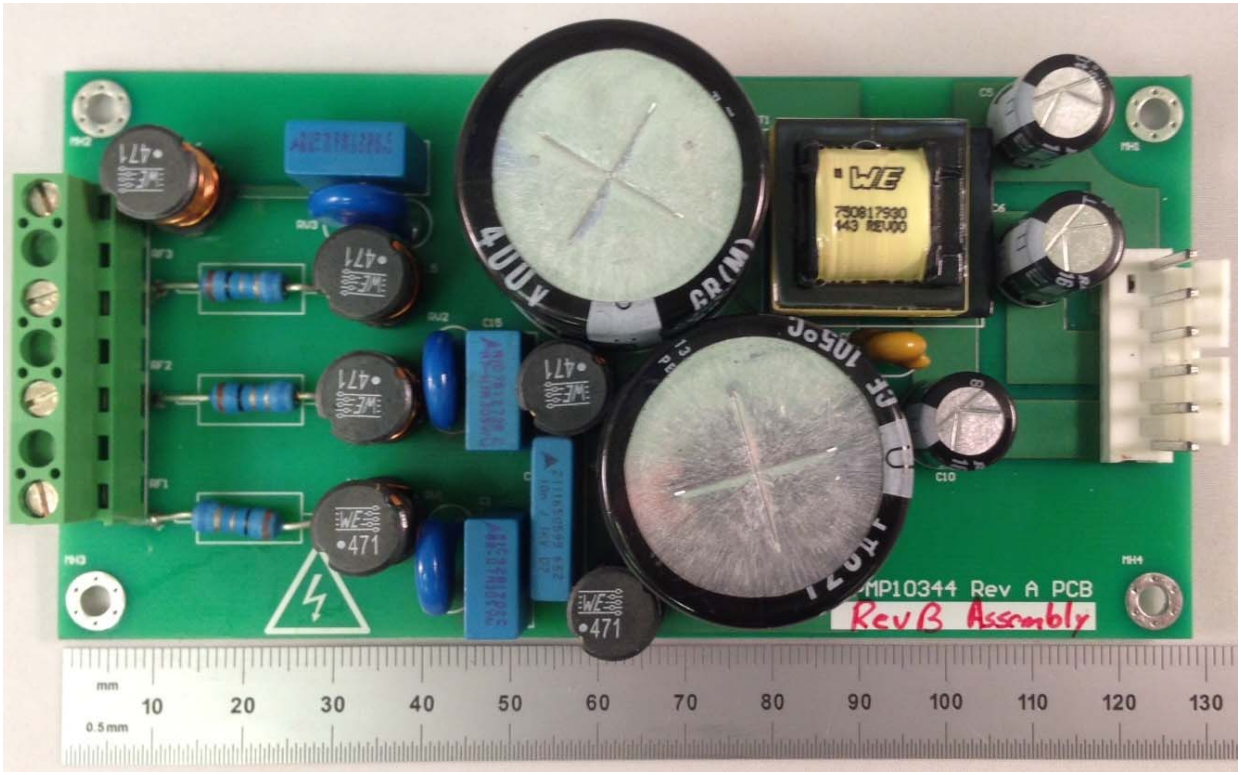
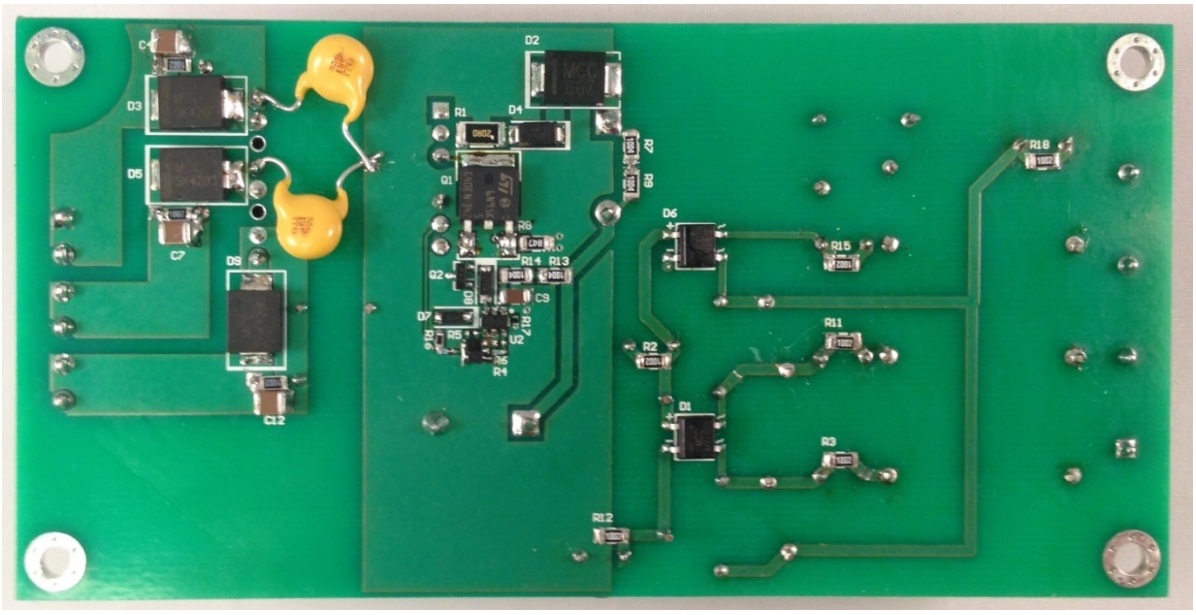
1 Photos

The photograph below shows the PMP10344 Rev B prototype assembly. This circuit was built using a PMP10344 Rev A PCB.

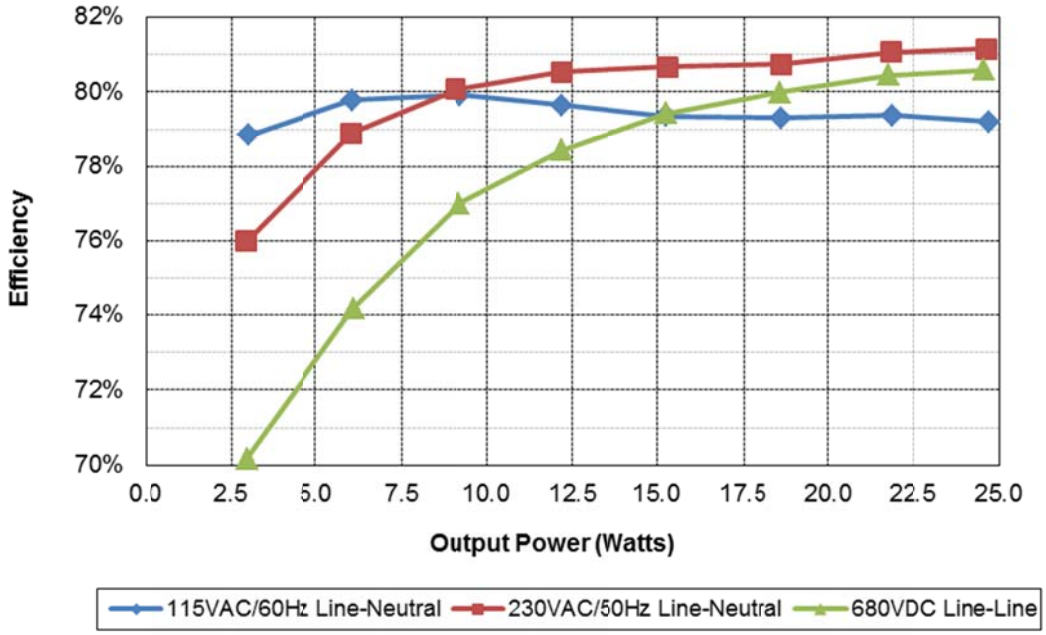




2 Standby Power

No Load	Pin (W)
115VAC/60Hz	0.07
230VAC/50Hz	0.104
680VDC L-L	0.271

3 Efficiency



115VAC/60Hz Line-Neutral

Output #1		Output #2		Output #3								
Iout	Vout	Iout	Vout	Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	12.80	0.000	12.80	0.00	12.80	115.0	0.0059	0.070		0.00	0.07	
0.085	11.56	0.086	11.59	0.090	11.55	115.0	0.0770	3.829	0.432	3.02	0.81	78.8%
0.176	11.59	0.173	11.63	0.174	11.60	115.0	0.1415	7.608	0.467	6.07	1.54	79.8%
0.264	11.62	0.266	11.66	0.264	11.63	115.0	0.2056	11.560	0.489	9.24	2.32	79.9%
0.350	11.65	0.347	11.69	0.349	11.66	115.0	0.2647	15.32	0.503	12.20	3.12	79.7%
0.438	11.68	0.438	11.72	0.430	11.69	115.0	0.3253	19.25	0.515	15.28	3.97	79.4%
0.527	11.73	0.535	11.77	0.526	11.74	115.0	0.3905	23.52	0.524	18.65	4.87	79.3%
0.614	11.77	0.629	11.81	0.613	11.78	115.0	0.4533	27.56	0.529	21.88	5.68	79.4%
0.705	11.80	0.704	11.84	0.683	11.81	114.9	0.5122	31.21	0.530	24.72	6.49	79.2%

230VAC/50Hz Line-Neutral

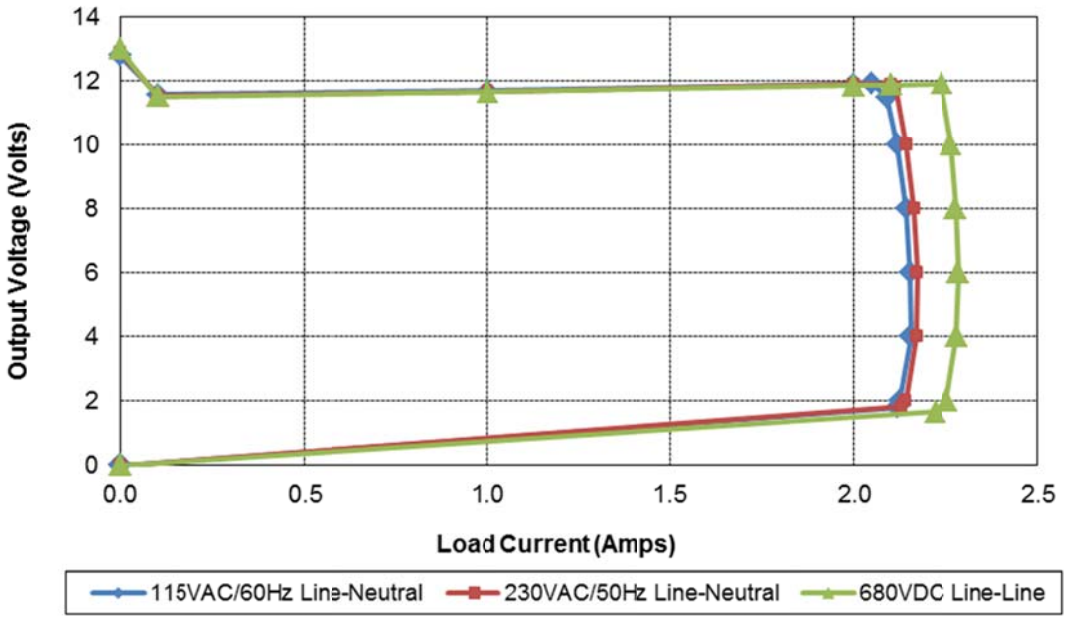
Output #1		Output #2		Output #3								
Iout	Vout	Iout	Vout	Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	12.90	0.000	12.90	0.00	12.90	229.8	0.0077	0.104		0.00	0.10	
0.085	11.53	0.086	11.57	0.084	11.55	229.8	0.0488	3.876	0.346	2.95	0.93	76.0%
0.172	11.57	0.175	11.60	0.175	11.58	229.8	0.0867	7.664	0.384	6.05	1.62	78.9%
0.262	11.61	0.260	11.65	0.260	11.62	229.8	0.1220	11.354	0.405	9.09	2.26	80.1%
0.349	11.64	0.346	11.68	0.351	11.65	229.8	0.1568	15.14	0.420	12.19	2.95	80.5%
0.438	11.67	0.438	11.71	0.432	11.68	229.8	0.1913	18.95	0.431	15.29	3.66	80.7%
0.528	11.71	0.536	11.75	0.526	11.72	229.8	0.2278	23.09	0.441	18.65	4.44	80.8%
0.615	11.76	0.628	11.79	0.612	11.77	229.8	0.2615	26.94	0.448	21.84	5.10	81.1%
0.700	11.79	0.704	11.83	0.683	11.81	229.8	0.2912	30.37	0.454	24.65	5.72	81.2%

680VDC Line-Line											
Output #1		Output #2		Output #3							
Iout	Vout	Iout	Vout	Iout	Vout	Vin	Iin	Pin	Pout	Losses	Efficiency
0.000	13.00	0.000	13.00	0.00	13.00	678	0.00040	0.271	0.00	0.27	
0.085	11.54	0.086	11.56	0.085	11.53	677	0.00622	4.211	2.96	1.26	70.2%
0.174	11.56	0.177	11.59	0.177	11.56	676	0.01218	8.234	6.11	2.12	74.2%
0.263	11.59	0.265	11.62	0.265	11.59	676	0.01767	11.945	9.20	2.75	77.0%
0.351	11.62	0.346	11.66	0.349	11.63	676	0.02296	15.521	12.17	3.35	78.4%
0.440	11.65	0.437	11.69	0.430	11.66	675	0.02844	19.197	15.25	3.95	79.4%
0.528	11.70	0.534	11.73	0.526	11.71	675	0.03445	23.254	18.60	4.65	80.0%
0.614	11.73	0.627	11.77	0.611	11.74	674	0.04012	27.041	21.76	5.29	80.5%
0.702	11.76	0.701	11.80	0.682	11.77	674	0.0452	30.465	24.55	5.91	80.6%

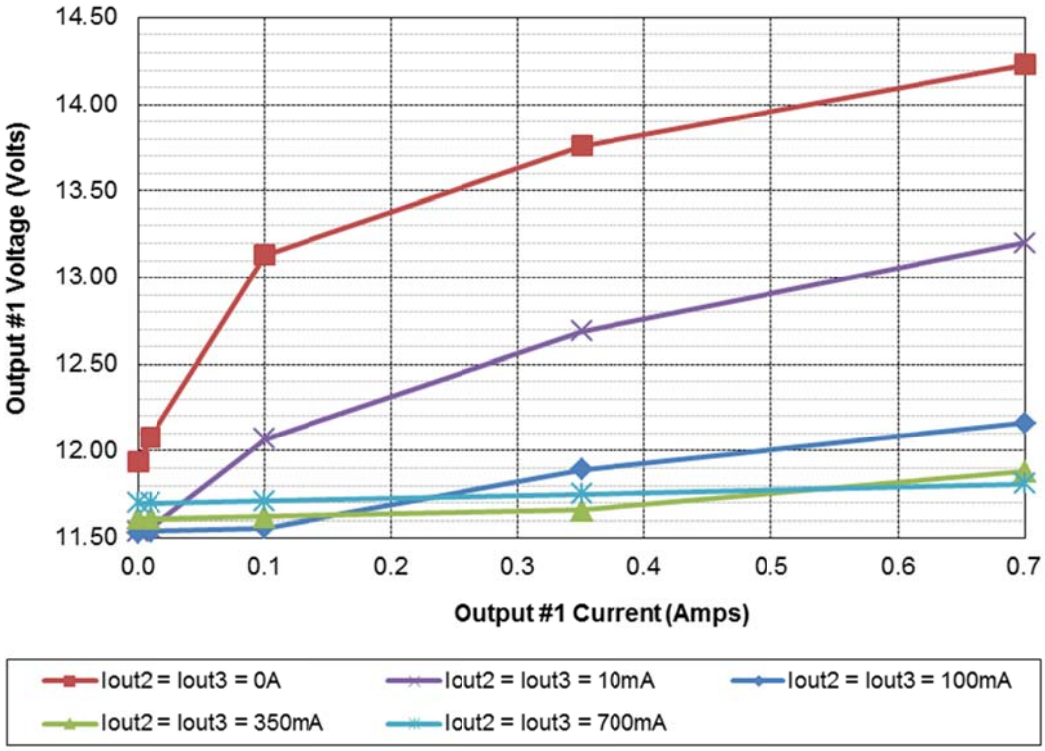
Vin	Pin	Vout	Iout	Load	Efficiency	Avg. Eff.
115VAC/60Hz	7.61	11.59	0.176	25%	79.79%	**79.49%**
	15.32	11.65	0.350	50%	79.66%	
	23.52	11.73	0.527	75%	79.31%	
	31.21	11.80	0.705	100%	79.21%	
230VAC/50Hz	7.66	11.57	0.172	25%	78.90%	**80.34%**
	15.14	11.64	0.349	50%	80.54%	
	23.09	11.71	0.528	75%	80.75%	
	30.37	11.79	0.700	100%	81.16%	

4 Current Limit

Test performed on output #1. Outputs 2 and 3 were unloaded.



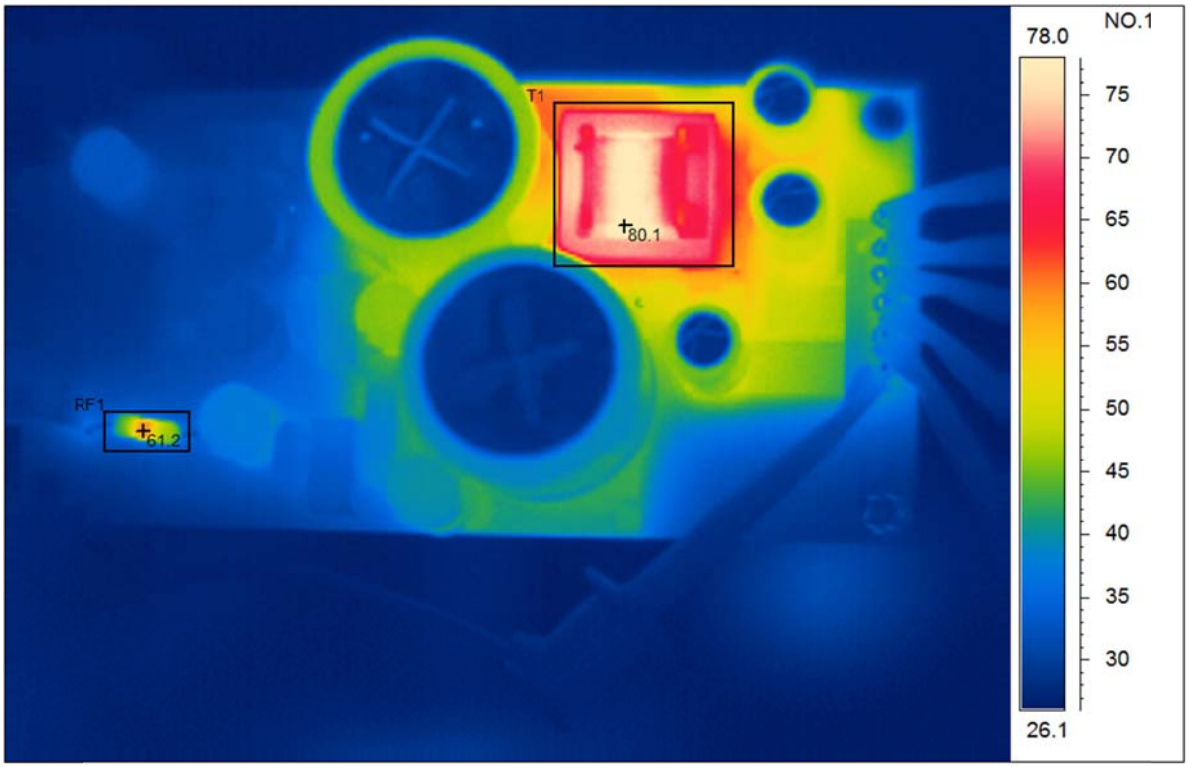
5 Cross Regulation

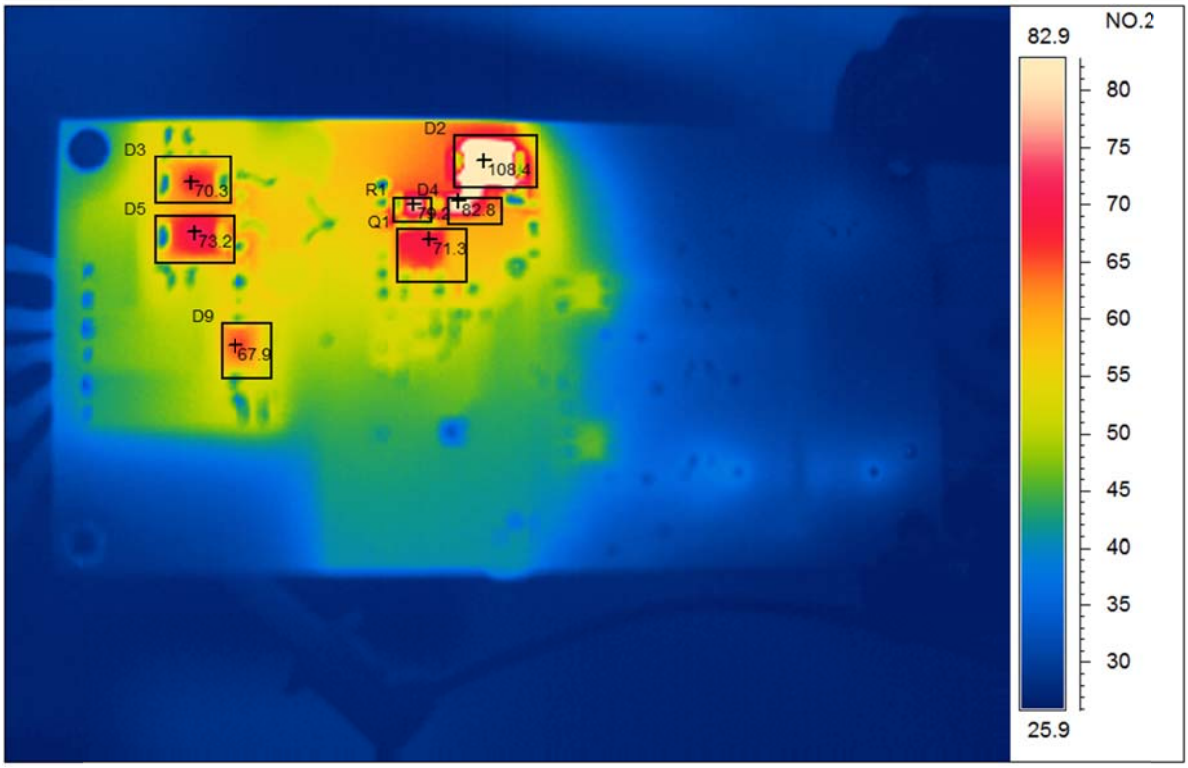


6 Thermal Images

The ambient temperature was 25ºC. The outputs were loaded with 0.7A each.

6.1 115VAC/60Hz Line-Neutral





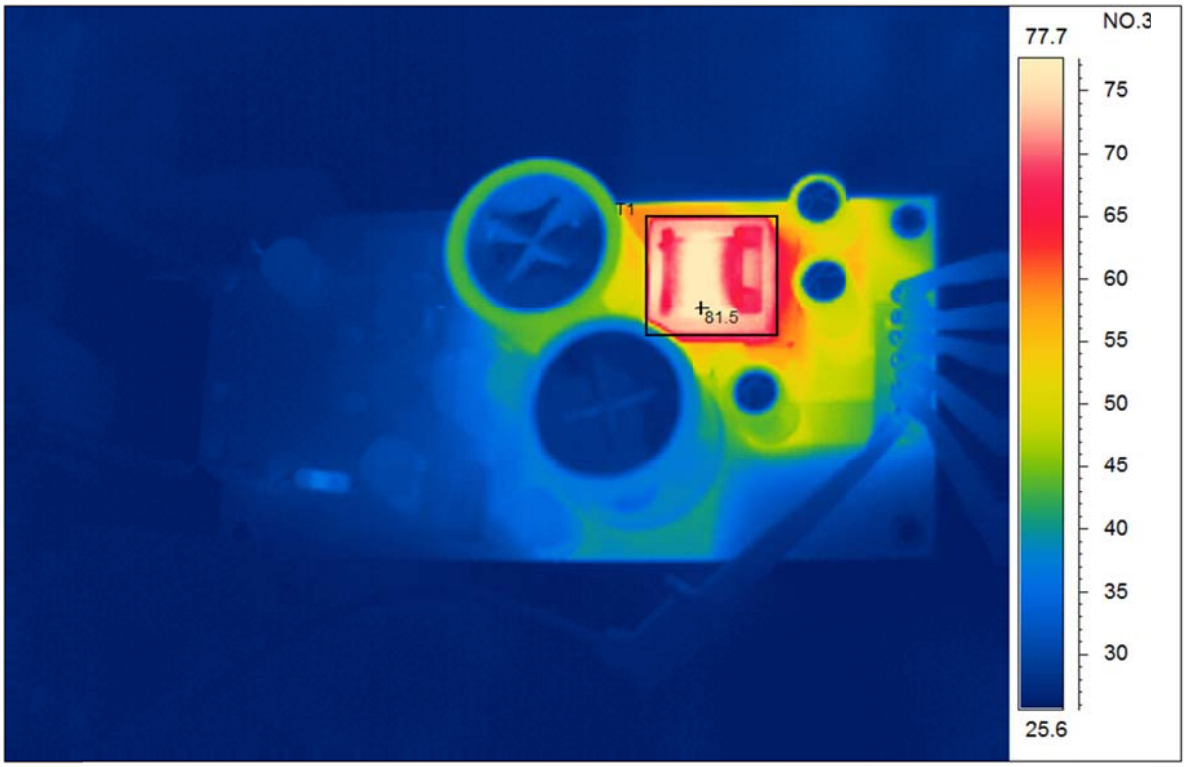
Area analysis	Value
T1 Max	80.1°C
RF1 Max	61.2°C

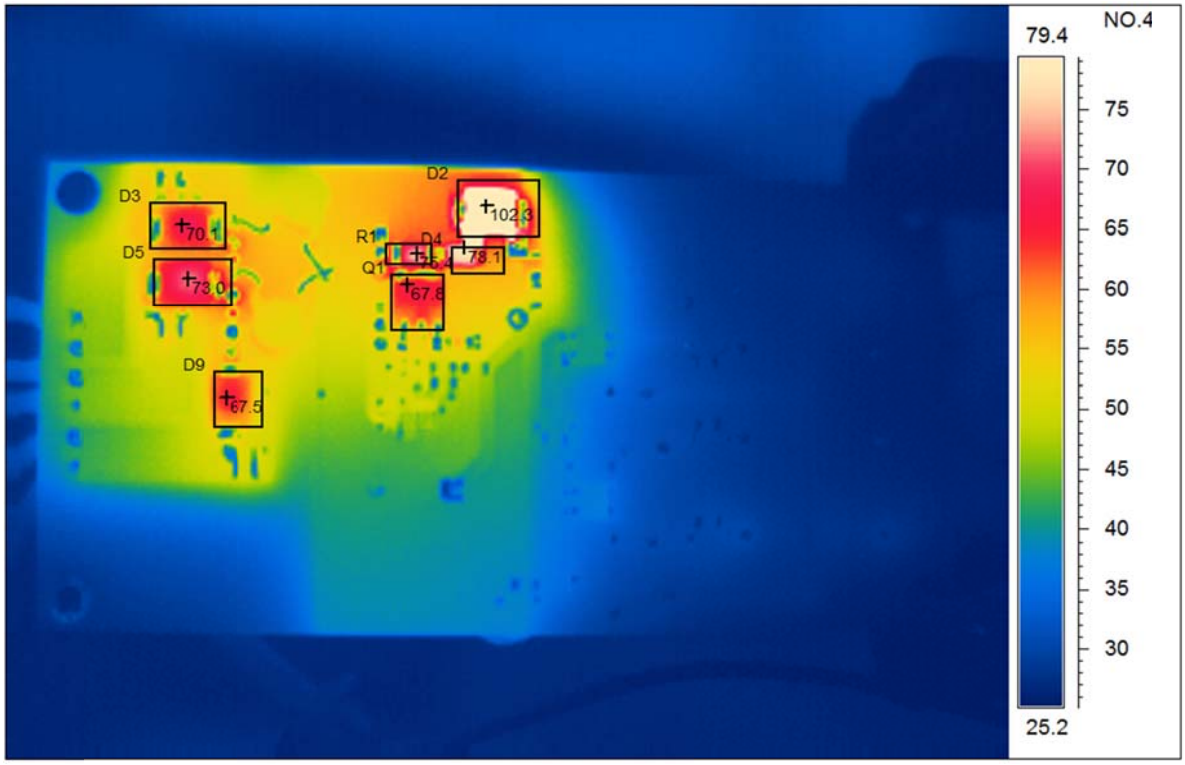
NO.1

Area analysis	Value
D3Max	70.3°C
D5Max	73.2°C
D9 Max	67.9°C
Q1Max	71.3°C
D2Max	108.4°C
D4Max	82.8°C
R1 Max	79.2°C

NO.2

6.2 230VAC/50Hz Line-Neutral





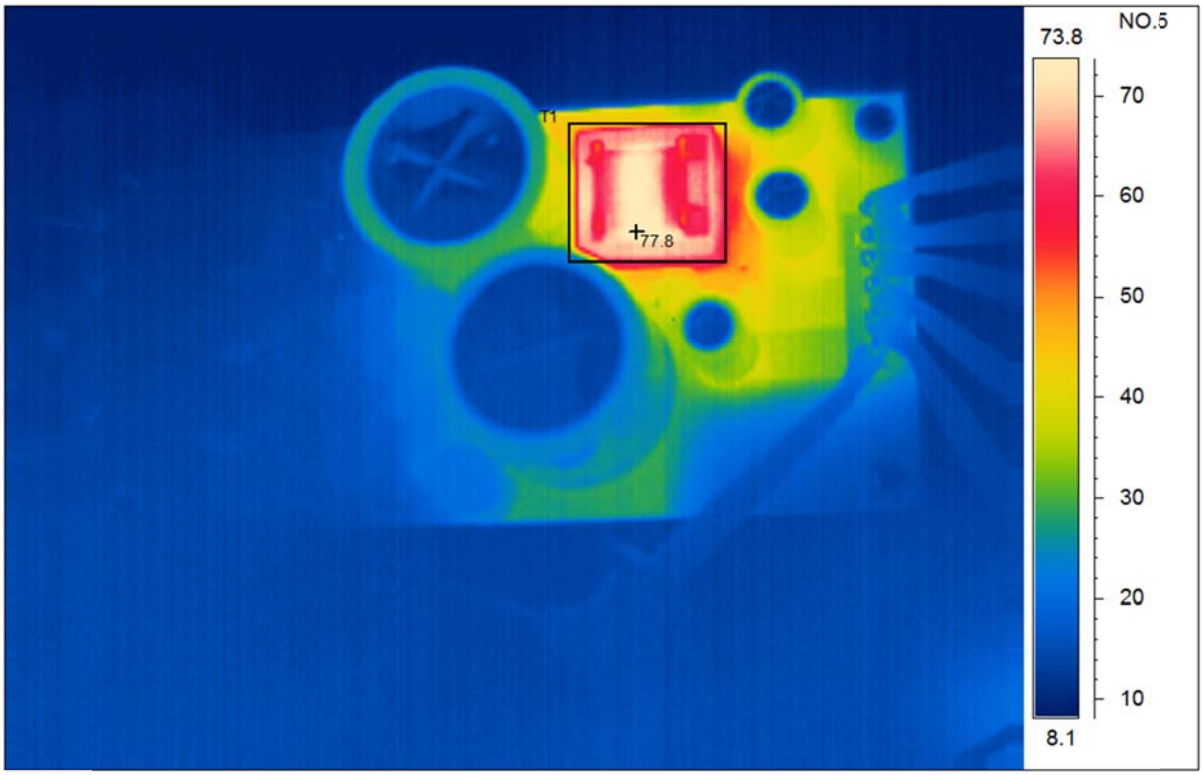
NO.3

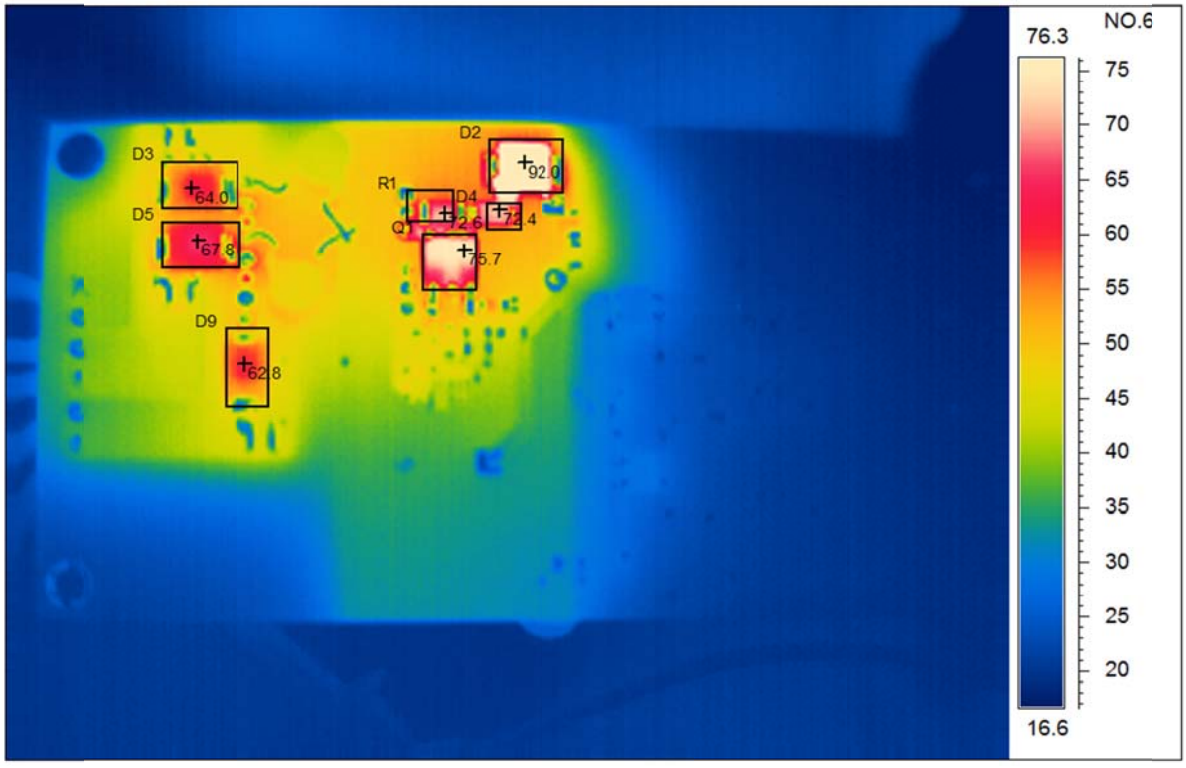
Area analysis	Value
T1 Max	81.5°C

NO.4

Area analysis	Value
D3Max	70.1°C
D5Max	73.0°C
D9 Max	67.5°C
Q1Max	67.8°C
D2Max	102.3°C
D4Max	78.1°C
R1 Max	75.4°C

6.3 680VDC Line-Line





Area analysis	Value
T1 Max	77.8°C

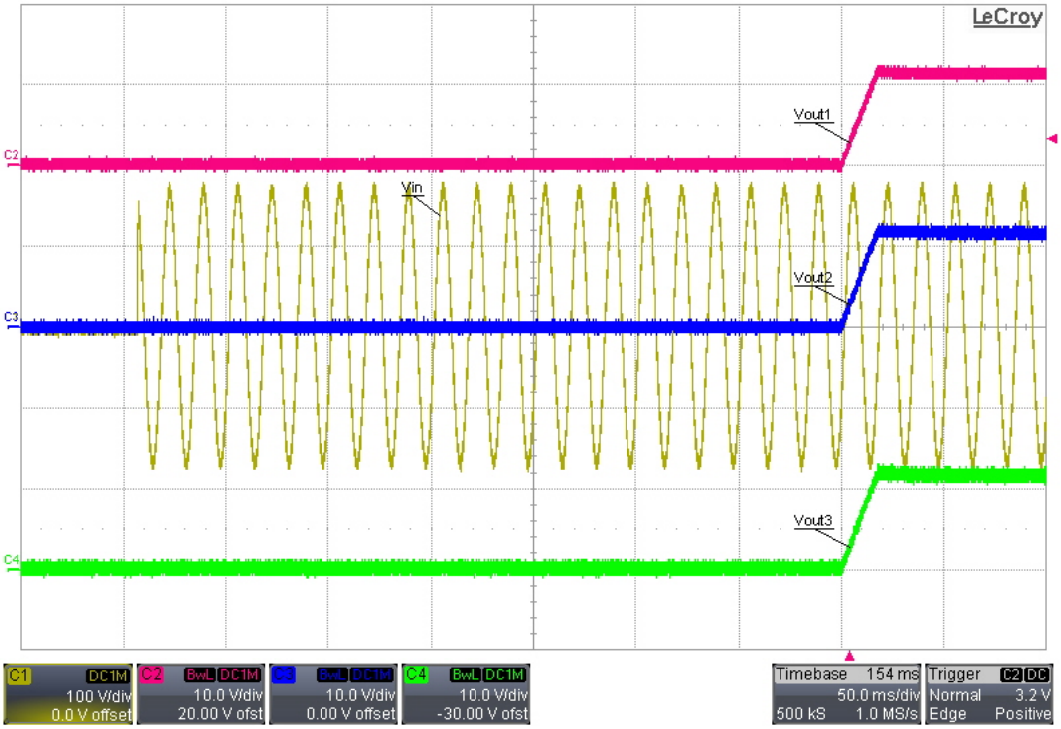
NO.5

Area analysis	Value
D3Max	64.0°C
D5Max	67.8°C
D9 Max	62.8°C
Q1Max	75.7°C
D2Max	92.0°C
D4Max	72.4°C
R1 Max	72.6°C

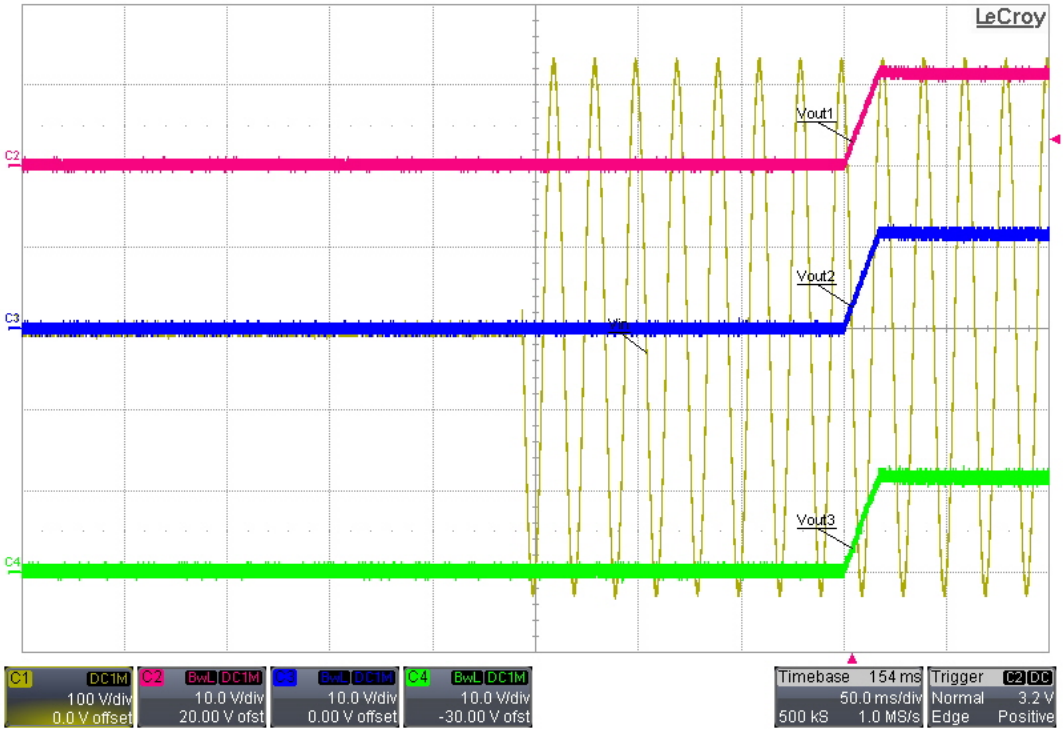
NO.6

7 Startup

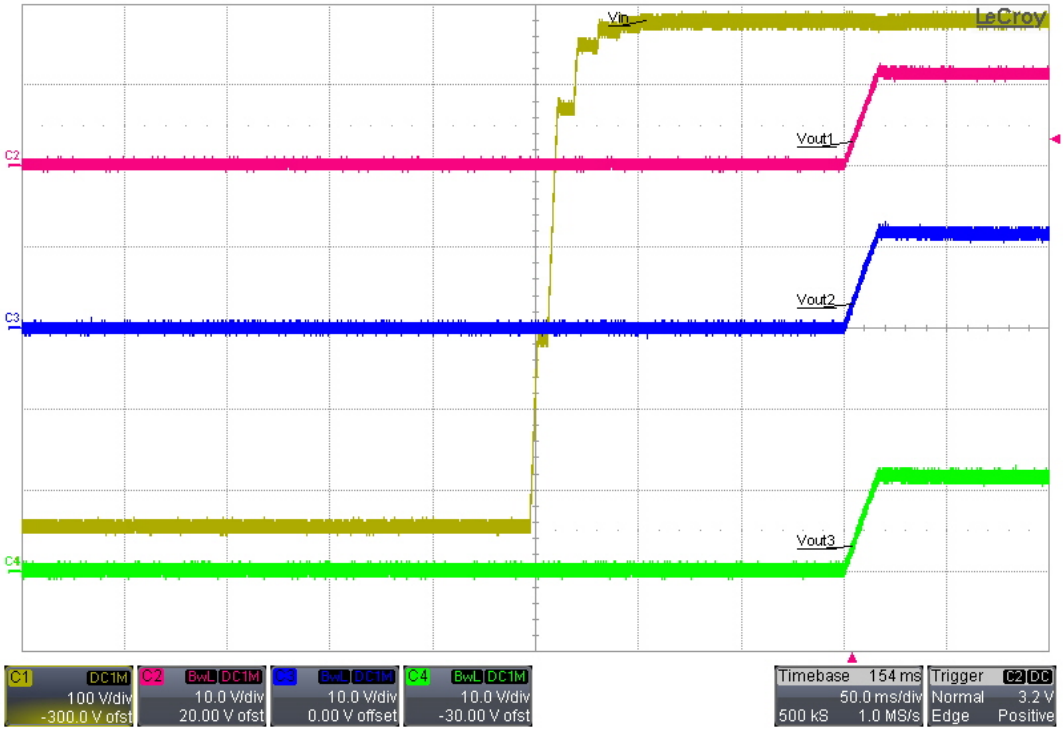
7.1 115VAC/60Hz Line-Neutral Startup – 0A Load on all 3 outputs



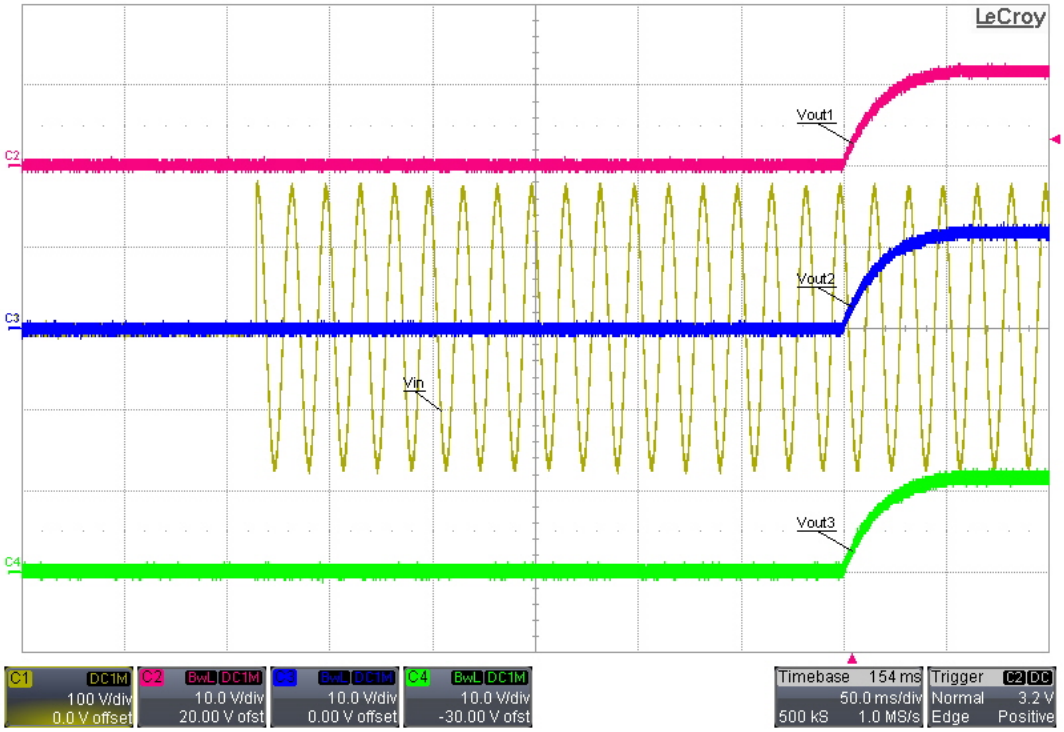
7.2 230VAC/50Hz Line-Neutral Startup – 0A Load on all 3 outputs



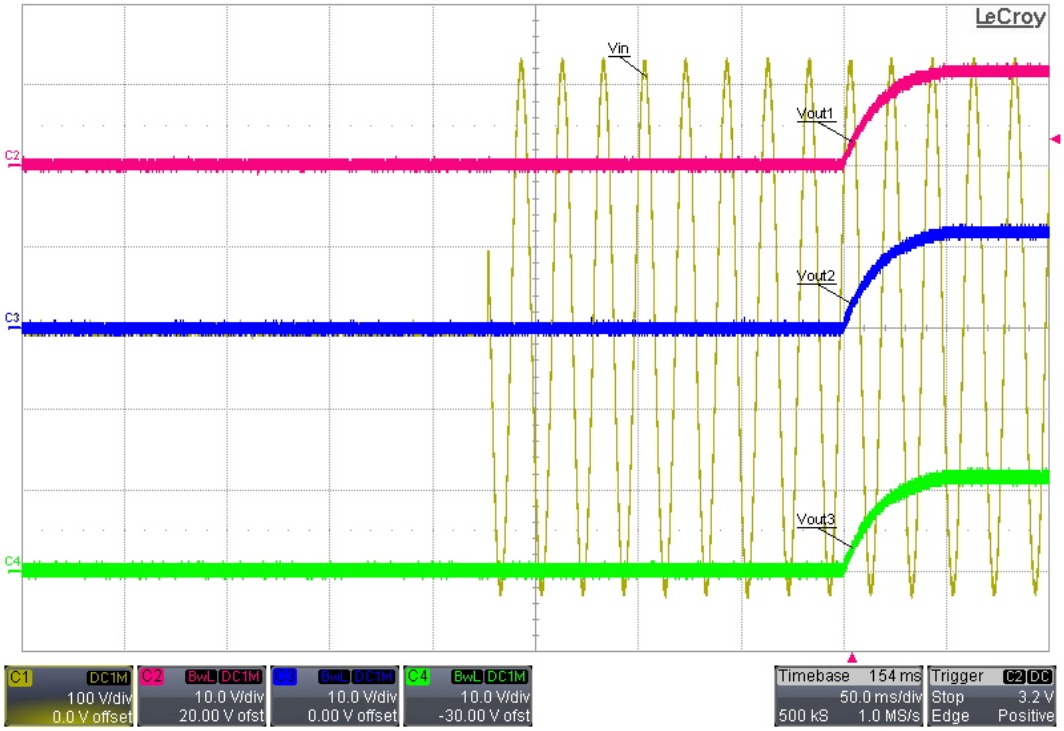
7.3 680VDC Line-Line Startup – 0A Load on all 3 outputs



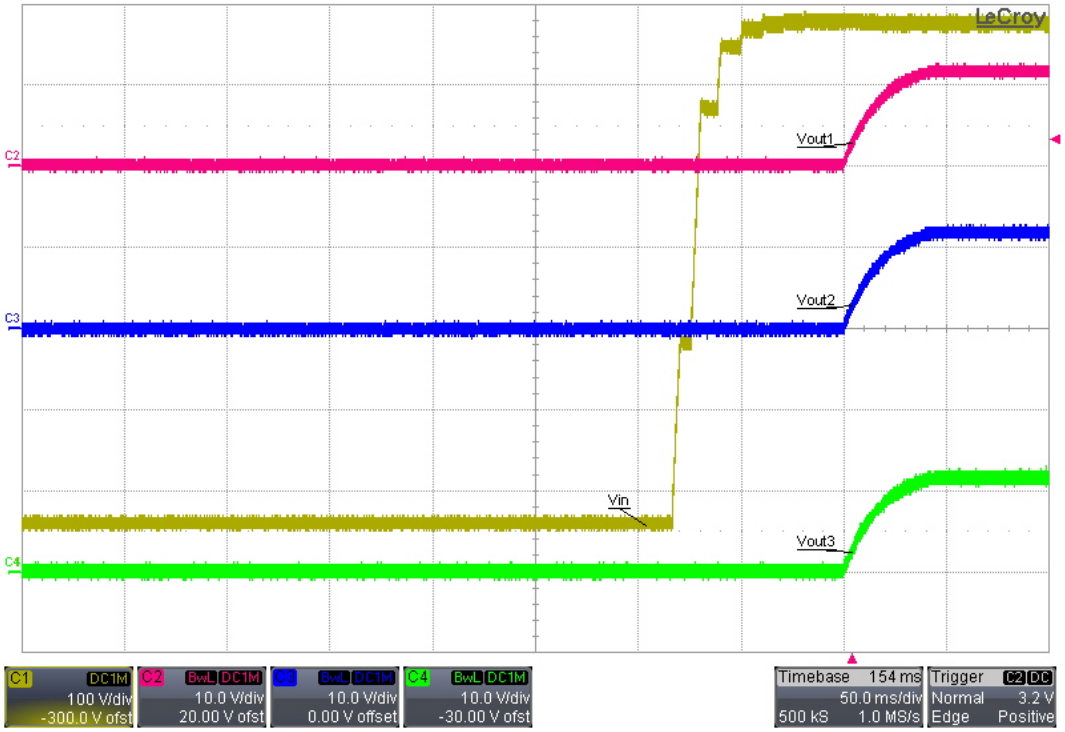
7.4 115VAC/60Hz Line-Neutral Startup – 0.7Ω Load on all 3 outputs



7.5 230VAC/50Hz Line-Neutral Startup – 0.7Ω Load on all 3 outputs



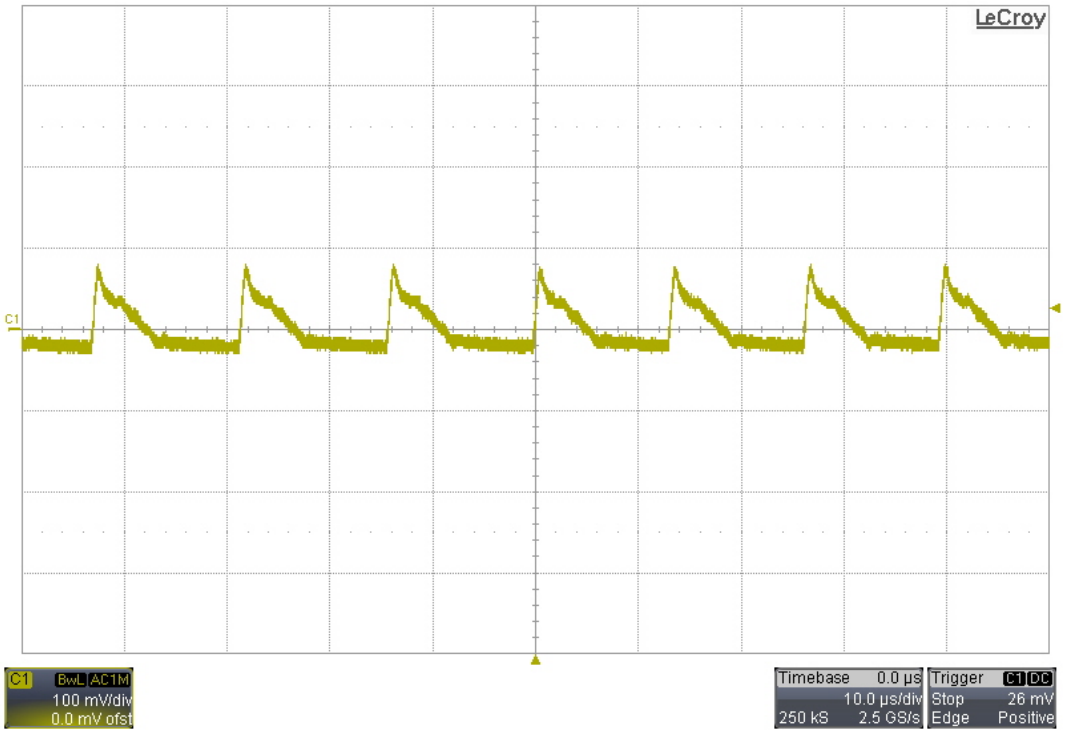
7.6 680VDC Line-Line Startup – 0.7Ω Load on all 3 outputs



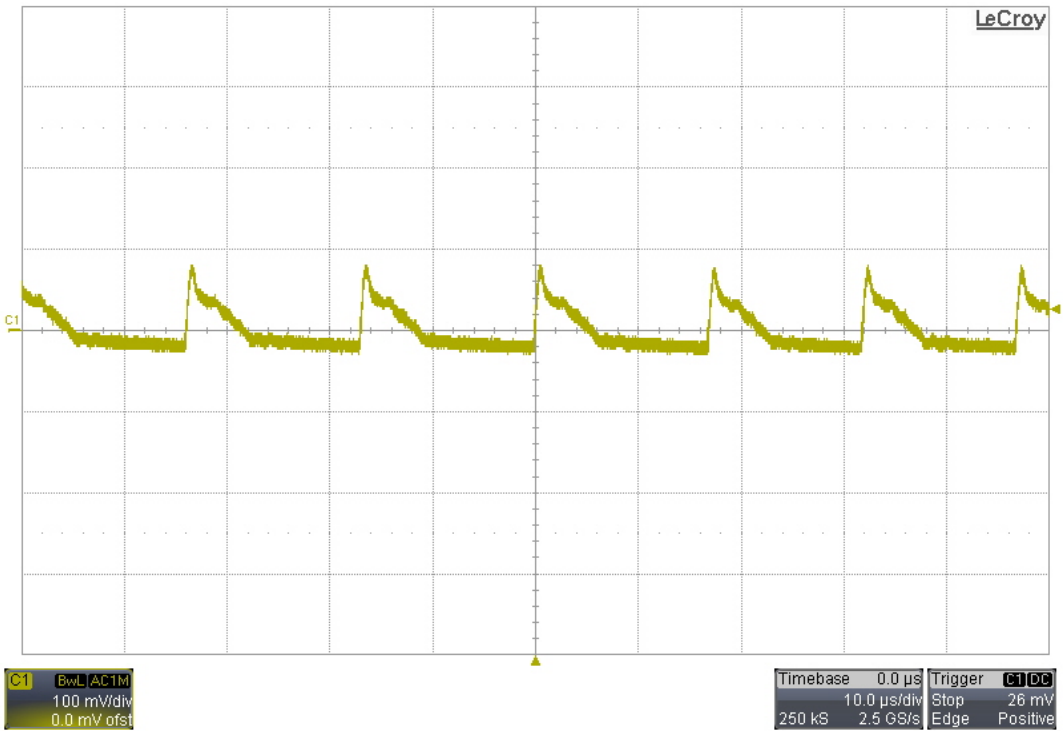
8 Output Ripple Voltage

All outputs were loaded with 0.7A.

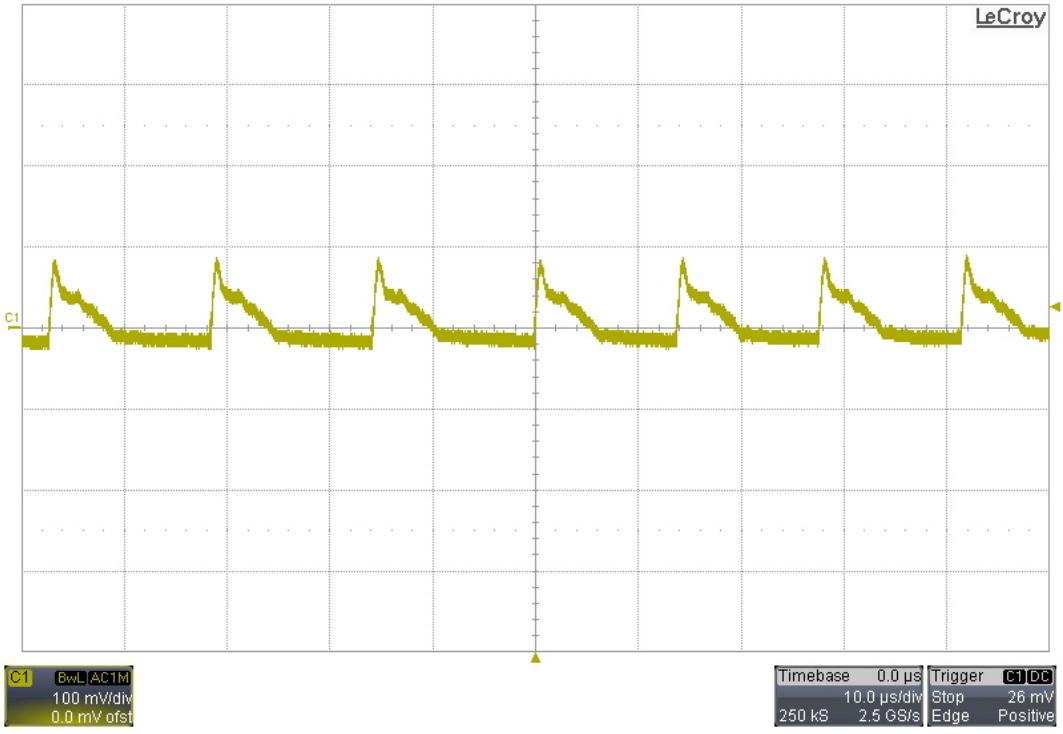
8.1 Output #1 Ripple Voltage, 115VAC/60Hz Line-Neutral



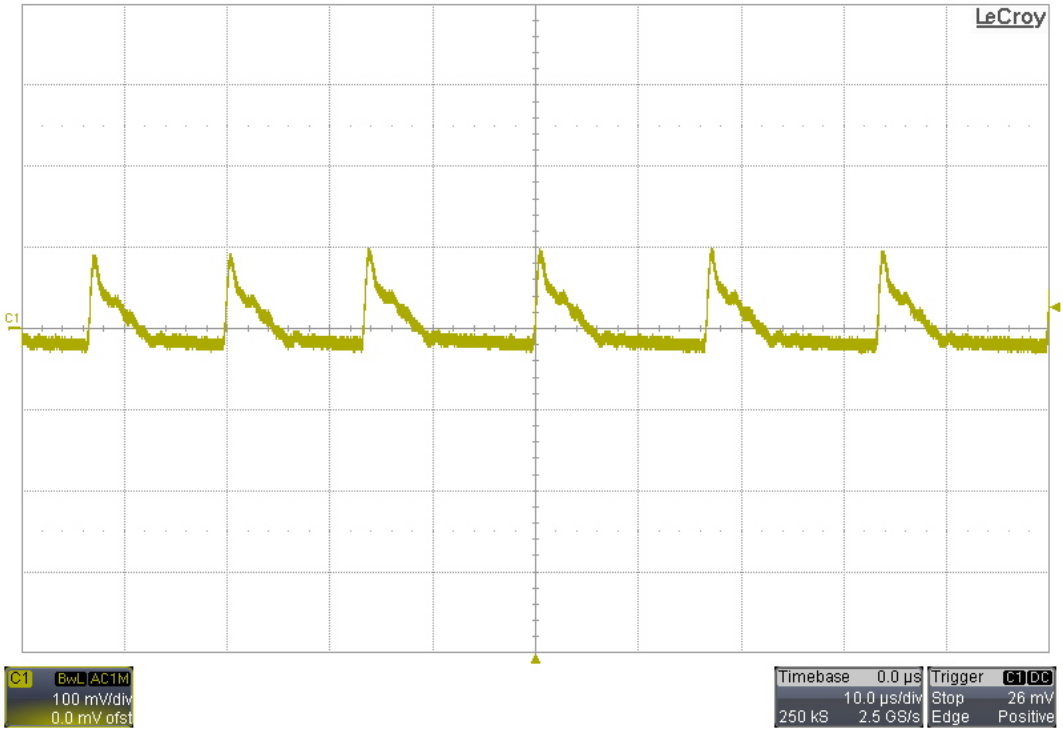
8.2 Output #1 Ripple Voltage, 230VAC/50Hz Line-Neutral



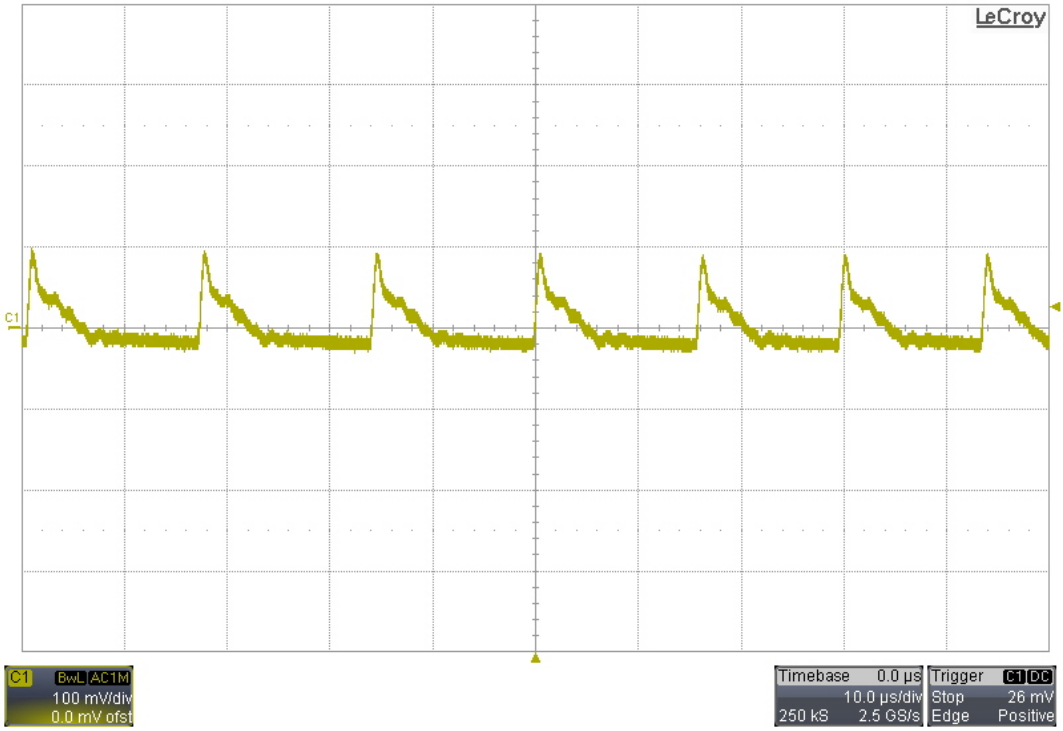
8.3 Output #1 Ripple Voltage, 680VDC Line-Line



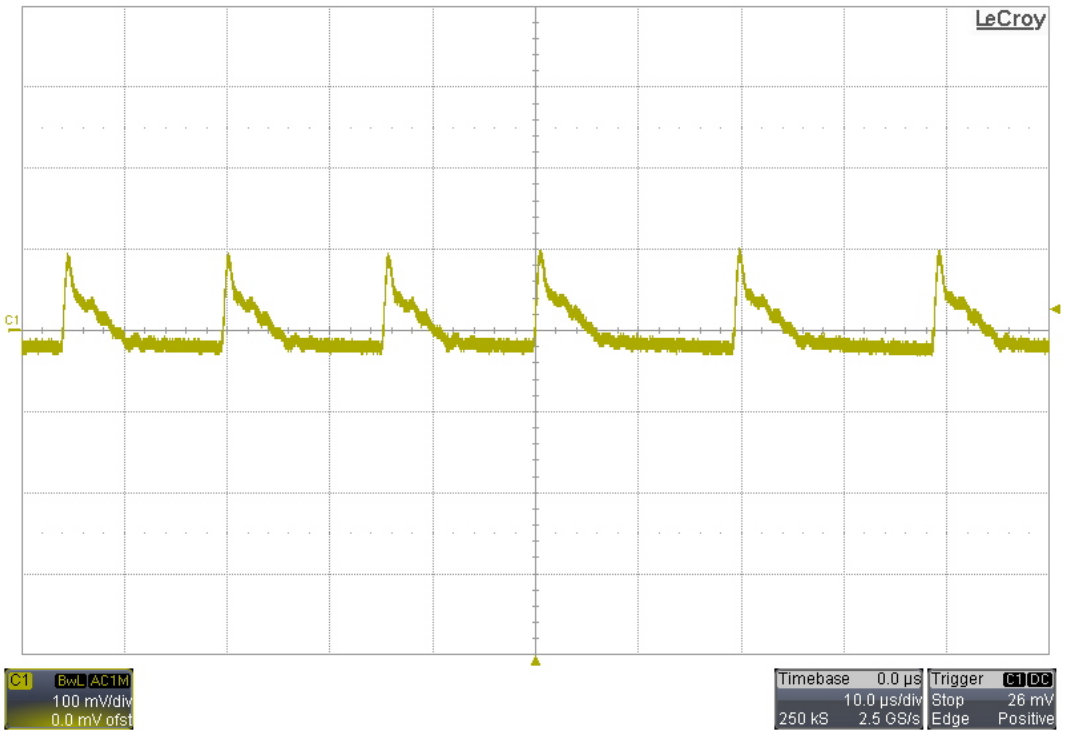
8.4 Output #2 Ripple Voltage, 115VAC/60Hz Line-Neutral



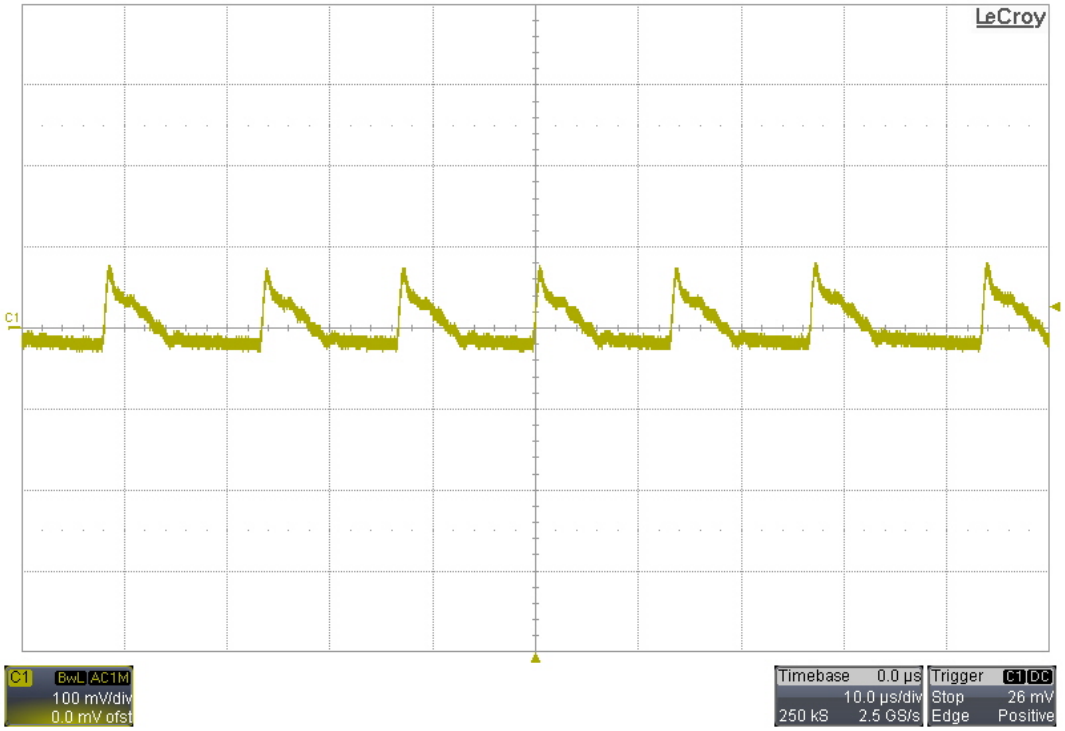
8.5 Output #2 Ripple Voltage, 230VAC/50Hz Line-Neutral



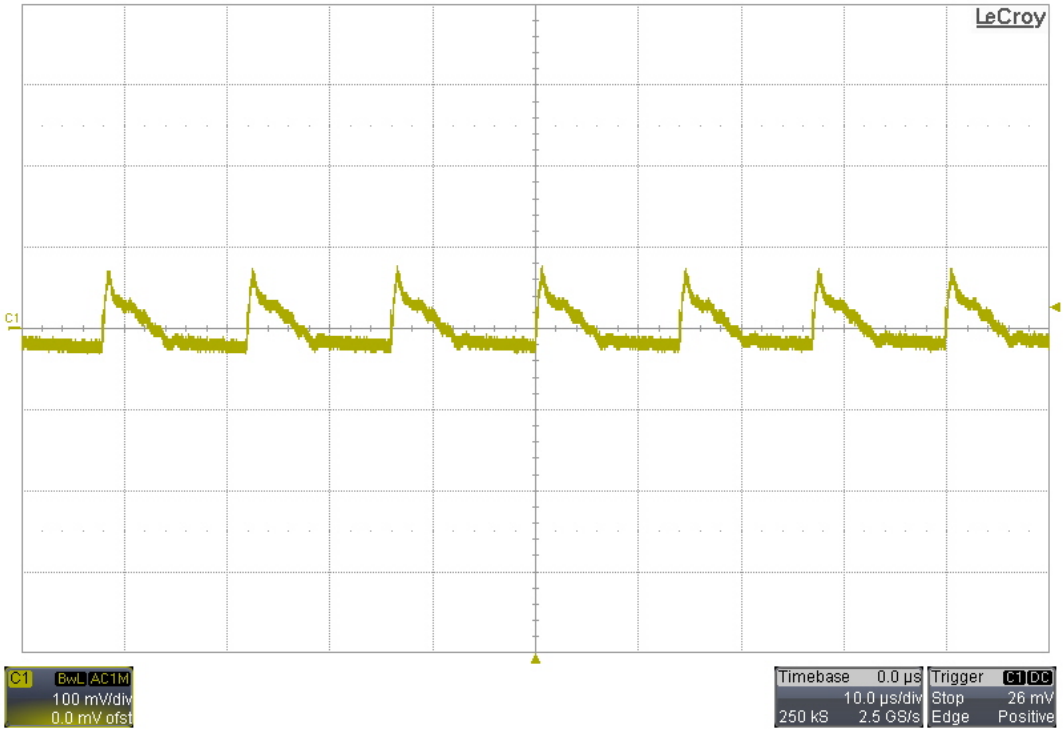
8.6 Output #2 Ripple Voltage, 680VDC Line-Line



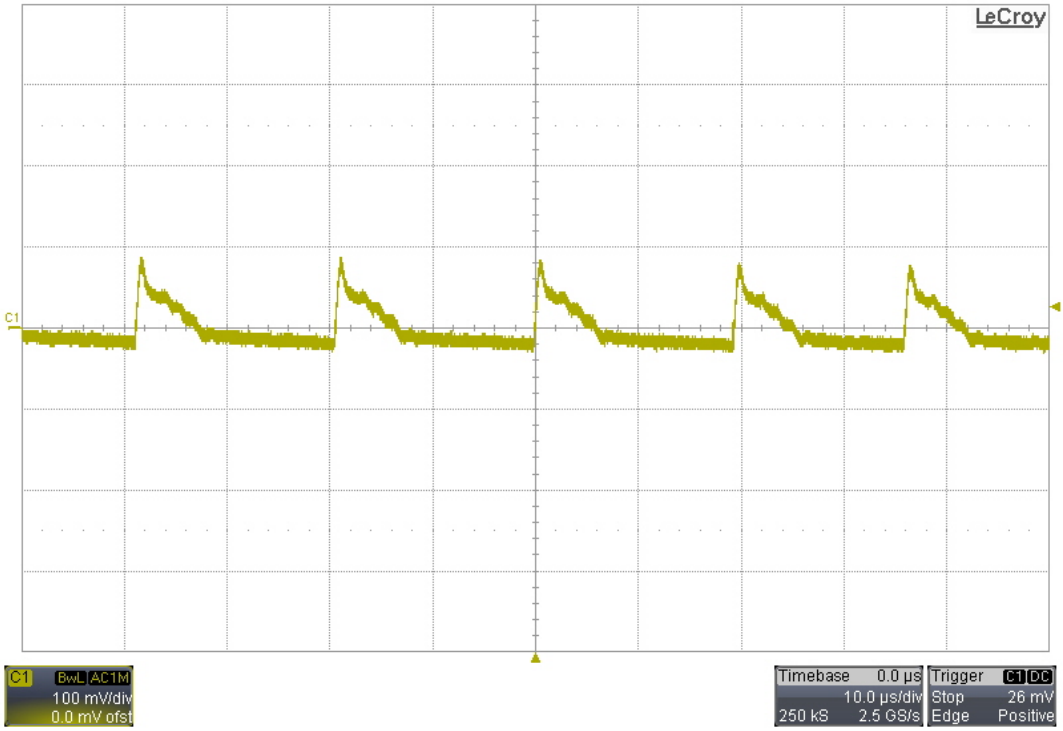
8.7 Output #3 Ripple Voltage, 115VAC/60Hz Line-Neutral



8.8 Output #3 Ripple Voltage, 230VAC/50Hz Line-Neutral



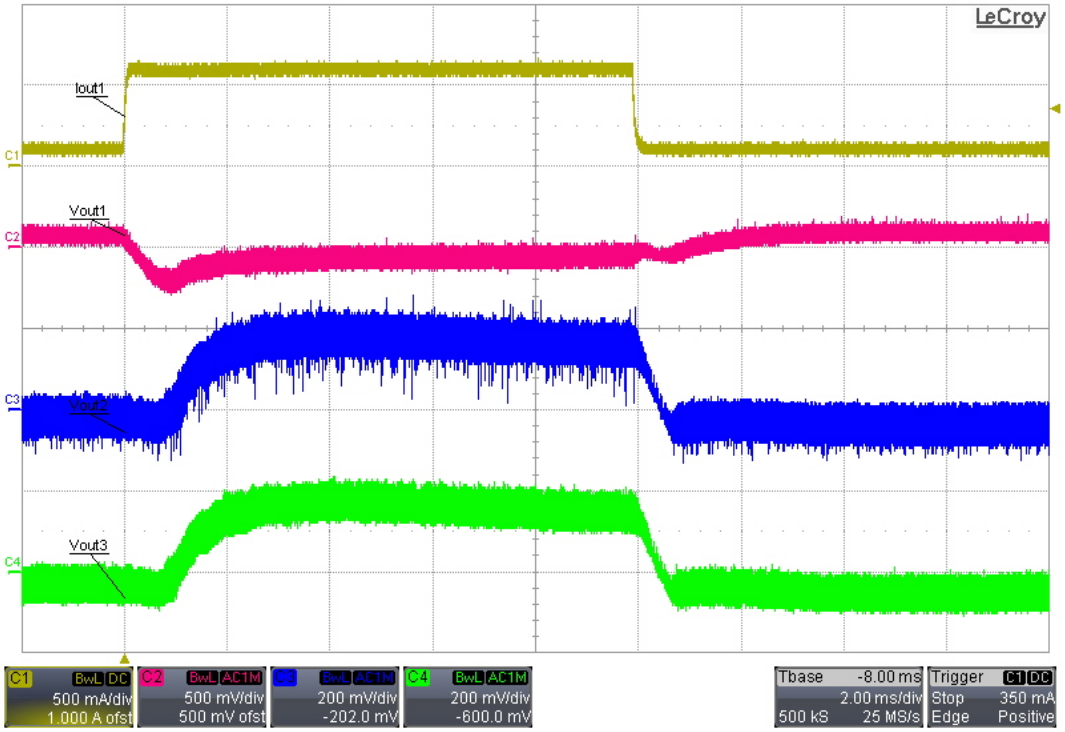
8.9 Output #3 Ripple Voltage, 680VDC Line-Line



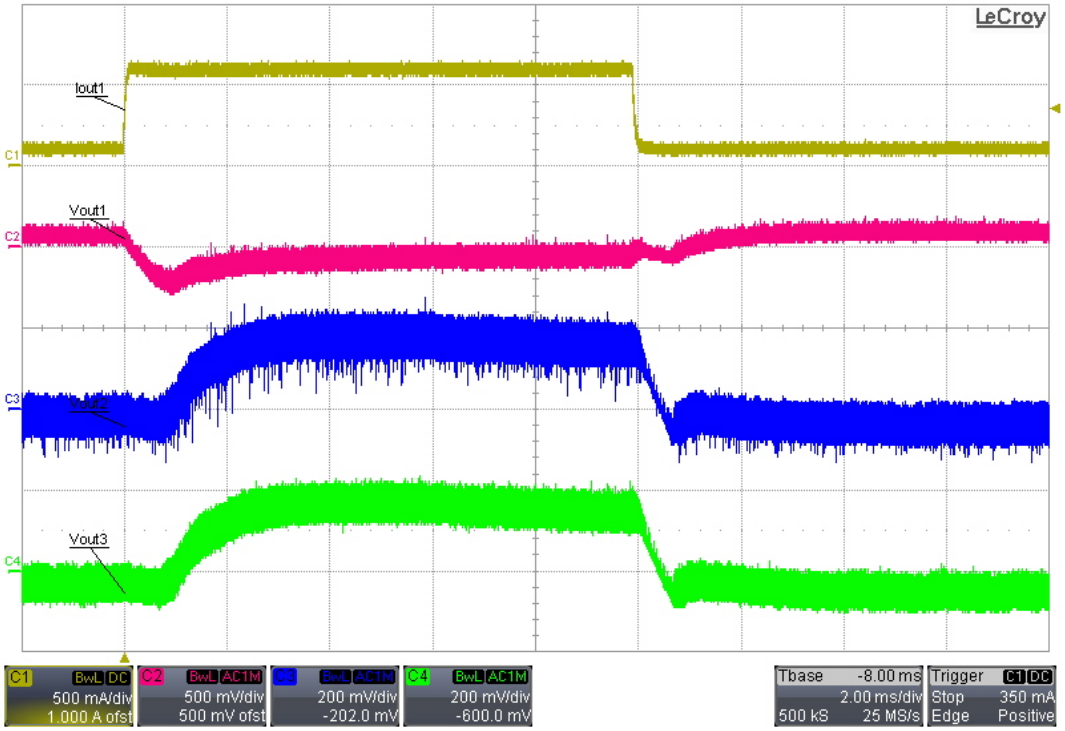
9 Load Transients

100mA to 600mA step applied to output #1. Outputs #2 and #3 loaded with 0.35A each.

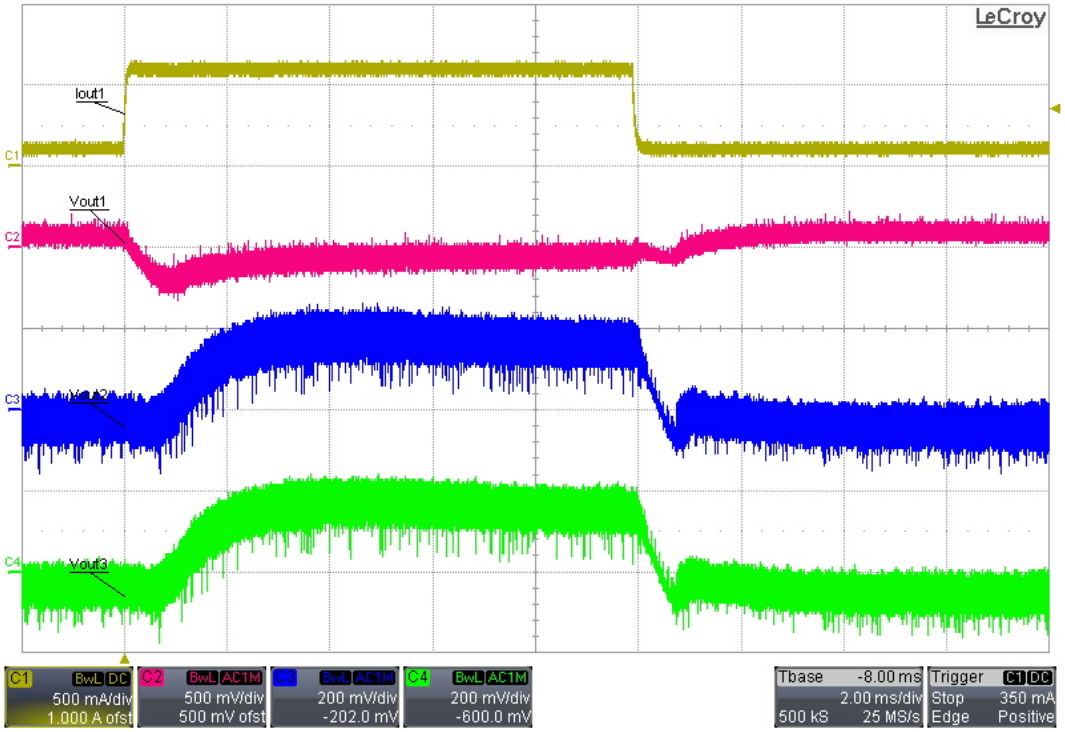
9.1 115VAC/60Hz Line-Neutral



9.2 230VAC/50Hz Line-Neutral



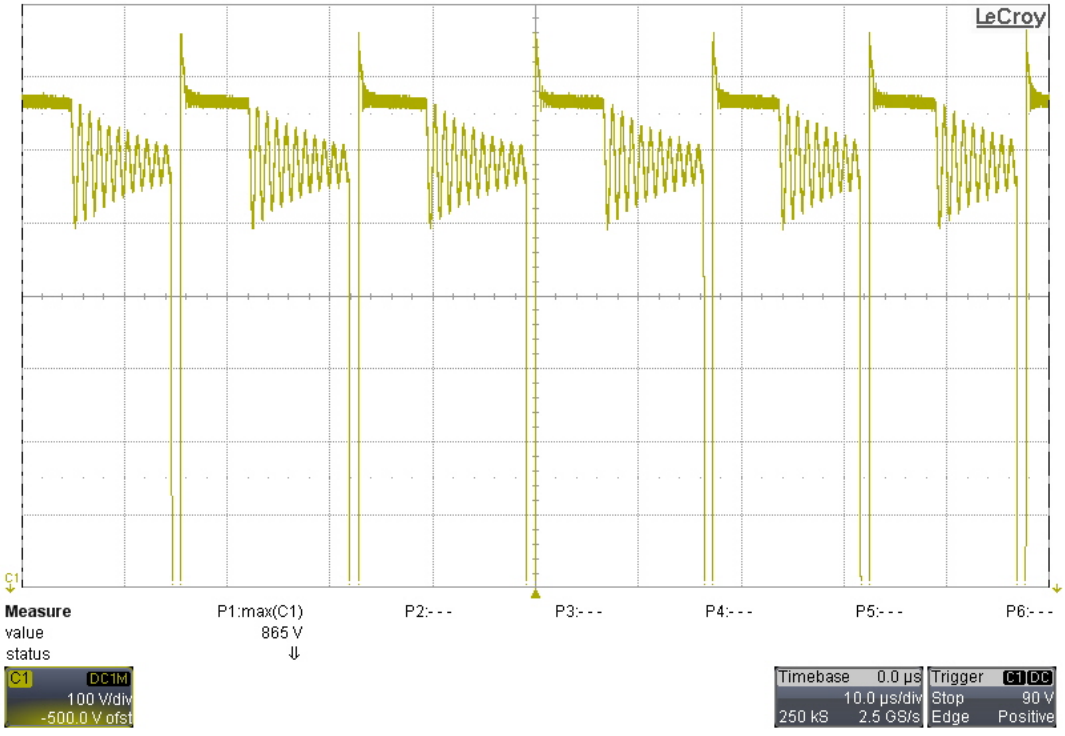
9.3 680VDC Line-Line



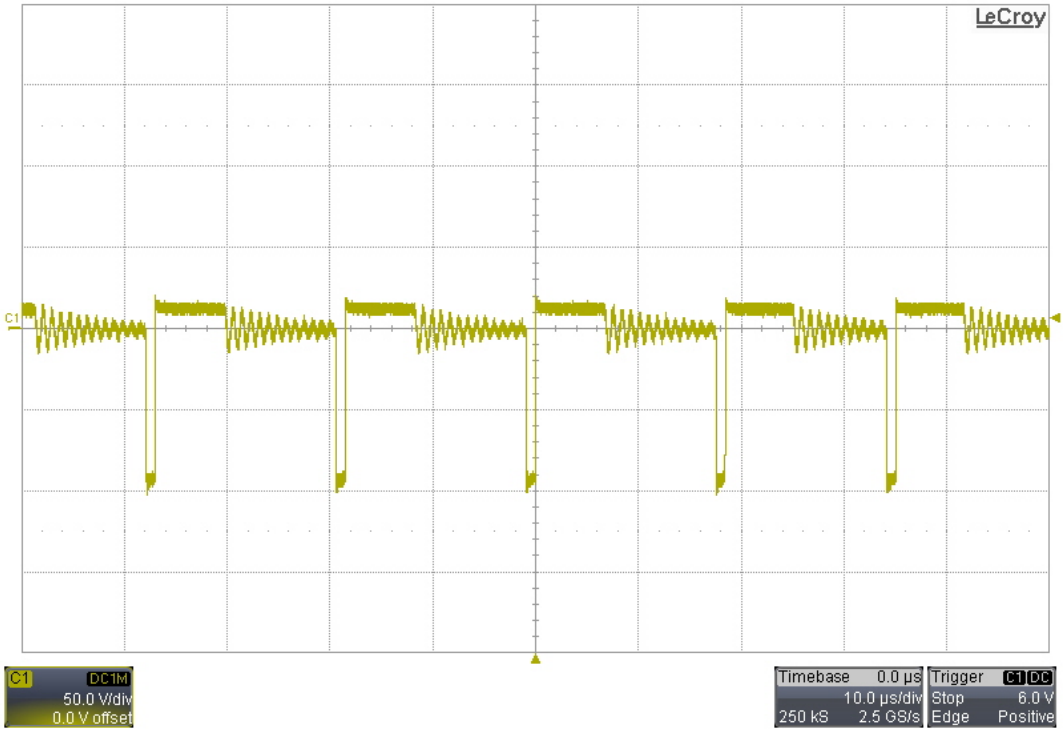
10 Switching Waveforms

The input was 680VDC Line-Line. The outputs were loaded with 0.7A each.

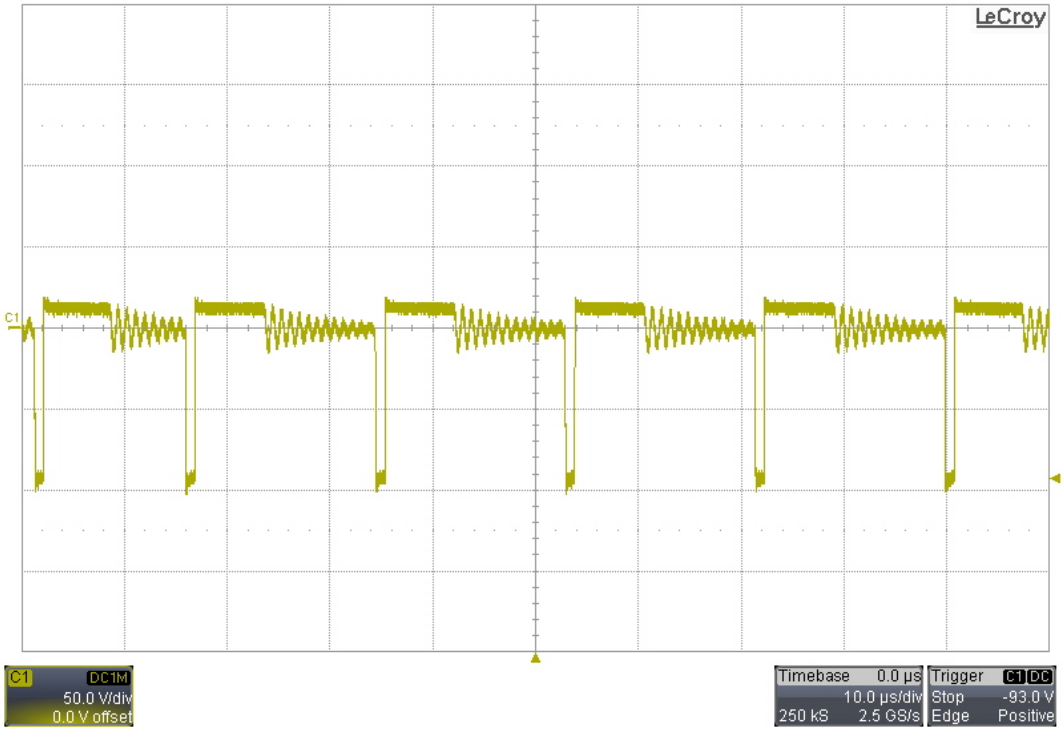
10.1 Q1 Drain Voltage



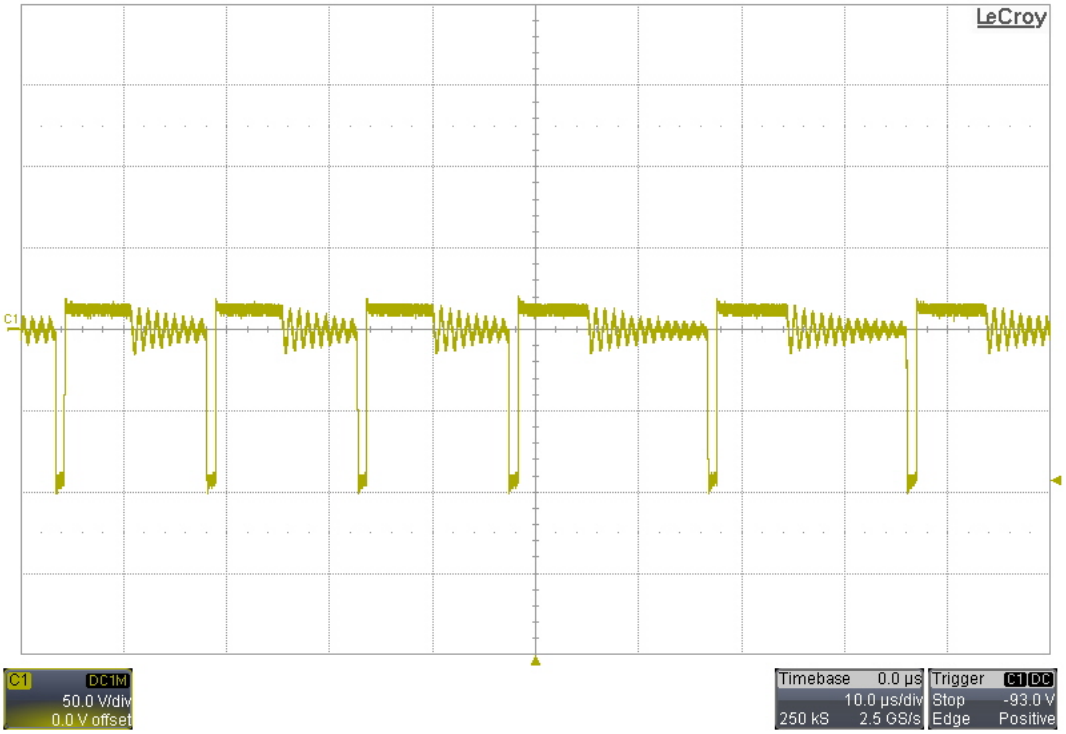
10.2 D9 Anode Voltage



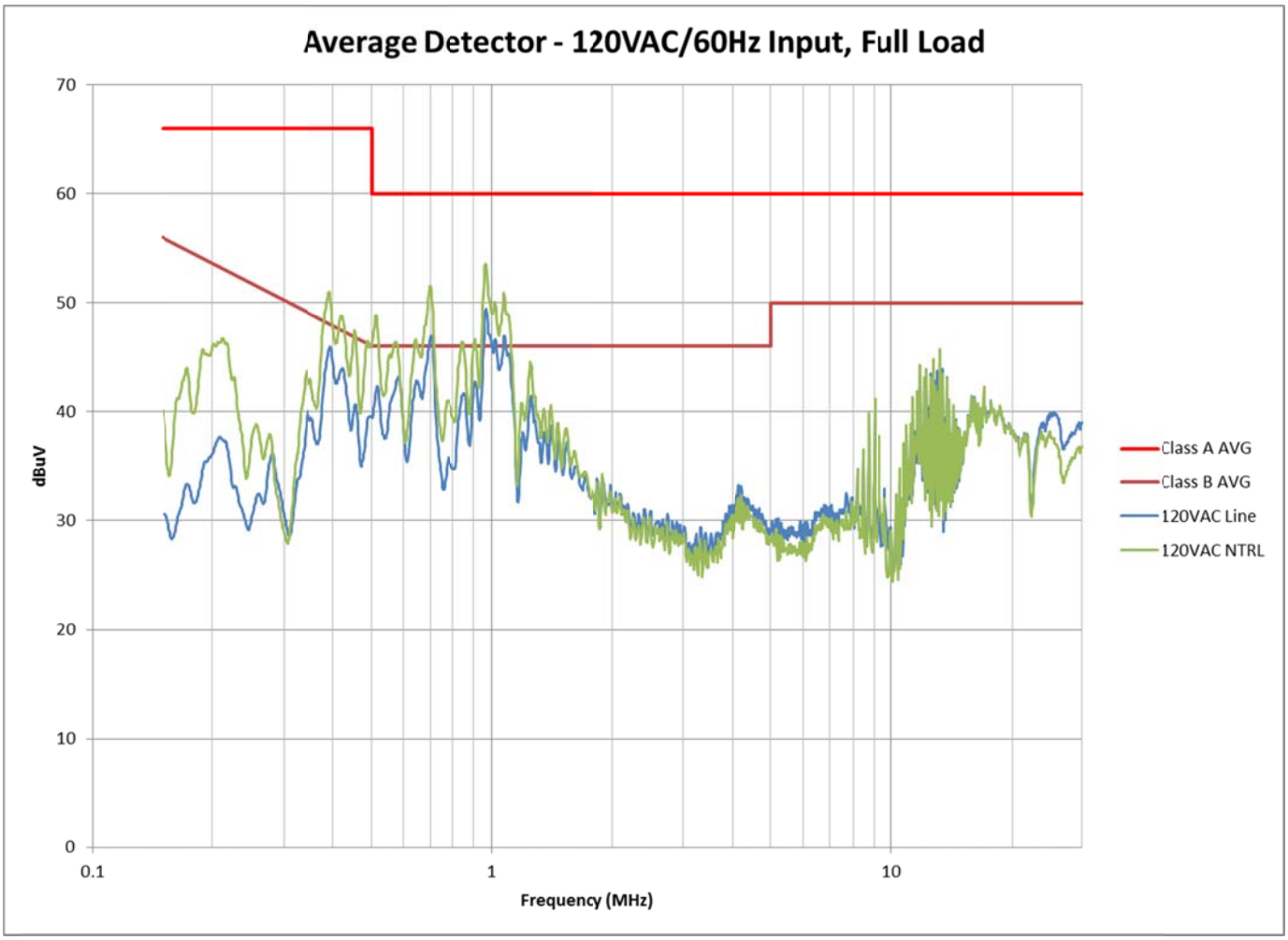
10.3 D5 Anode Voltage

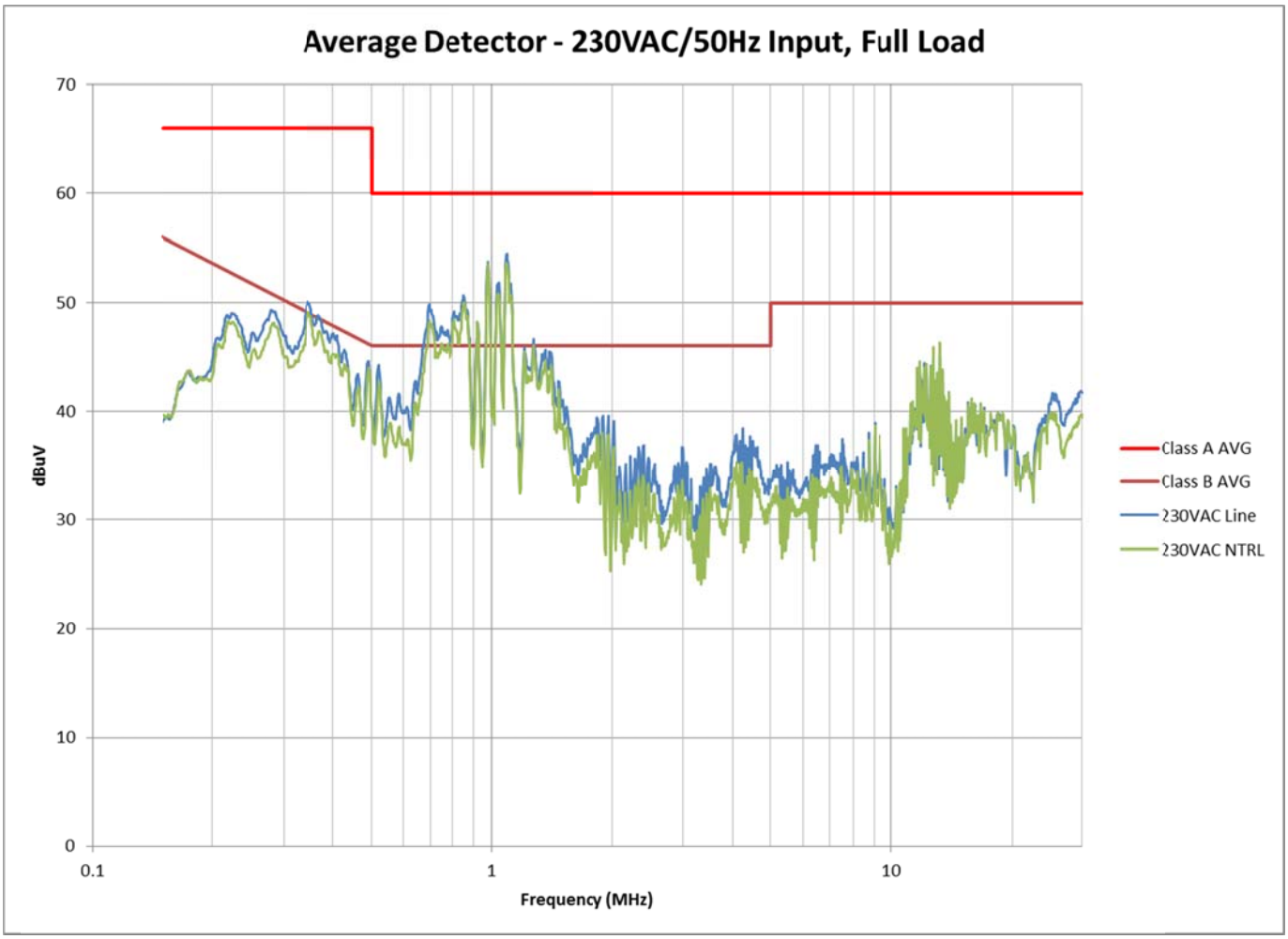


10.4 D3 Anode Voltage



11 Conducted Emissions




Average Detector - 230VAC/50Hz Input, Full Load
70
60
50
40
30
20
10
0
dBuV
0.1
1
10
Frequency (MHz)
Class A AVG
Class B AVG
230VAC Line
230VAC NTRL

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