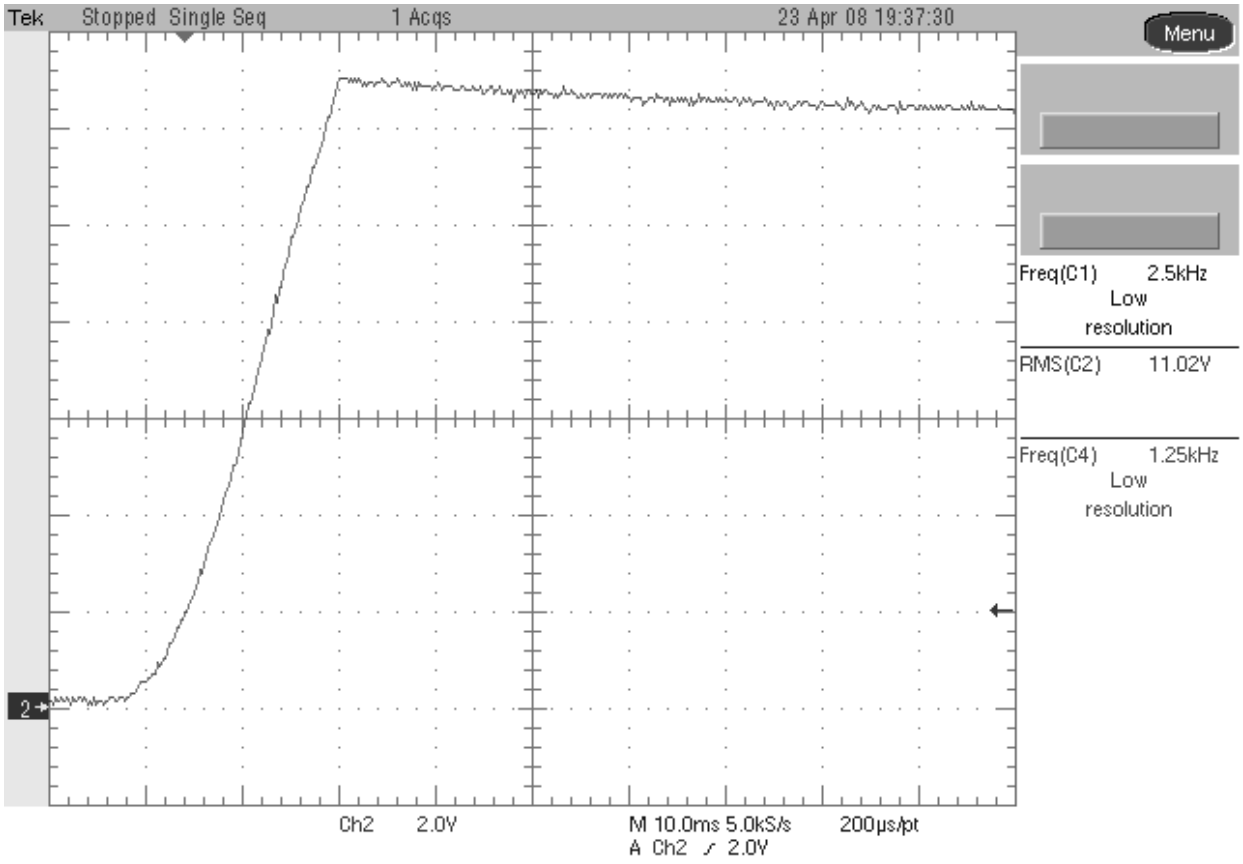
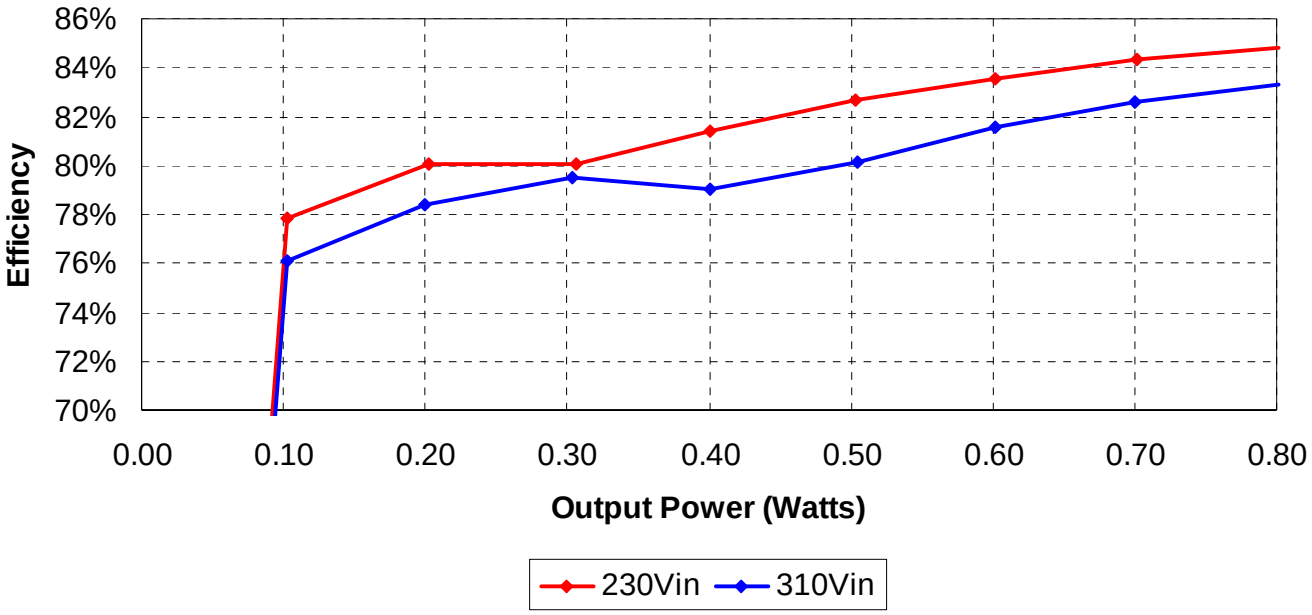
1 Startup

The output voltage at startup is shown in the image below. Input voltage is 167Vac. The output was loaded with 10mA.
Channel 2 shows the 12V output (2 V/div).



2 Efficiency

The efficiency data is shown in the tables and graph below. For simplicity and accuracy of measurements, the data was measured using a DC input.

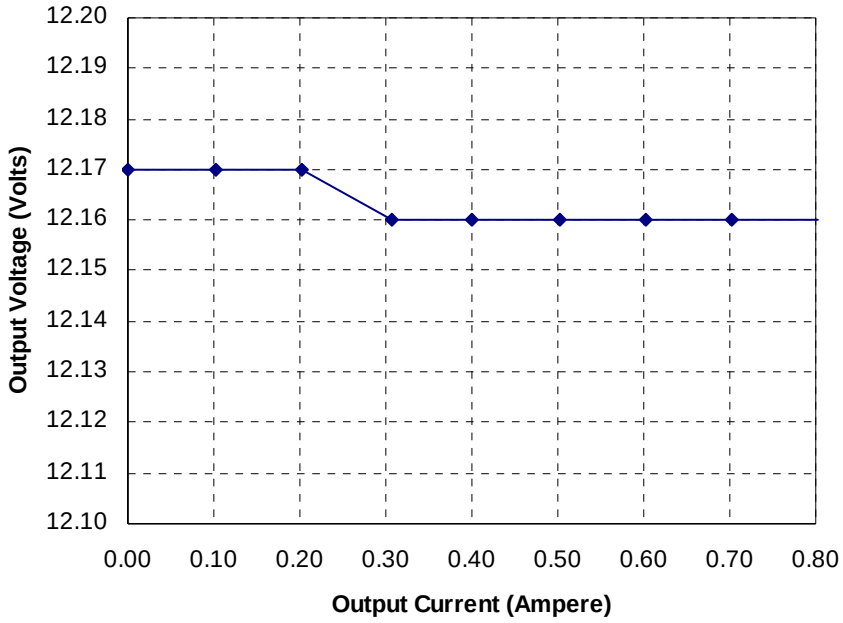


Iout (A)	Vout (V)	Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff
0.000	12.17	0.00	0.39	230	0.0897	0.0897	0
0.103	12.17	1.25	7.00	230	1.61	0.36	77.9%
0.203	12.17	2.47	13.42	230	3.09	0.62	80.0%
0.306	12.16	3.72	20.21	230	4.65	0.93	80.0%
0.400	12.16	4.86	25.99	230	5.98	1.11	81.4%
0.503	12.16	6.12	32.16	230	7.40	1.28	82.7%
0.602	12.16	7.32	38.10	230	8.76	1.44	83.5%
0.702	12.16	8.54	44.00	230	10.12	1.58	84.4%
0.802	12.16	9.75	50.00	230	11.50	1.75	84.8%

Iout (A)	Vout (V)	Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff
0.000	12.17	0.00	0.38	310	0.1178	0.1178	0
0.102	12.17	1.24	5.26	310	1.63	0.39	76.1%
0.200	12.17	2.43	10.02	310	3.11	0.67	78.4%
0.303	12.17	3.69	14.96	310	4.64	0.95	79.5%
0.400	12.16	4.86	19.86	310	6.16	1.29	79.0%
0.504	12.16	6.13	24.66	310	7.64	1.52	80.2%
0.602	12.16	7.32	28.94	310	8.97	1.65	81.6%
0.700	12.16	8.51	33.23	310	10.30	1.79	82.6%
0.802	12.16	9.75	37.76	310	11.71	1.95	83.3%

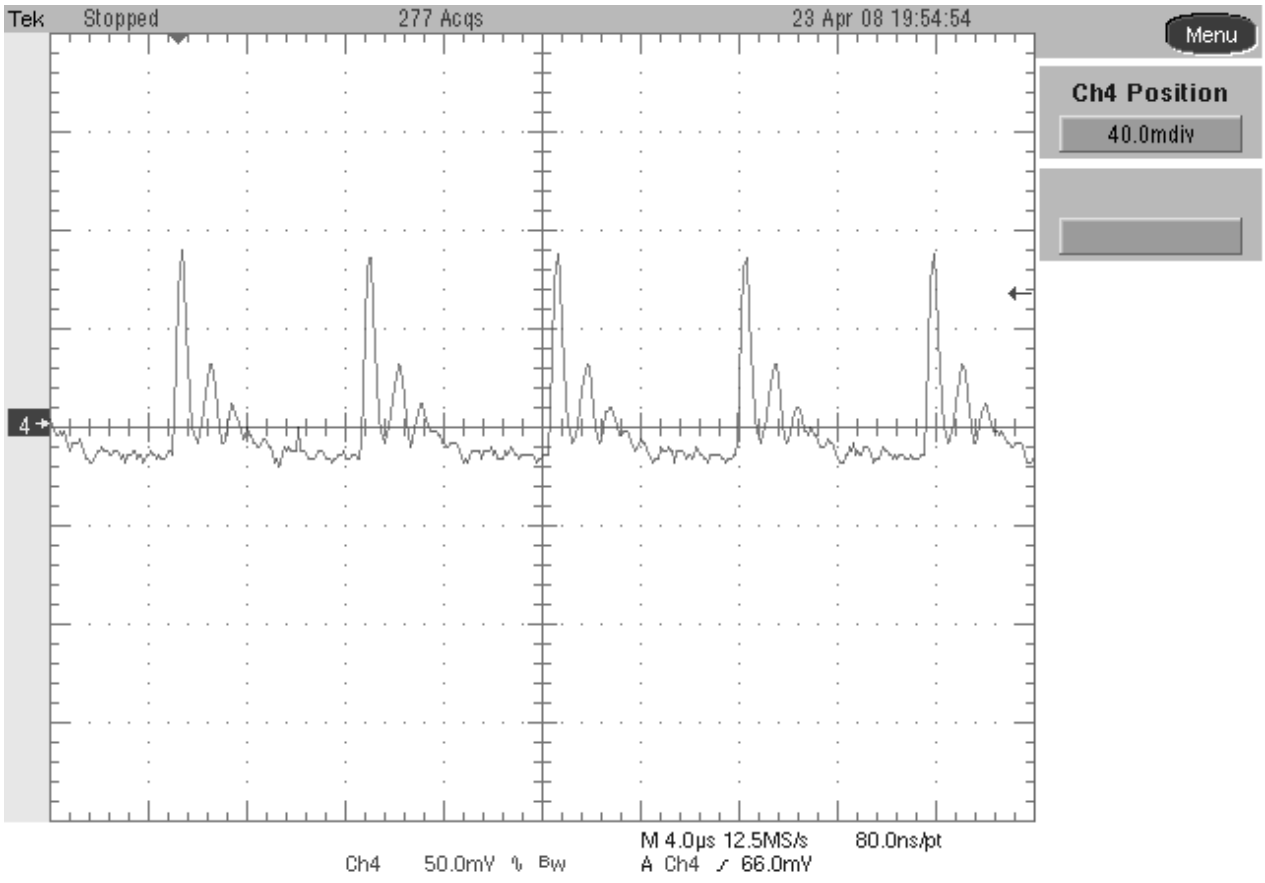
3 Output Voltage Regulation

The output voltage versus load current is plotted below.



4 Output Ripple Voltage

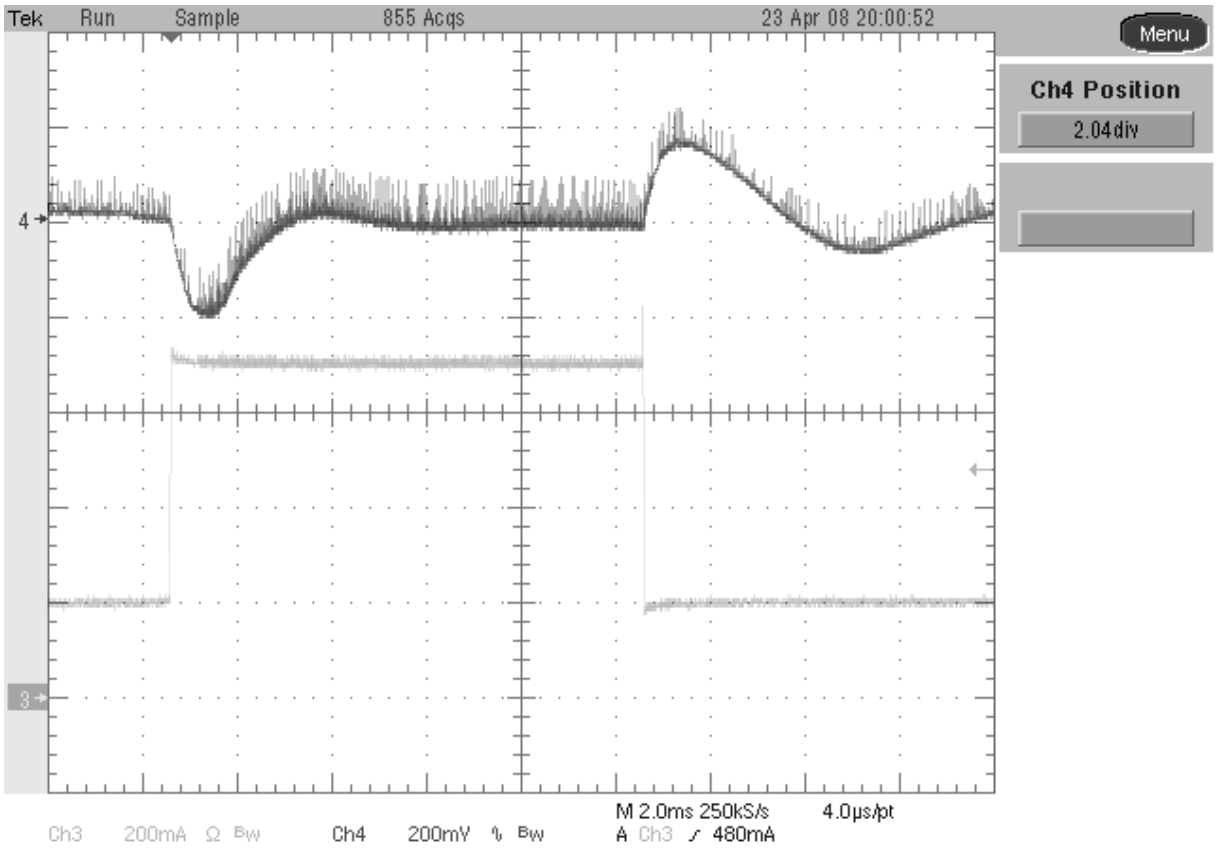
The output ripple voltage is shown in the plot below. The input was set at 167Vac and the load was set to 0.8A.



5 Load Transient

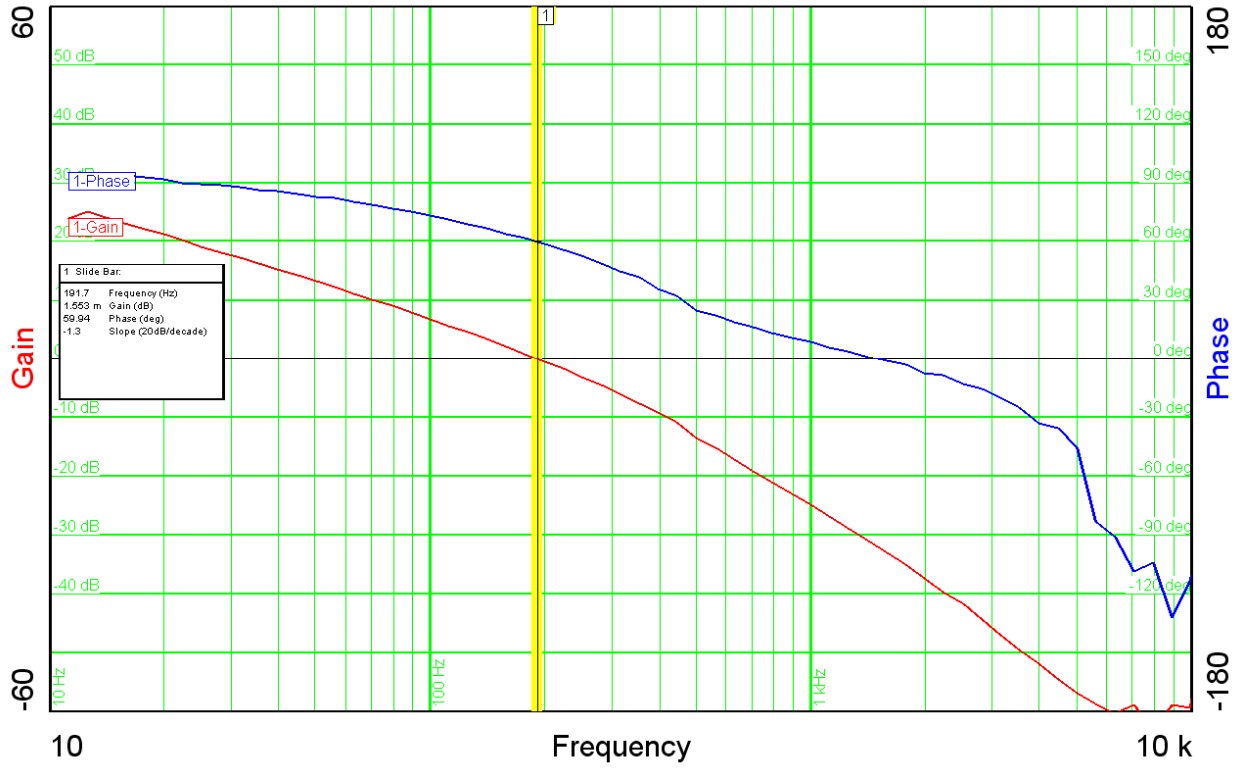
The image below shows the response to 0.2A to 0.7A load transient on the output voltage. The input voltage was set to the nominal value 230Vac.

Channel 4: Vout (ac coupled) 200mV/div, Channel 3: Iout 200mA/div.



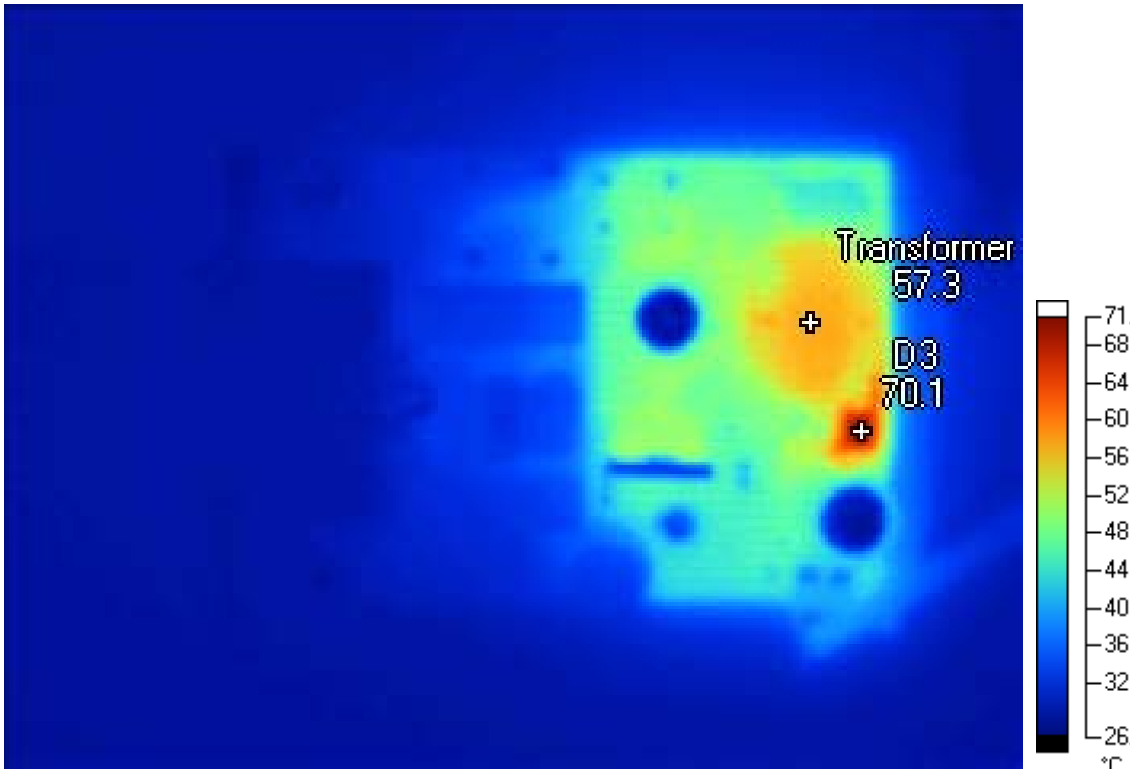
6 Loop Response

The image below shows the loop response of the converter measured with a 310Vdc input, and a full load. Phase margin is 59.94 deg. and crossover frequency is 191.7Hz.



7 Thermal Analysis

The image below shows the infrared image taken from the FlexCam after 15min at full load. Input voltage is 167Vac, output load is 0.8A, and ambient temperature is 23C.



Markers

Label	Temperature	Emissivity	Background
Transformer	57.3 °C	0.95	23.0 °C
D3	70.1 °C	0.95	23.0 °C

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