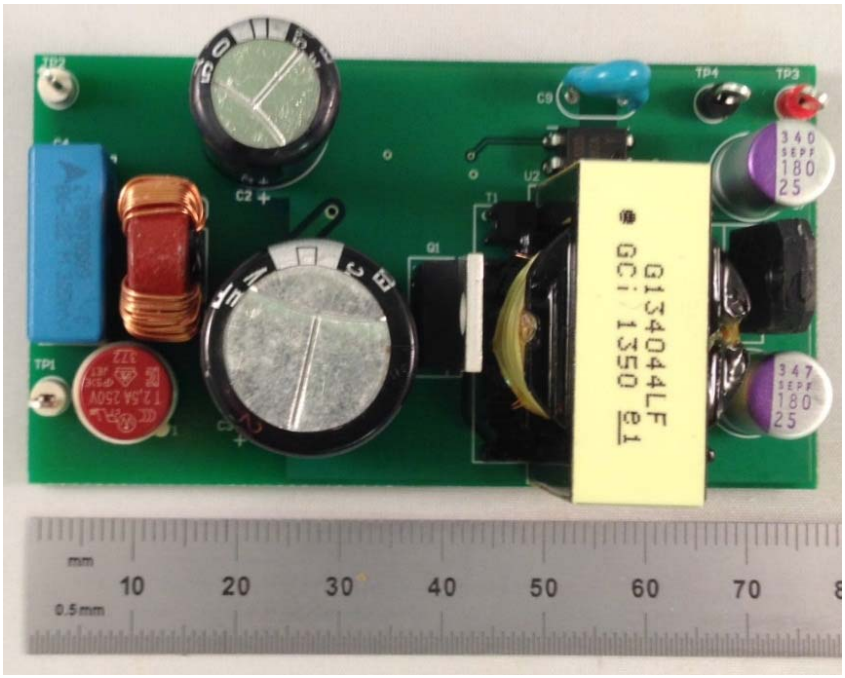
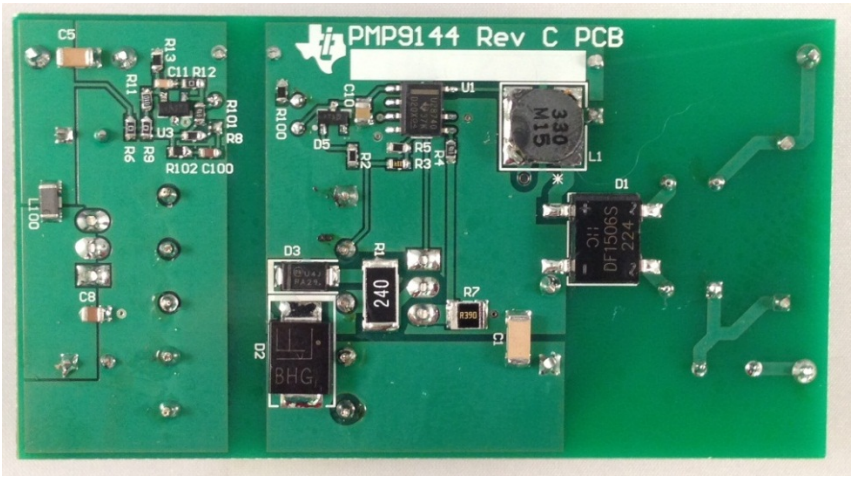
1 Photos

The photograph below shows the PMP9144 Rev C prototype assembly.

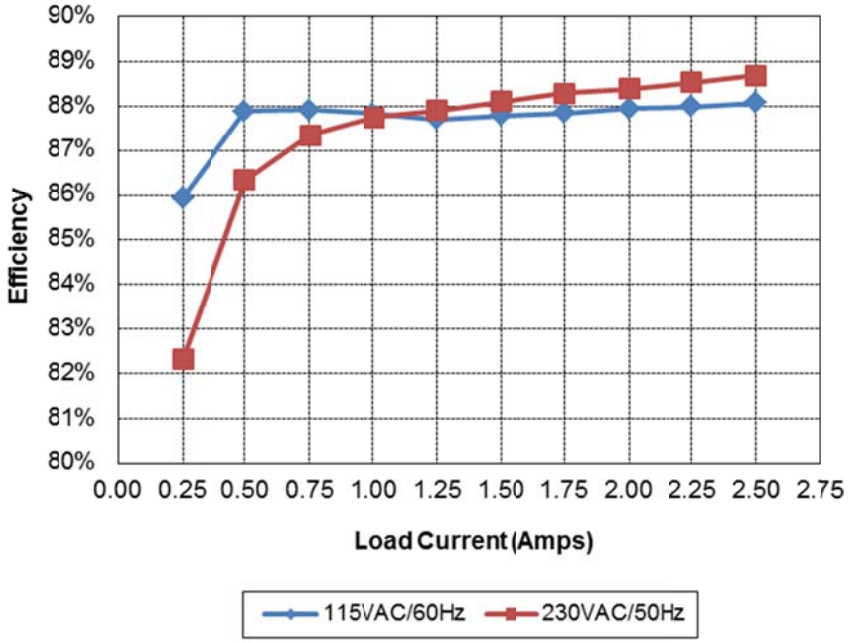




2 Standby Power

With no load attached to the output of the supply, the unit draws 70mW of input power with an 115VAC/60Hz input, and 74mW with a 230VAC/50Hz input.

3 Efficiency



115VAC/60Hz

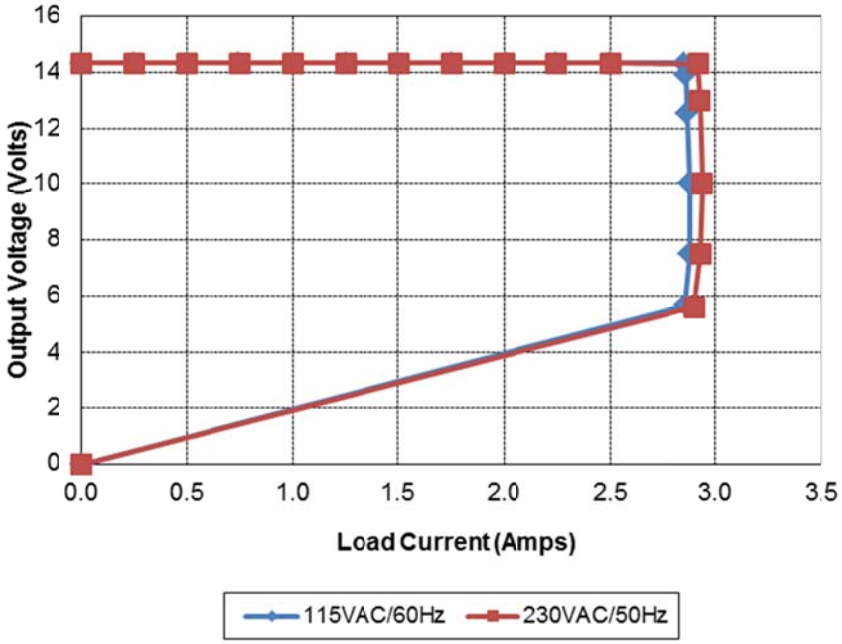
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	14.33	114.9	0.0113	0.070		0.00	0.07	0.0%
0.252	14.32	115.1	0.108	4.20	0.35	3.61	0.59	85.9%
0.499	14.32	115.0	0.192	8.13	0.37	7.15	0.98	87.9%
0.749	14.32	115.0	0.263	12.20	0.40	10.73	1.47	87.9%
1.001	14.32	115.0	0.328	16.32	0.43	14.33	1.99	87.8%
1.250	14.32	115.0	0.390	20.41	0.46	17.90	2.51	87.7%
1.500	14.32	115.0	0.449	24.47	0.47	21.48	2.99	87.8%
1.752	14.32	115.0	0.508	28.56	0.49	25.09	3.47	87.8%
2.004	14.32	115.0	0.564	32.63	0.50	28.70	3.93	87.9%
2.250	14.32	115.0	0.619	36.62	0.52	32.22	4.40	88.0%
2.499	14.32	115.0	0.674	40.63	0.53	35.79	4.84	88.1%

230VAC/50Hz

Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	14.33	229.7	0.0160	0.074		0.00	0.07	0.0%
0.251	14.33	229.7	0.070	4.37	0.27	3.60	0.77	82.3%
0.500	14.33	229.7	0.118	8.30	0.31	7.17	1.14	86.3%
0.752	14.32	229.7	0.167	12.33	0.32	10.77	1.56	87.3%
1.003	14.32	229.7	0.215	16.37	0.33	14.36	2.01	87.7%
1.251	14.32	229.7	0.261	20.38	0.34	17.91	2.47	87.9%
1.503	14.32	229.7	0.304	24.43	0.35	21.52	2.91	88.1%
1.751	14.32	229.7	0.345	28.40	0.36	25.07	3.33	88.3%
2.000	14.32	229.7	0.381	32.40	0.37	28.64	3.76	88.4%
2.248	14.32	229.7	0.414	36.36	0.38	32.19	4.17	88.5%
2.501	14.32	229.7	0.448	40.38	0.39	35.81	4.57	88.7%

4 Current Limit

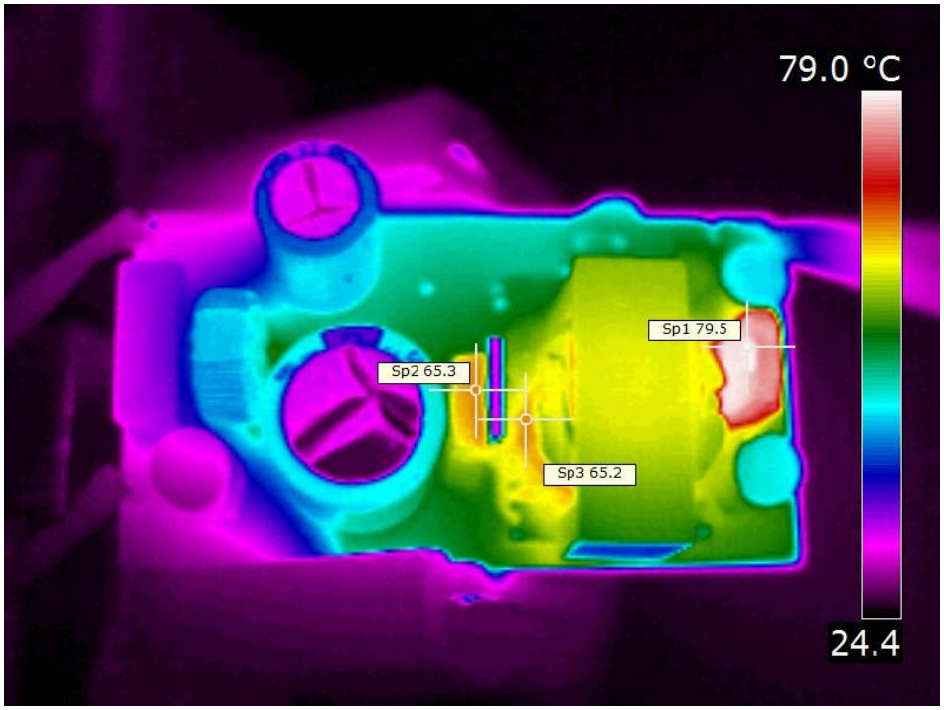
A plot of the output voltage versus load current is shown below.

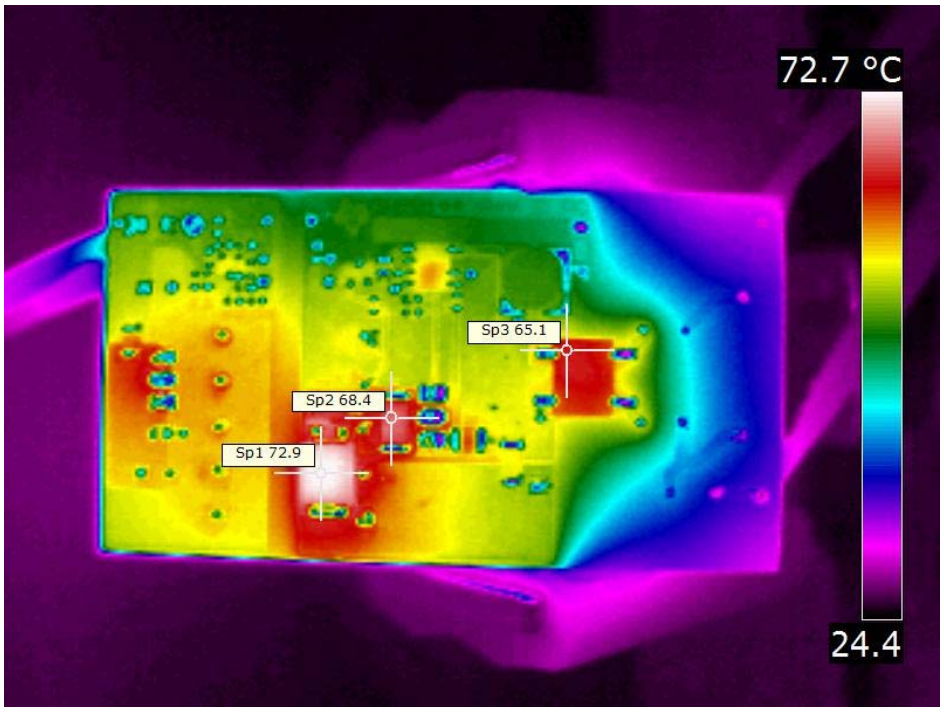


5 Thermal Images

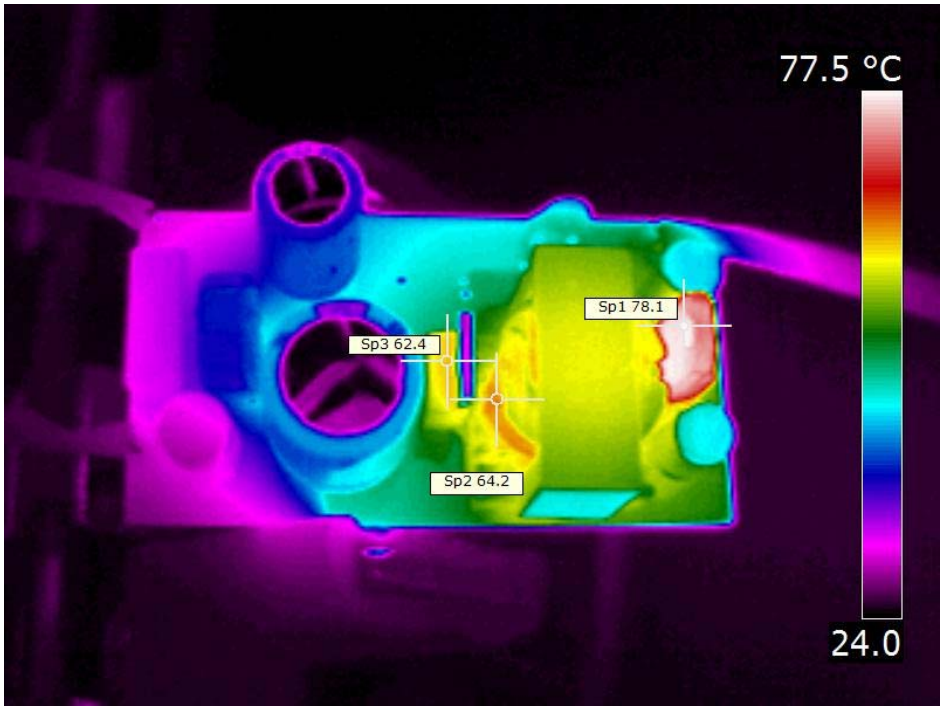
The ambient temperature was 25ºC. The output was loaded with 2.4A.

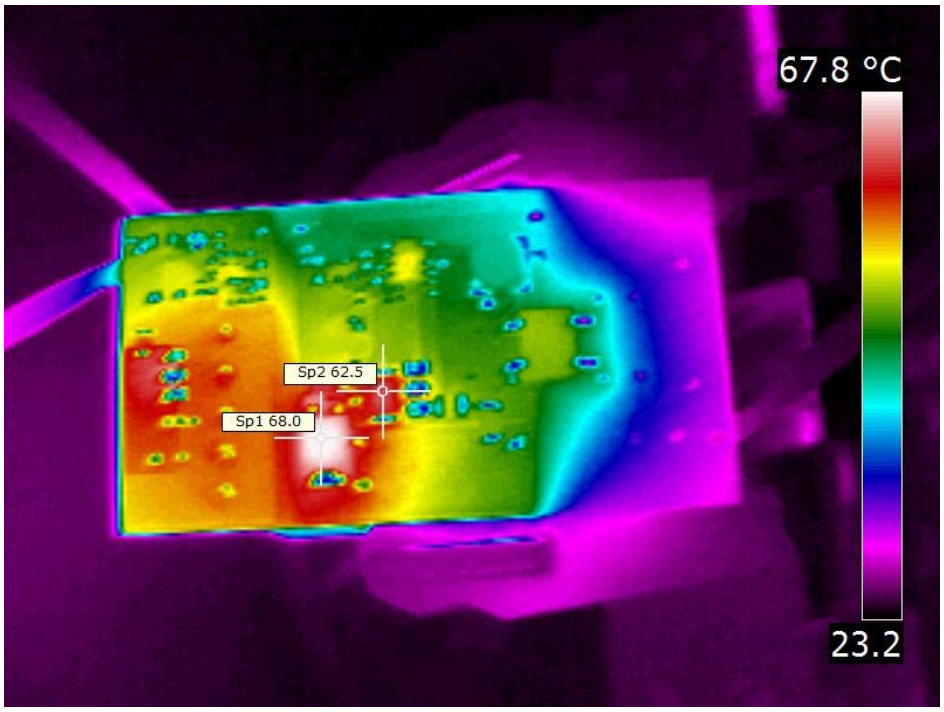
5.1 115VAC/60Hz Input





5.2 230VAC/50Hz Input

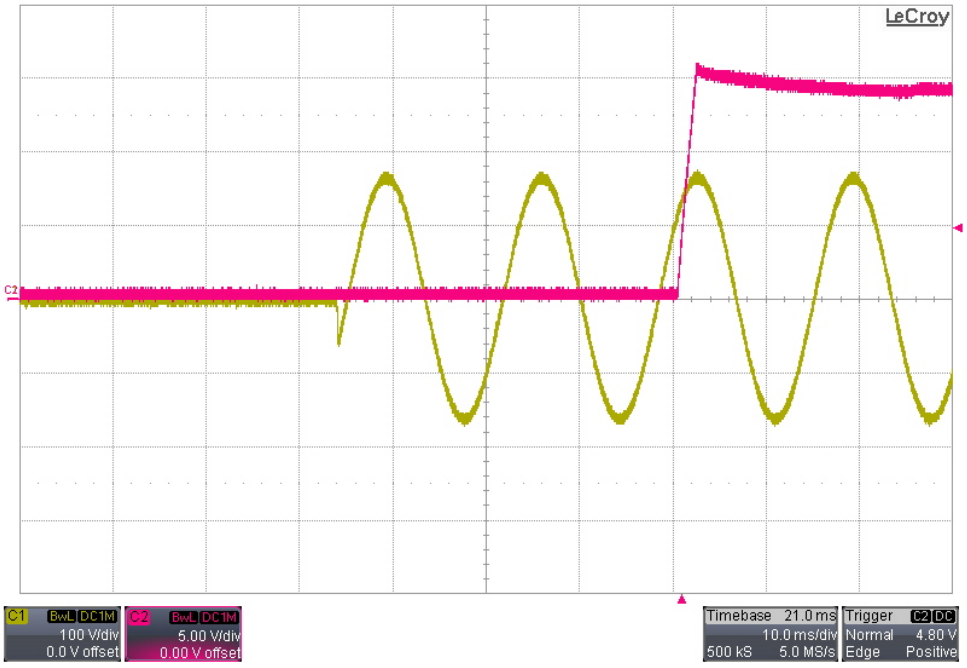




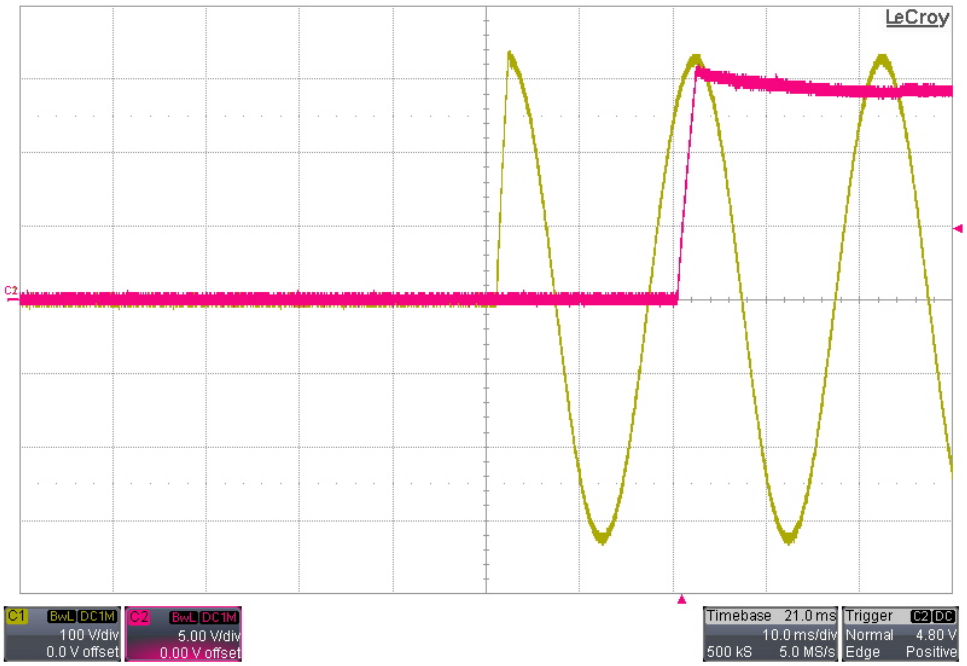
6 Startup

Channel 1 shows the AC input voltage. Channel 2 shows the output voltage.

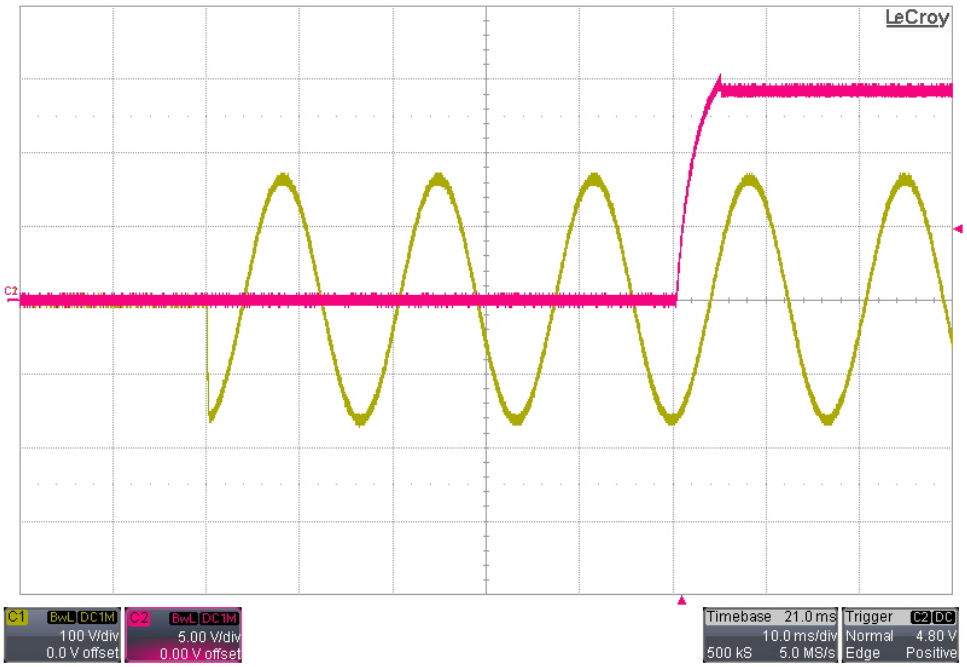
6.1 115VAC/60Hz Startup – 0A Load



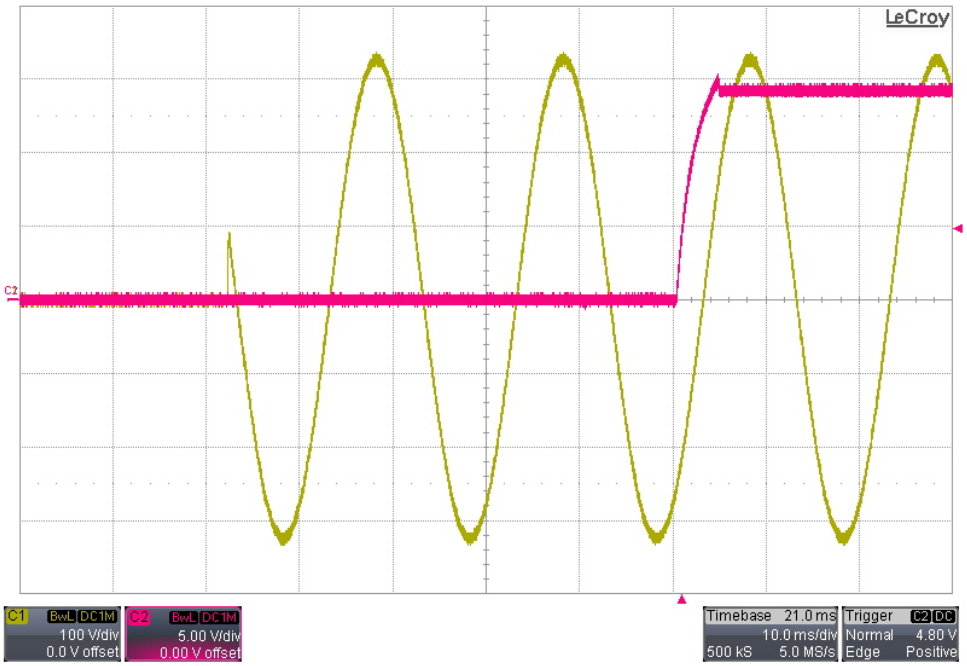
6.2 230VAC/50Hz Startup – 0A Load



6.3 115VAC/60Hz Startup – 6Ω Load



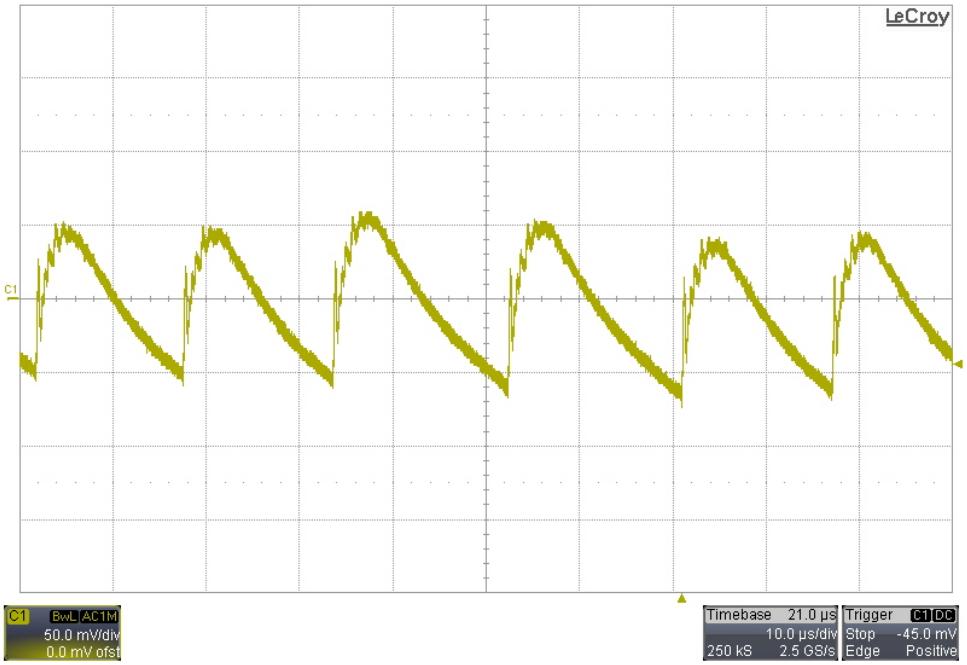
6.4 230VAC/50Hz Startup – 6Ω Load



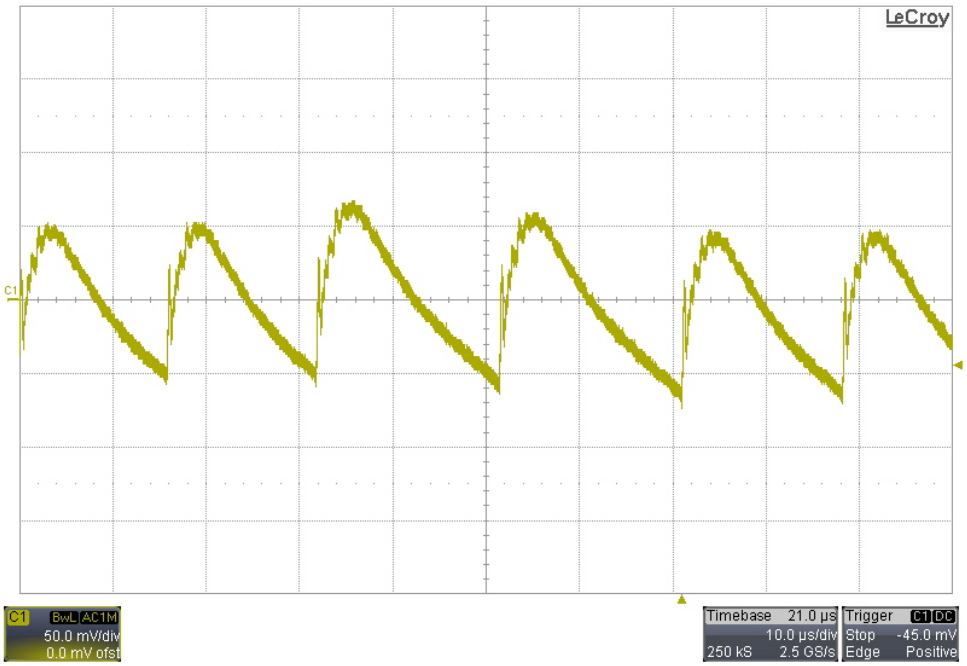
7 Output Ripple Voltage

The output was loaded with 2.4A.

7.1 115VAC/60Hz Output Ripple Voltage



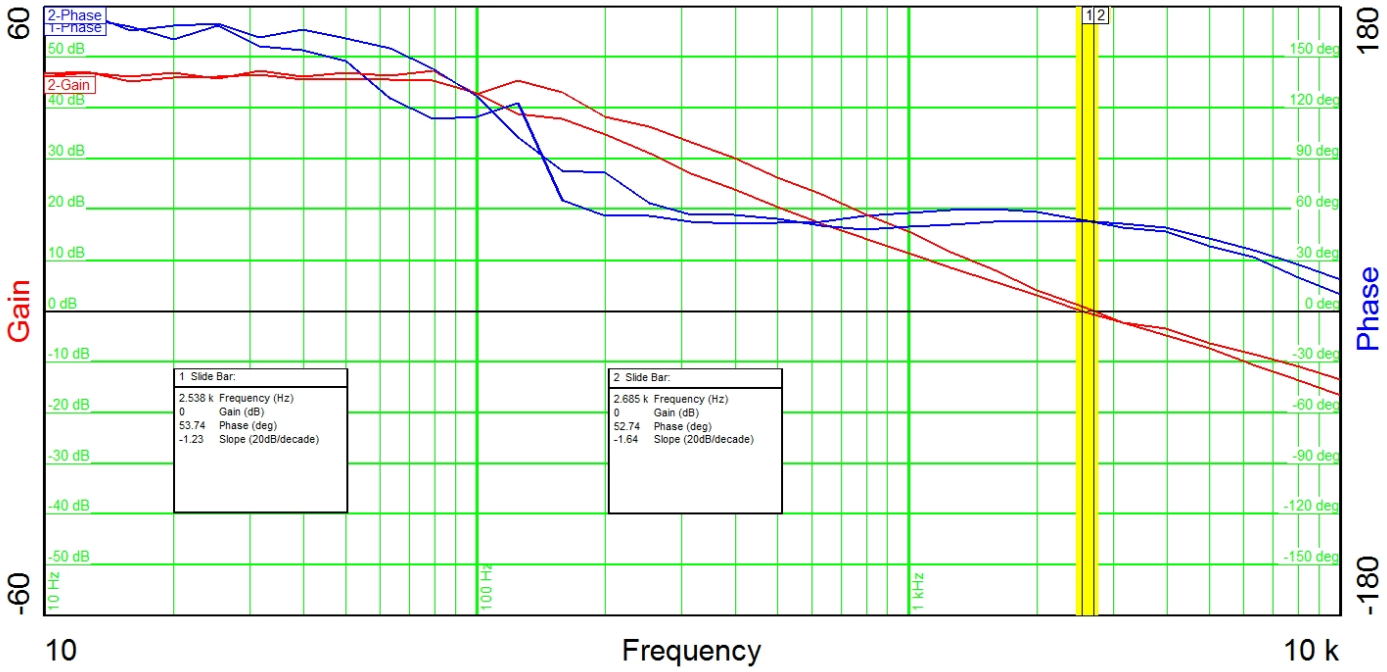
7.2 230VAC/50Hz Output Ripple Voltage



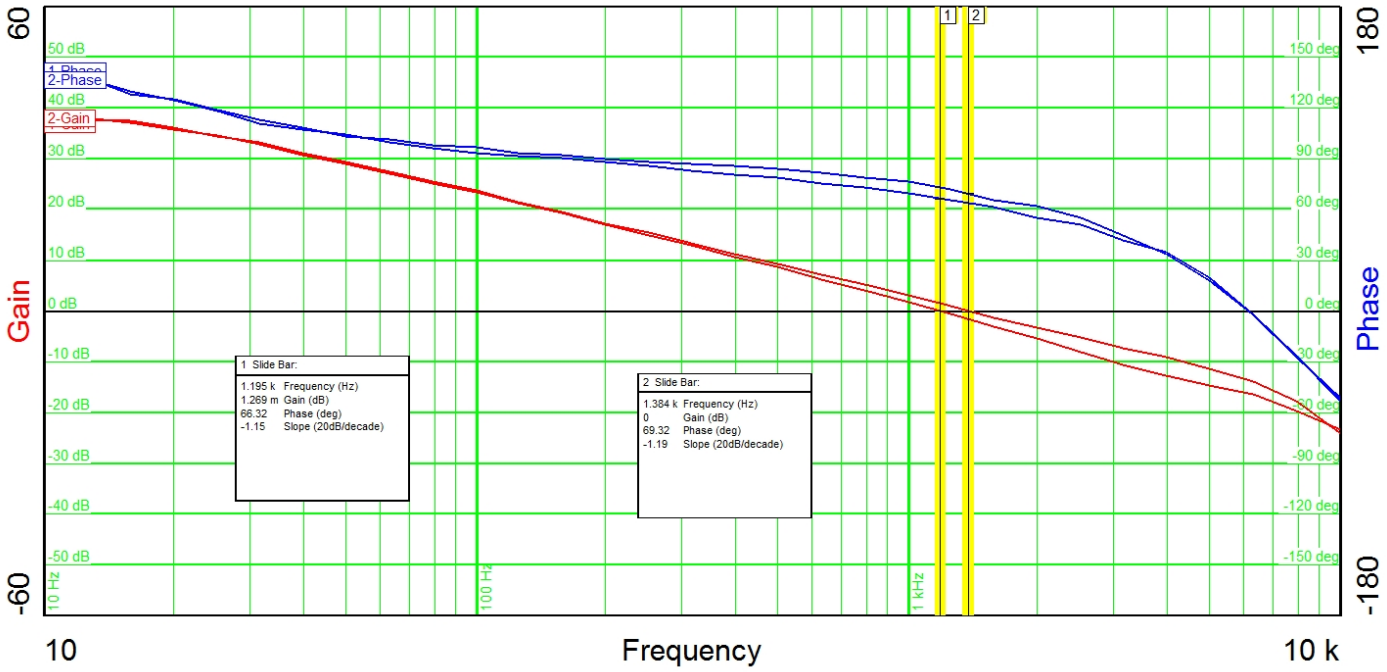
8 Frequency Response

The frequency response of the feedback loops are shown below. For the gain/phase plot #1, the input was set to 115VAC/60Hz. For the gain/phase plot #2, the input was set to 230VAC/50Hz. The output was loaded with 2.4A.

8.1 Measured Across R6



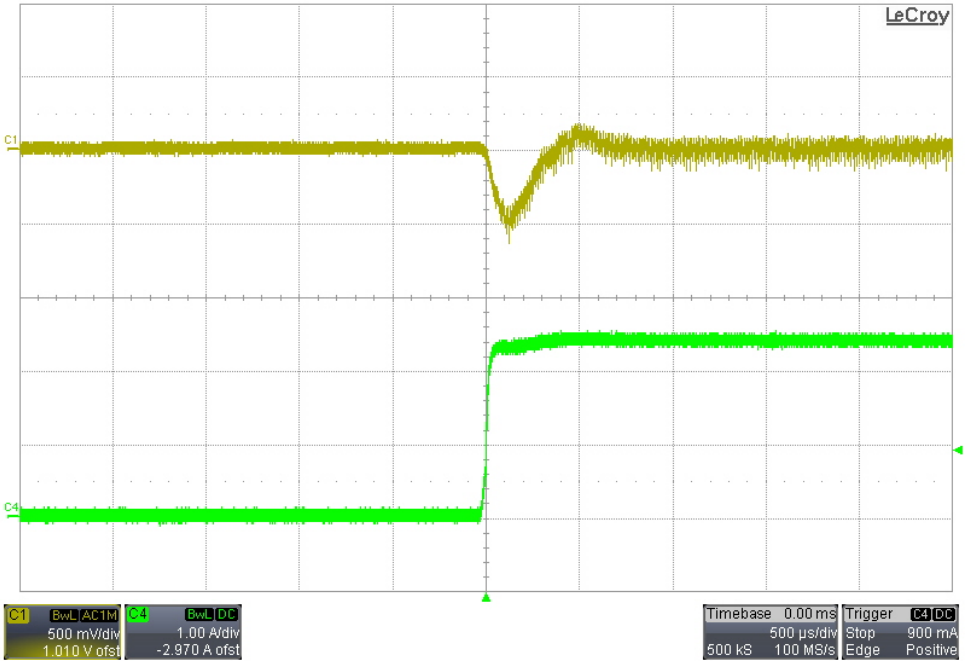
8.2 Measured Across R9

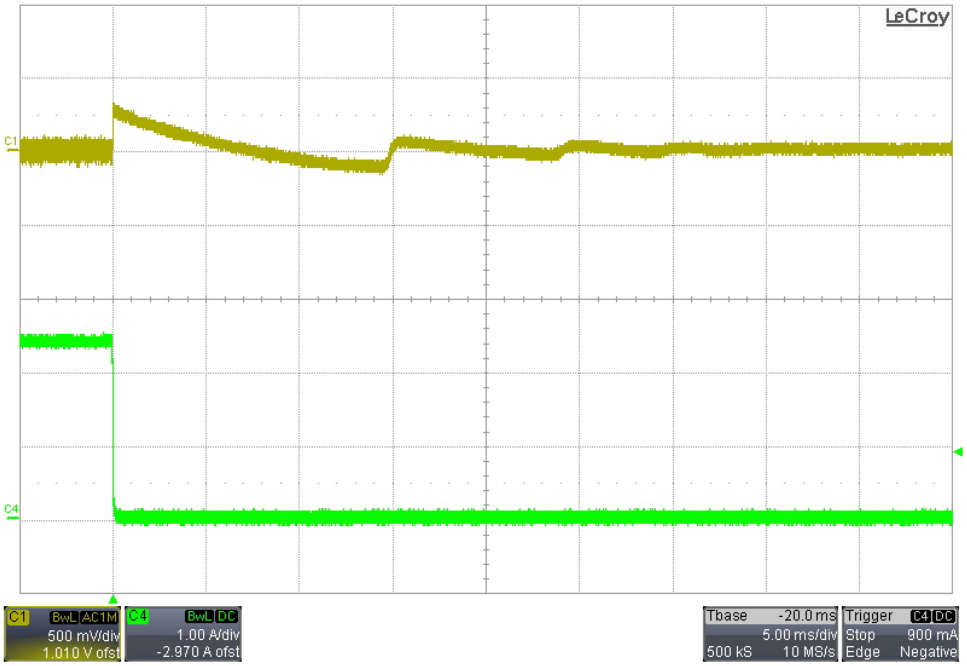


9

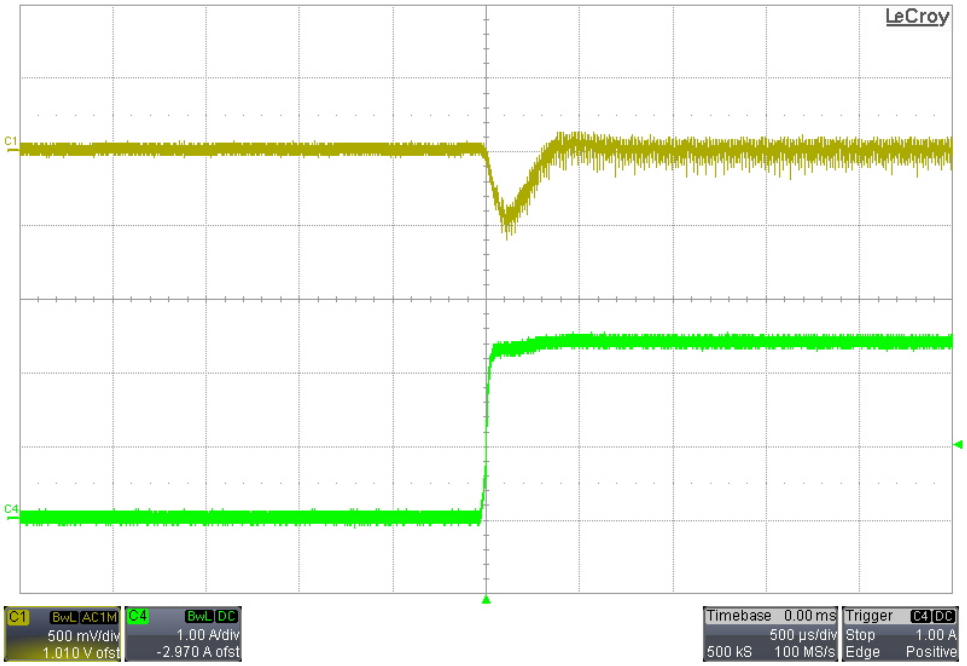
10 Load Transients

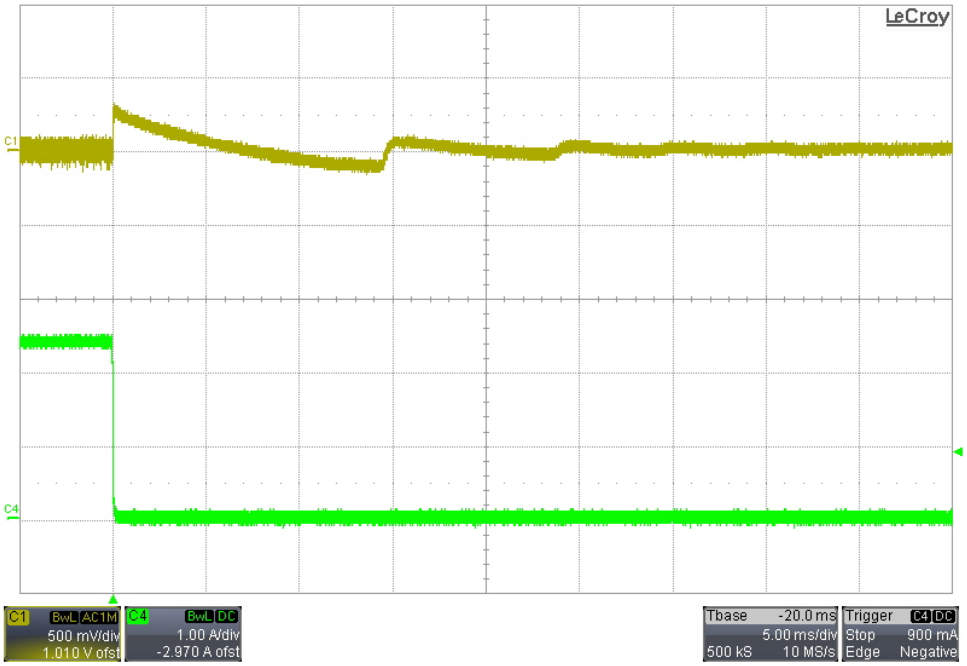
10.1 0A to 2.4A Transient – 115VAC/60Hz Input





10.2 0A to 0.4A Transient – 230VAC/50Hz Input



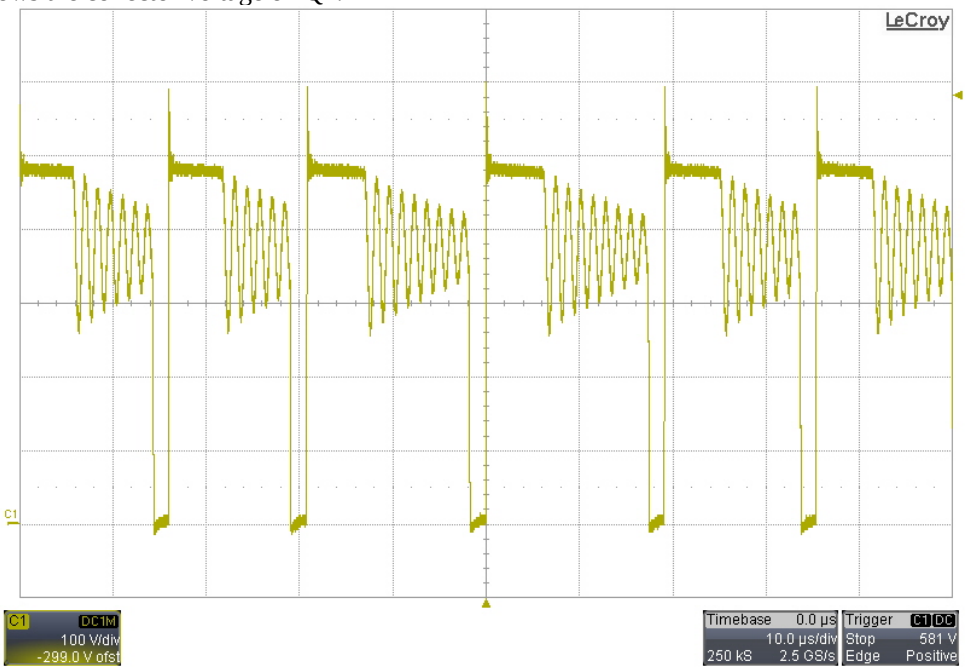


11 Switching Waveforms

The images below show the voltage waveforms on the switching devices within the supply. The input was 265VAC/50Hz. The output was loaded 2.4A.

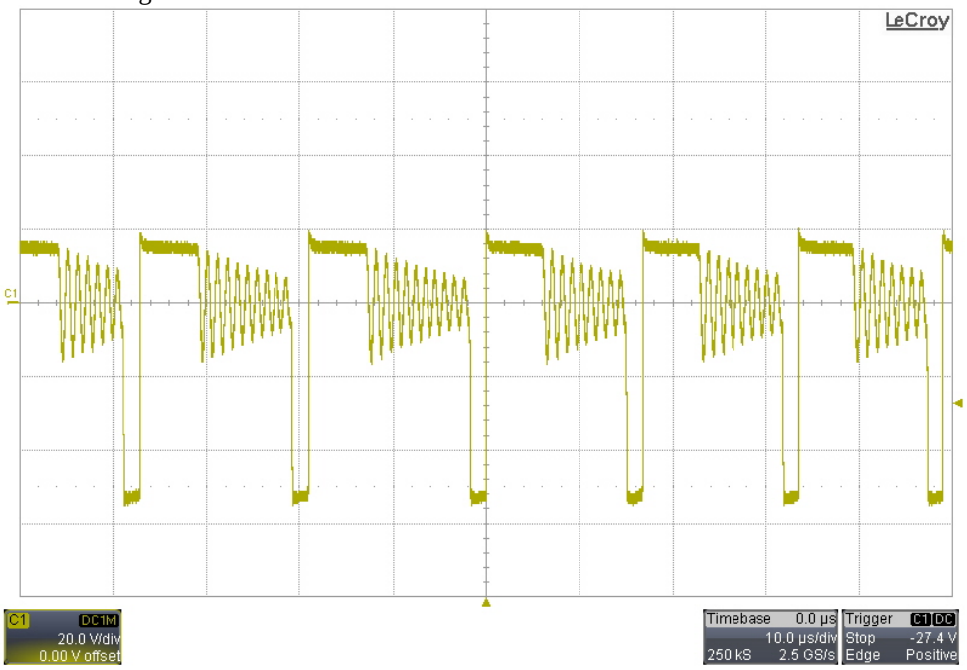
11.1 Primary Waveforms

The image below shows the collector voltage on Q1.

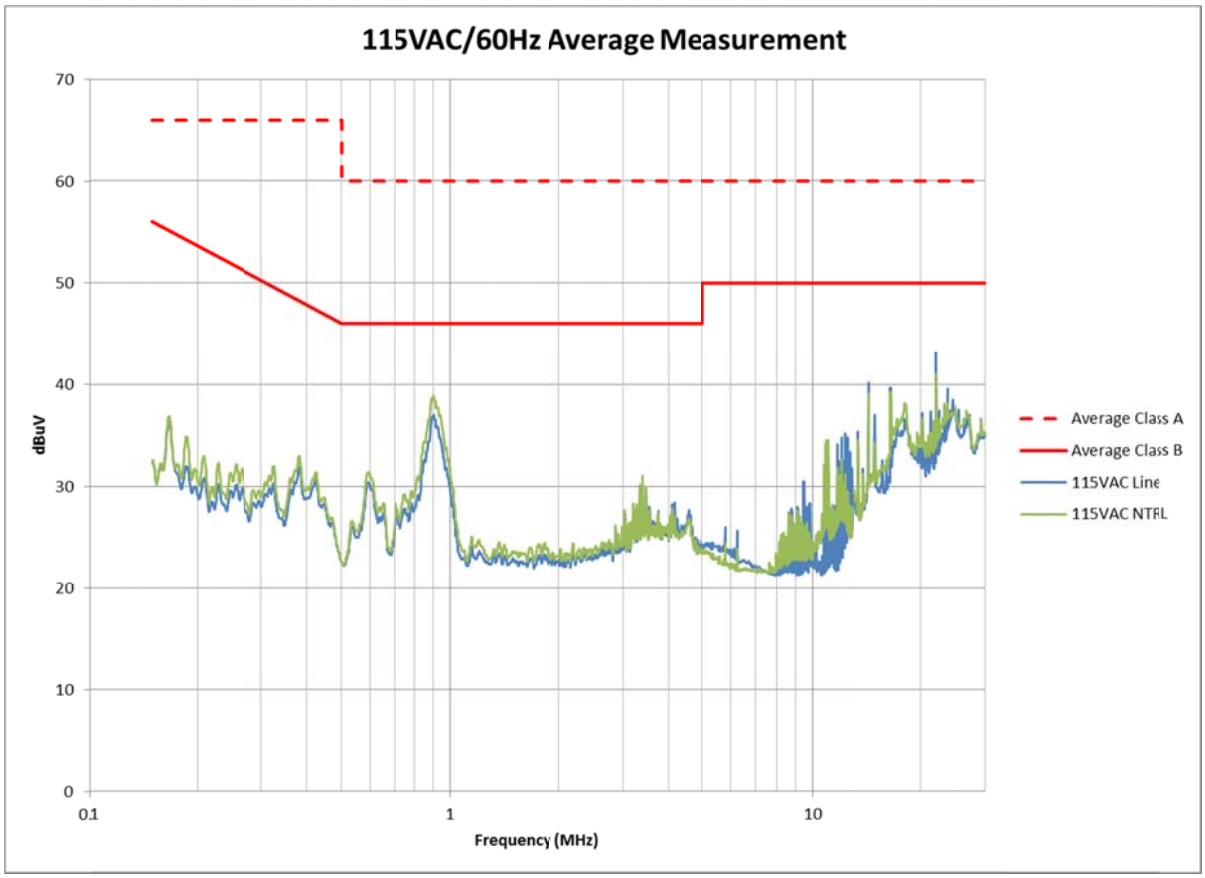


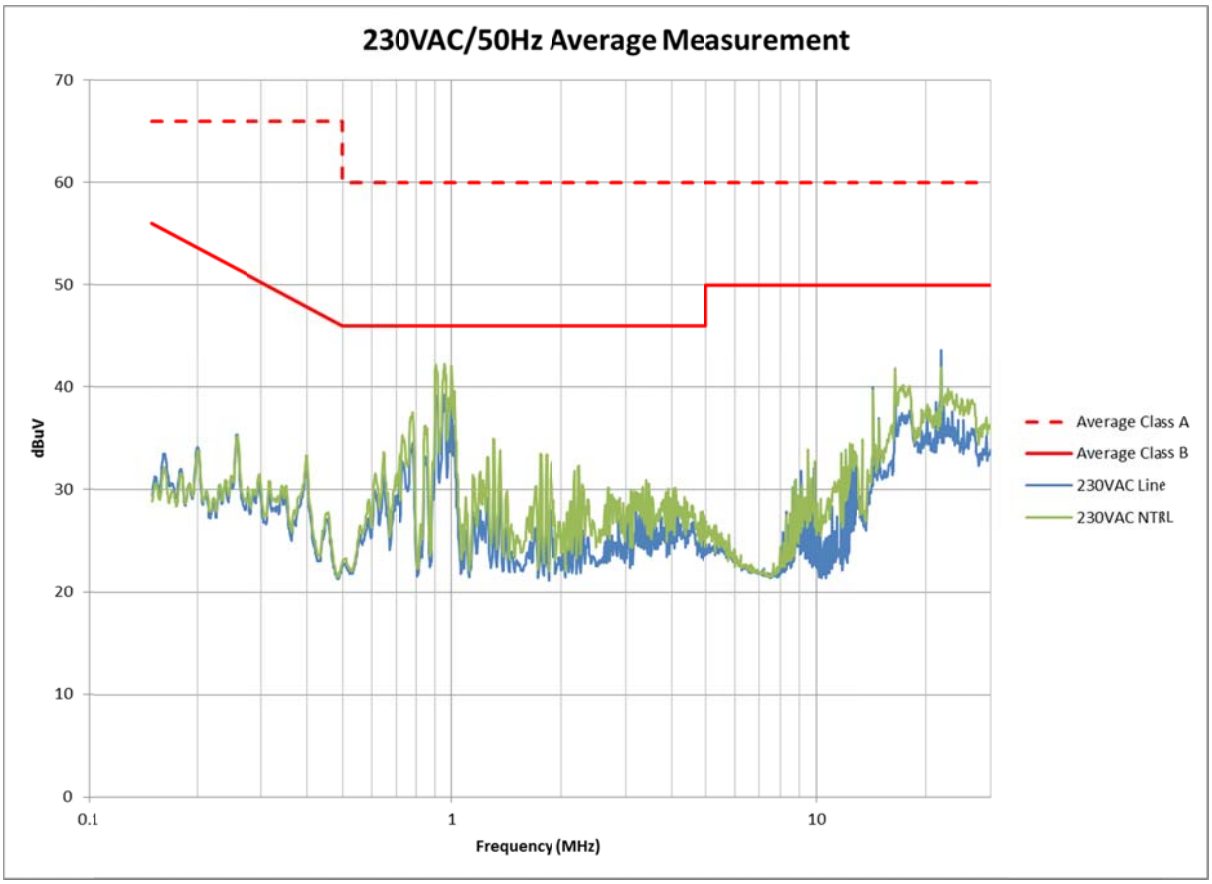
11.2 Secondary Waveforms

The image below shows the voltage on the anode of D4.



12 Conducted Emissions Scans




230VAC/50Hz Average Measurement
70
60
50
40
30
20
10
0
dBuV
0.1
1
10
Frequency (MHz)
Average Class A
Average Class B
230VAC Line
230VAC NTRL

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