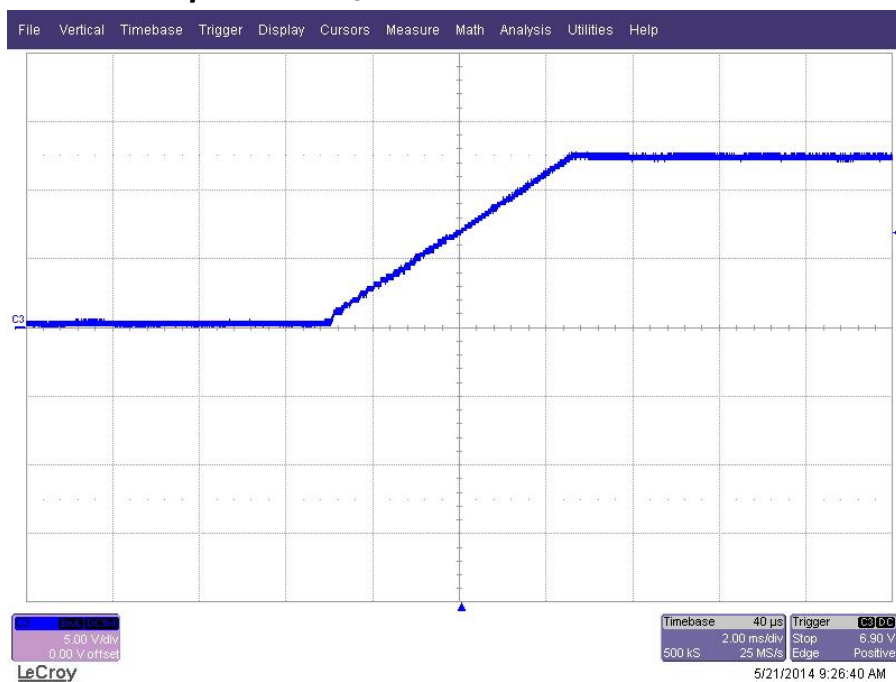
**$V_{in}=230V_{AC}/50Hz$** 

Spot analysis	Value
Q1 Temperature	51.1°C
L2 Temperature	44.2°C

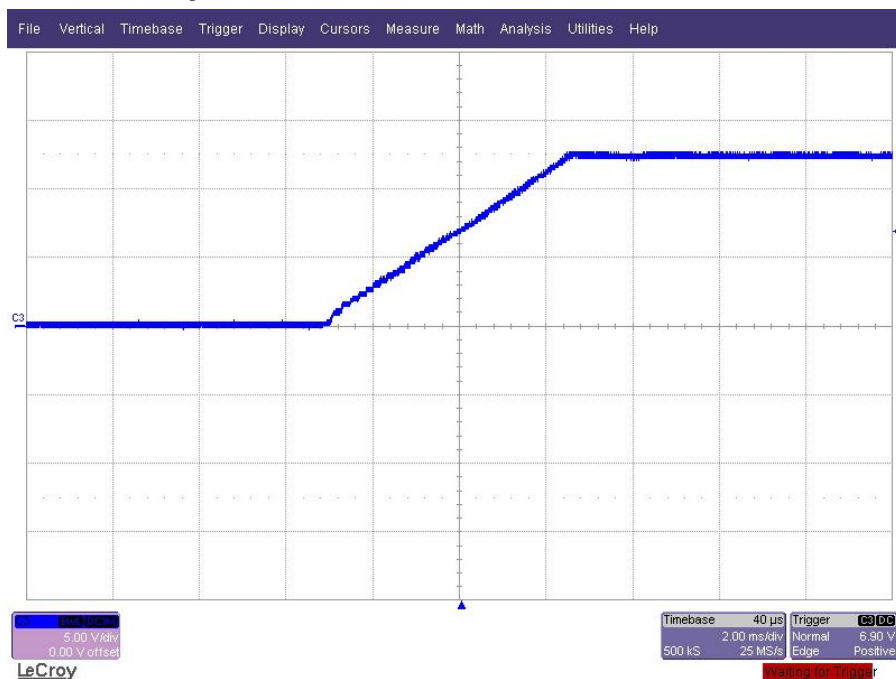
## 4 Startup Waveforms

The output voltages at startup are shown in the images below.

### 4.1 Start Up @ 120V<sub>AC</sub>: 12V/0.2A.

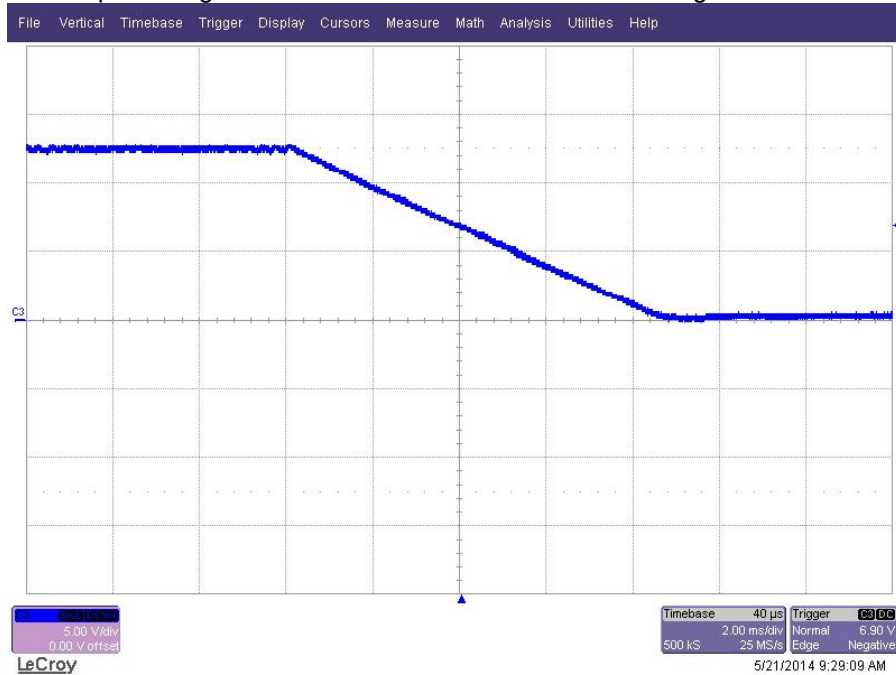


### 4.2 Start Up @ 120V<sub>AC</sub>: no load.



## 5 Turn off

The output voltage at turn off transient is shown in the image below at 12V/0.2A and 120V<sub>AC</sub>/60Hz input.



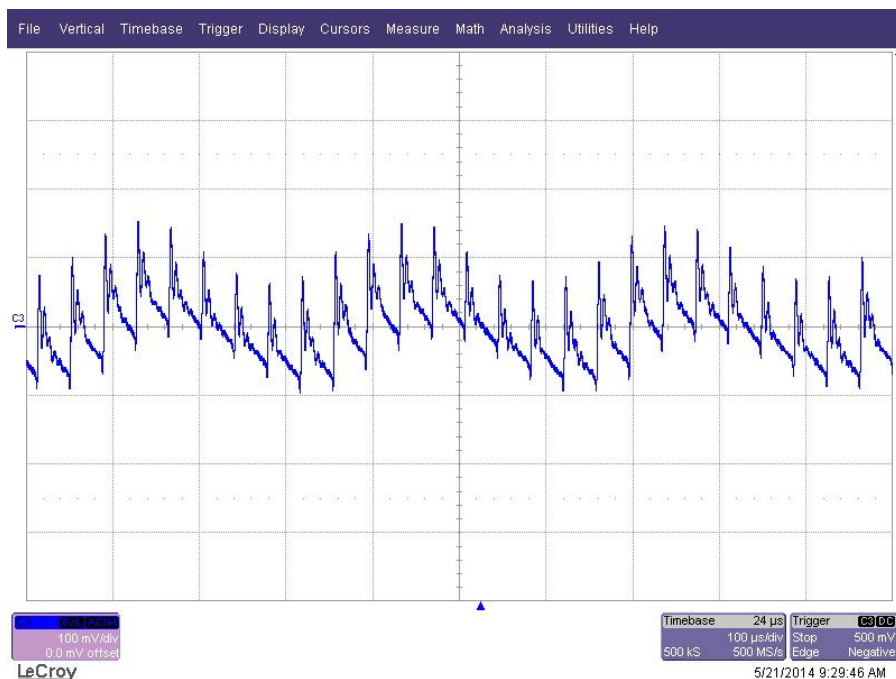


## 6 Output Ripple Voltages

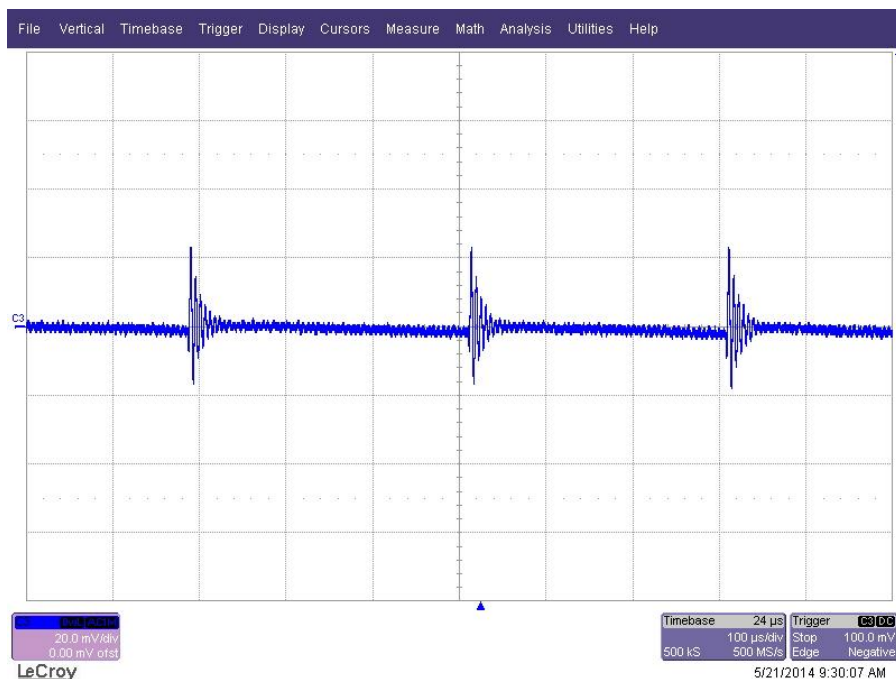
The output ripple voltages are shown in the plots below:

### 6.1 120V<sub>AC</sub>/60Hz

#### 6.1.1 12V/0.2A



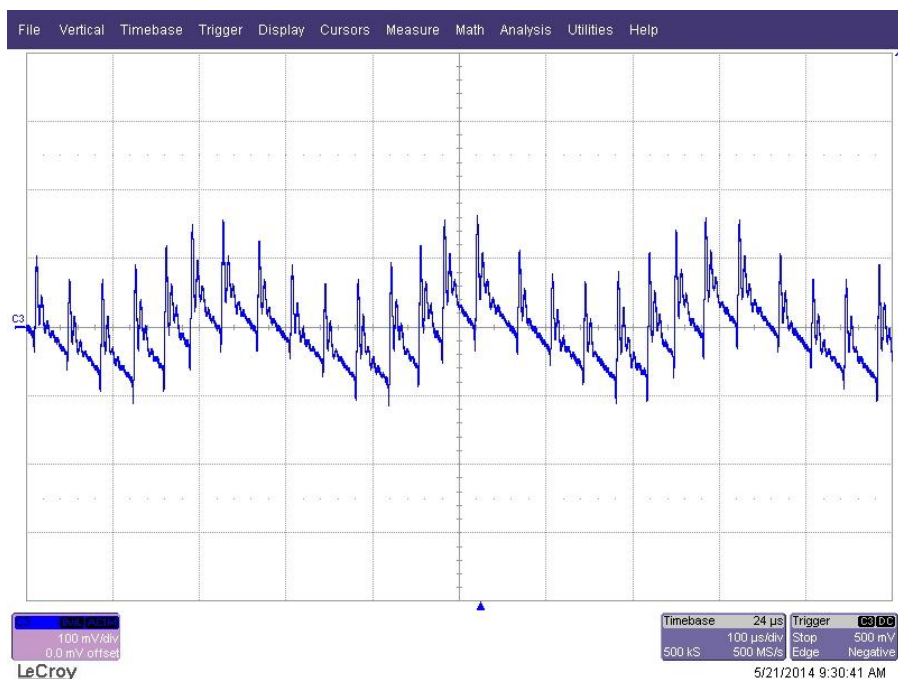
#### 6.1.2 No load



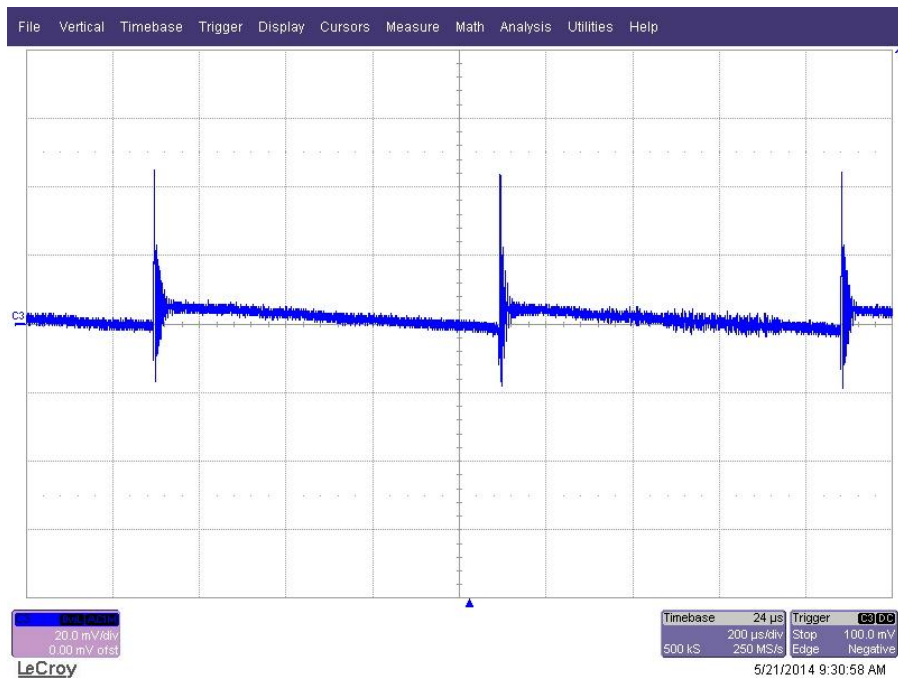


## 6.2 230V<sub>AC</sub>/50Hz

### 6.2.1 12V/0.2A

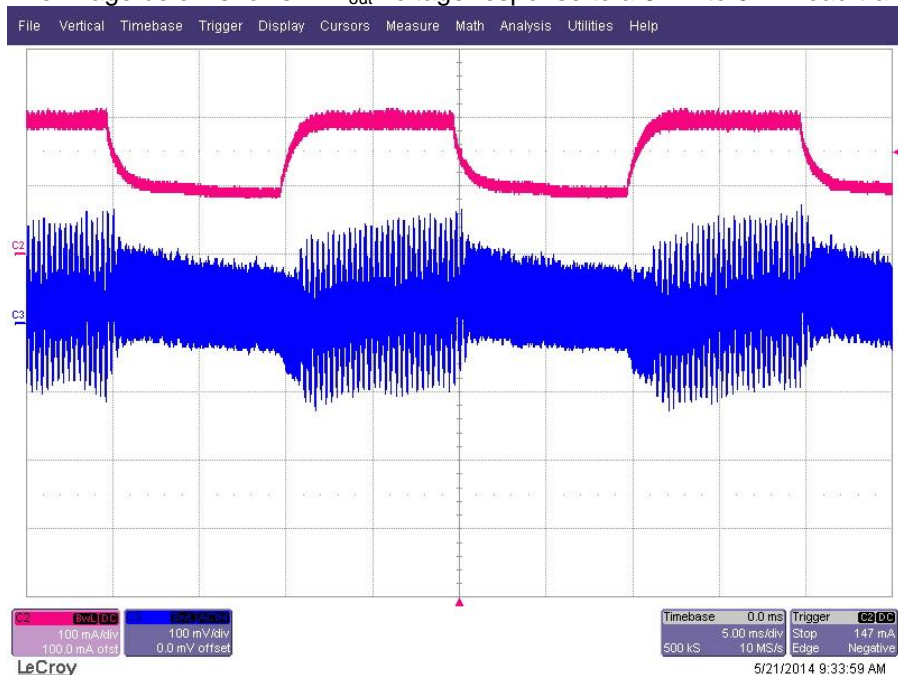


### 6.2.2 No load



## 7 Load Transient

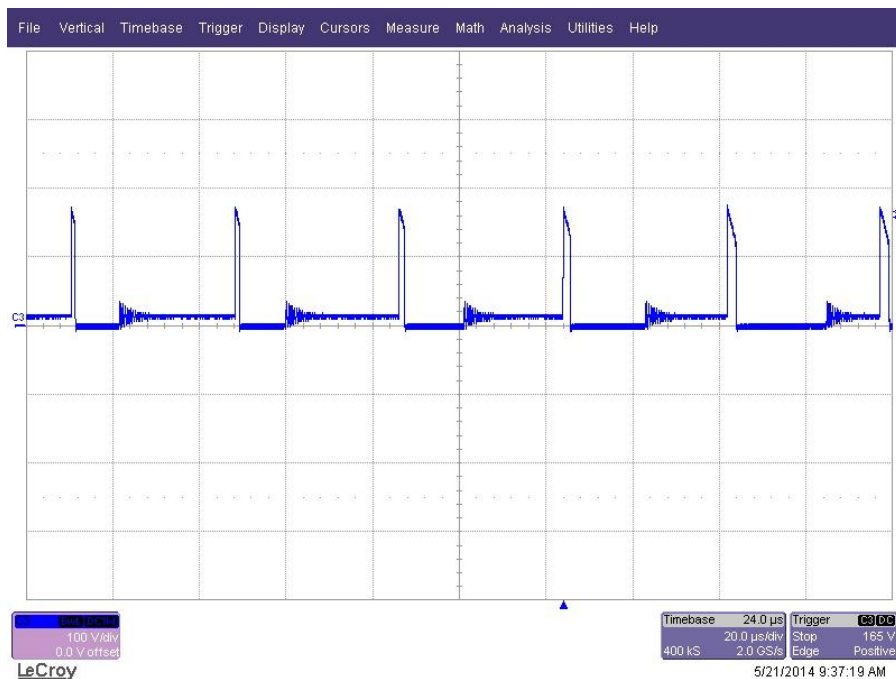
The image below shows  $12V_{out}$  voltage response to a **0.1A** to **0.2A** load transient at  $120V_{AC}/60\text{Hz}$  input.



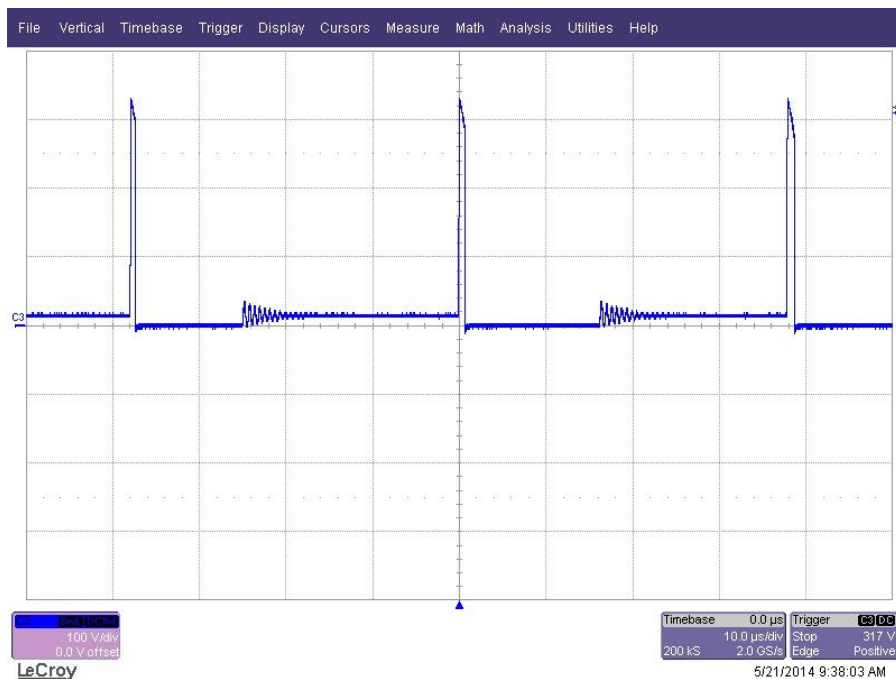
## 8 Switching Waveforms

The images below show key switching waveforms of PMP9707RevA. The waveforms are measured with 0.2A load current.

### 8.1 Diode D4 @ 120V<sub>AC</sub>/60Hz



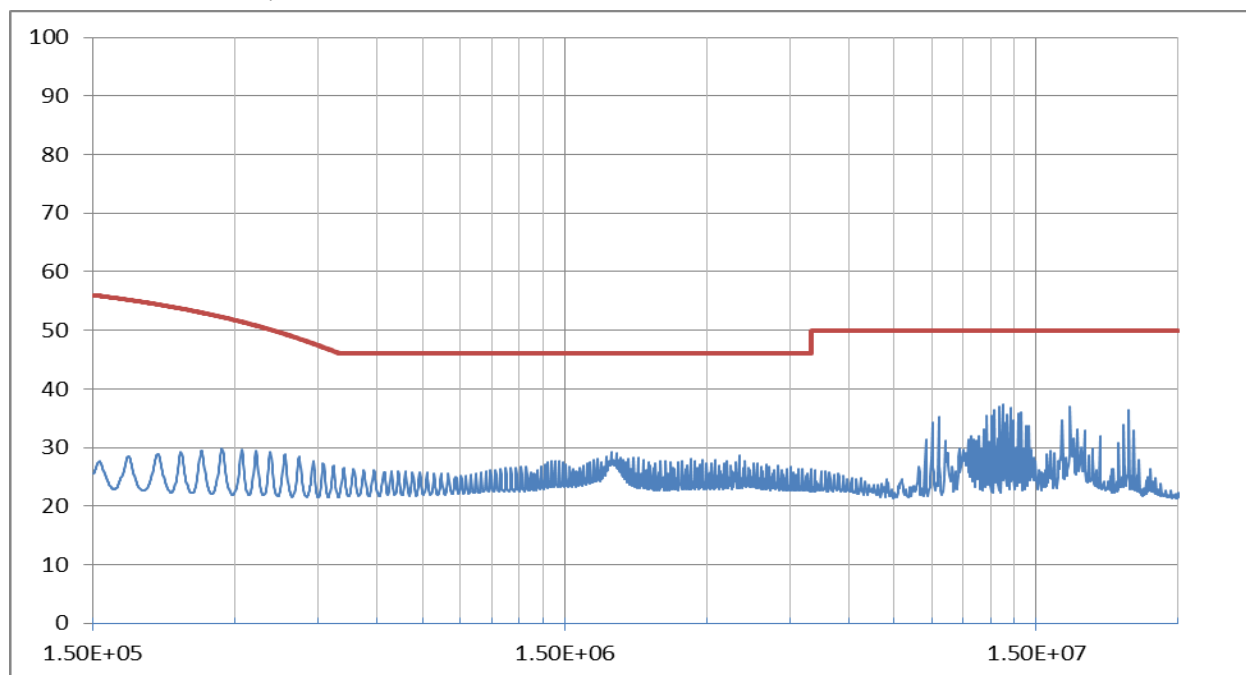
### 8.2 Diode D4 @ 230V<sub>AC</sub>/50Hz



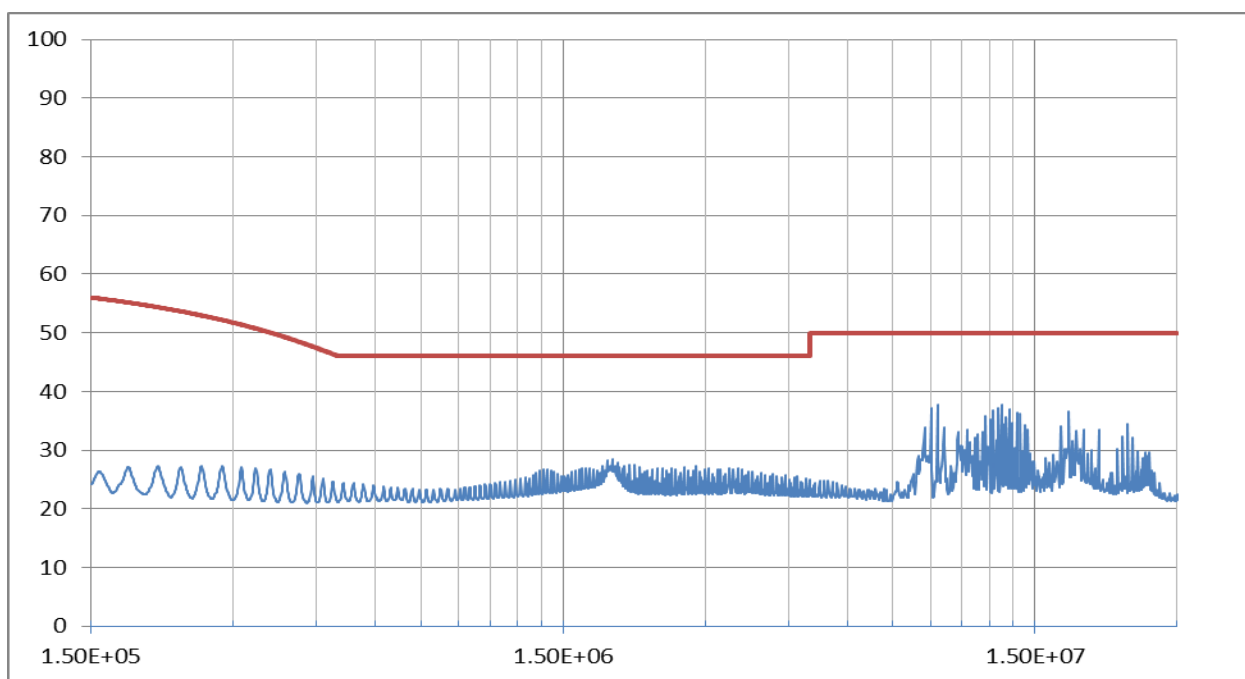
## 9 Conducted EMI:

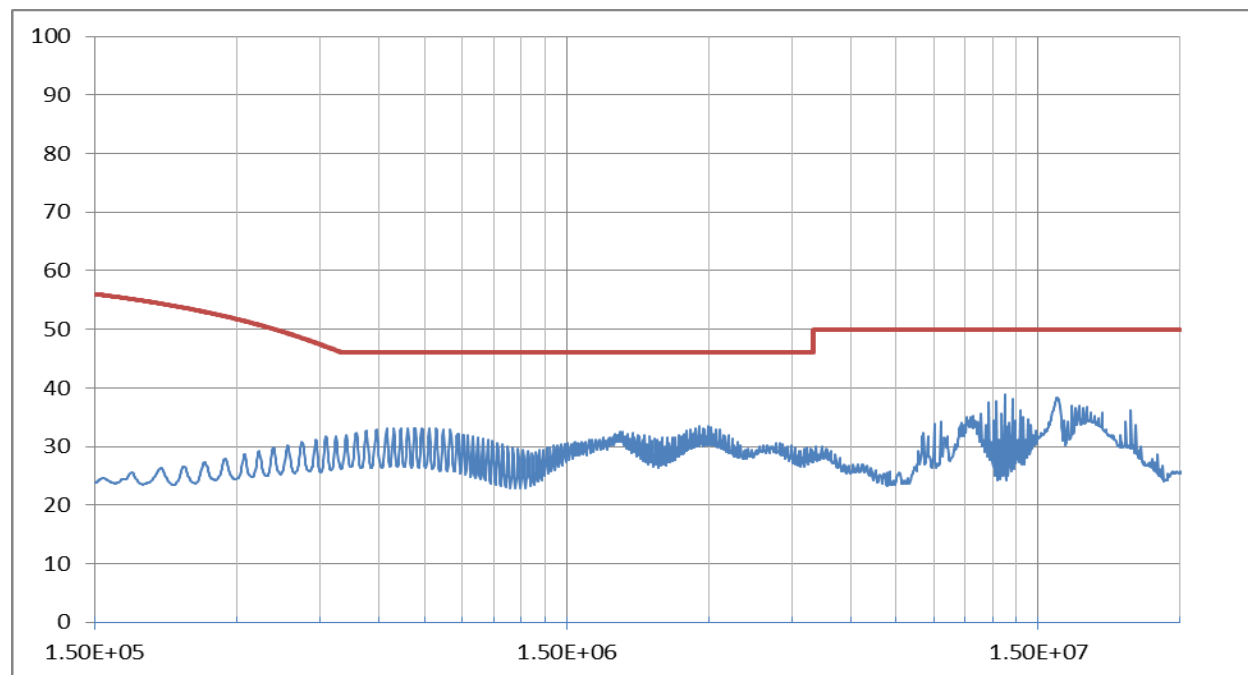
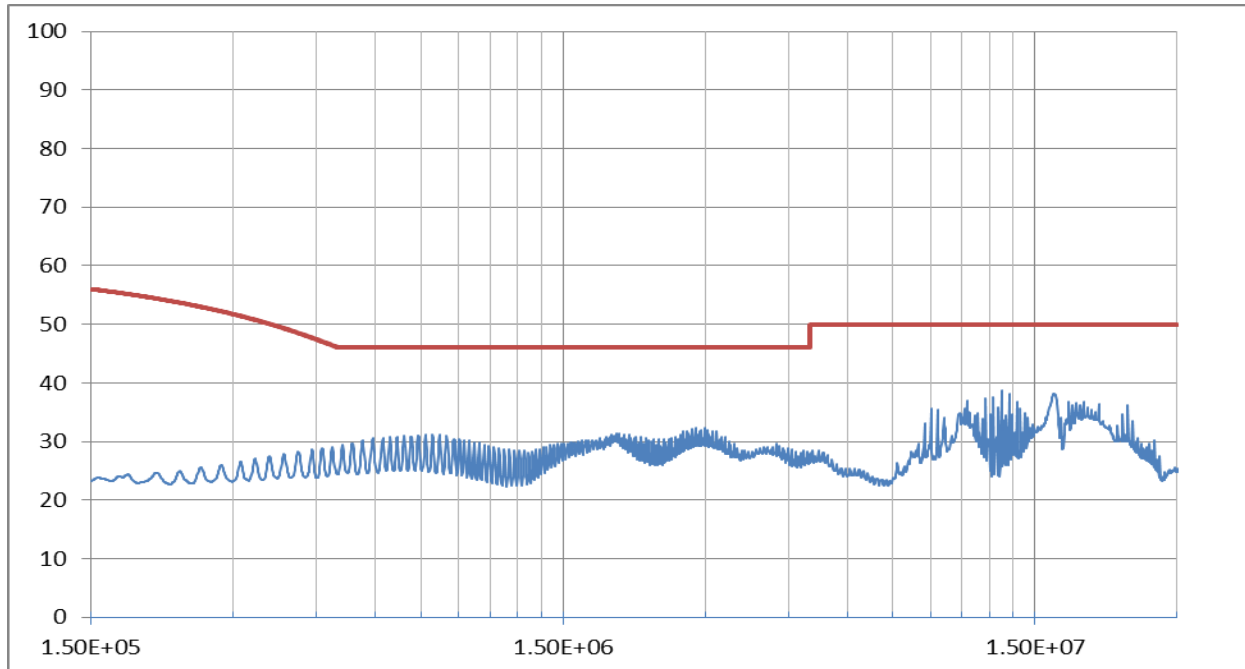
Conducted EMI of PMP9707 Rev A was tested with 12V/0.2A load. The following curves show the average scan results. PMP9707 Rev A is not connected to Earth ground during the test. The board is supplied by California Instruments 1251P with an isolated transformer.

### 9.1 120V<sub>AC</sub>/60Hz, Neutral



### 9.2 120V<sub>AC</sub>/60Hz, Line



**9.3 240V<sub>AC</sub>/50Hz, Neutral****9.4 240V<sub>AC</sub>/50Hz, Line**

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