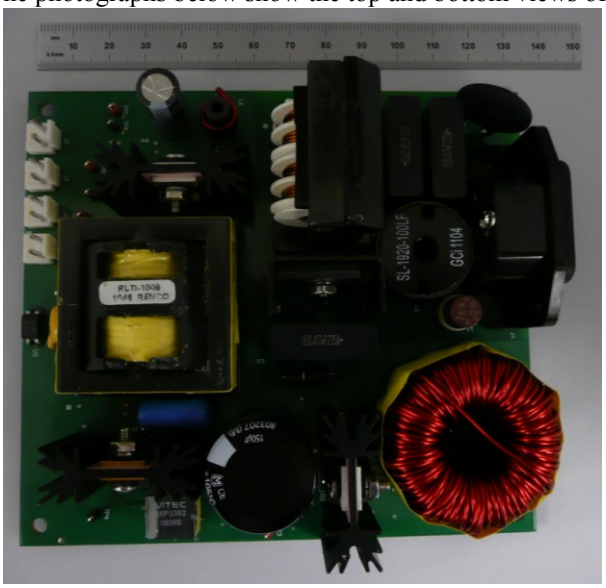
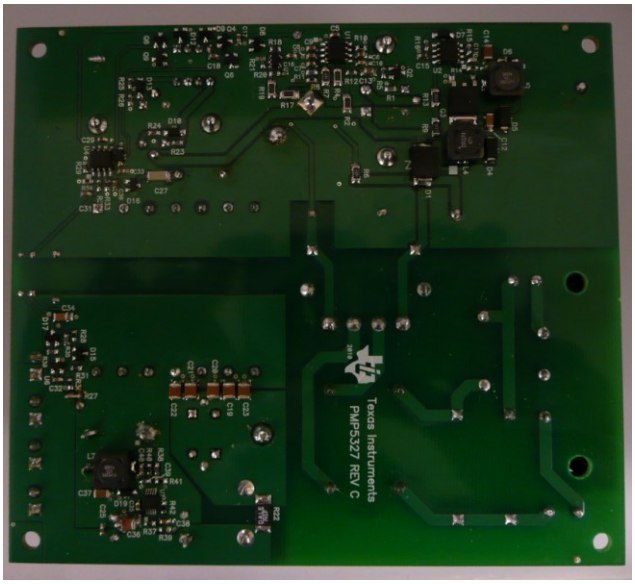
1 Photo

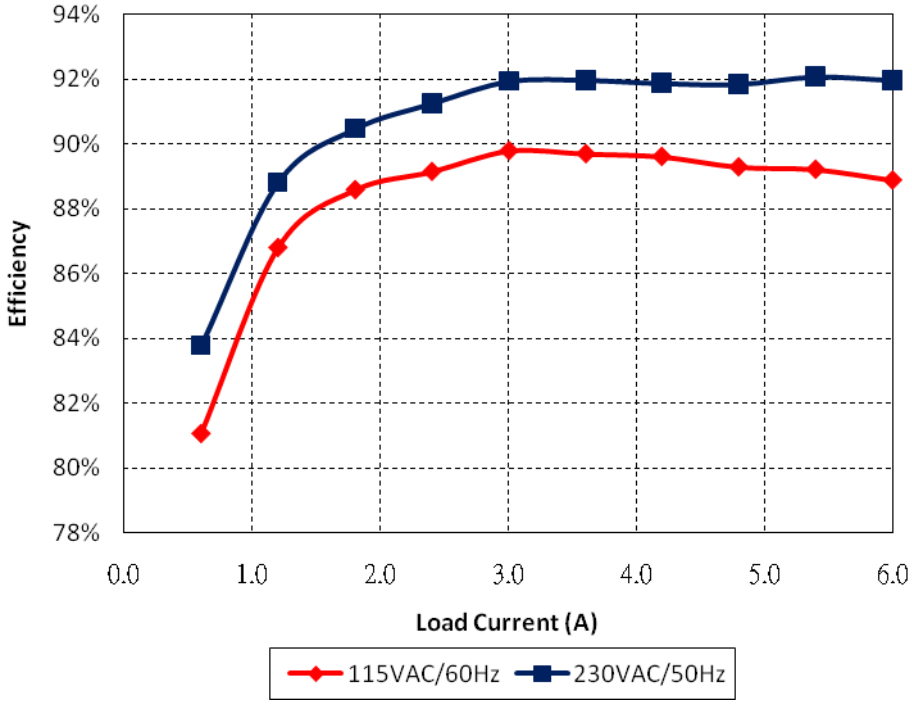
The photographs below show the top and bottom views of the PMP5327 Rev C demo board.





2 Total Efficiency

The efficiency of the total supply is shown in the tables and graph below.



115VAC/60Hz

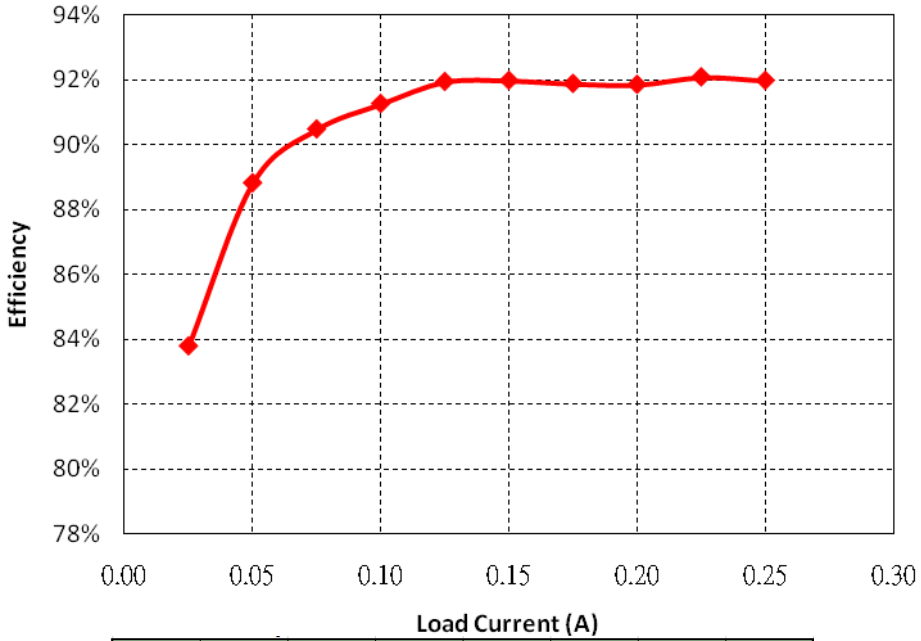
Iout	Vout	Vin	Iin	Pin	PFC Vout	PF	Pout	Losses	Efficiency
0.000	44.8	115.8	0.068	4.92	379.3	0.611	0.00	4.924	0.0%
0.601	41.5	115.7	0.274	30.77	379.0	0.971	24.94	5.829	81.1%
1.201	41.5	115.7	0.501	57.42	378.9	0.991	49.84	7.579	86.8%
1.804	41.5	115.6	0.735	84.51	378.9	0.995	74.87	9.644	88.6%
2.403	41.5	115.6	0.971	111.86	378.8	0.997	99.72	12.136	89.2%
3.004	41.5	115.5	1.204	138.84	378.8	0.998	124.67	14.174	89.8%
3.604	41.5	115.5	1.446	166.74	378.7	0.998	149.57	17.174	89.7%
4.196	41.5	115.4	1.686	194.32	378.7	0.999	174.13	20.186	89.6%
4.796	41.5	115.4	1.934	222.90	378.7	0.999	199.03	23.866	89.3%
5.396	41.5	115.3	1.178	251.00	378.6	0.999	223.93	27.066	89.2%
5.997	41.5	115.3	2.431	280.00	378.6	0.999	248.88	31.125	88.9%

230VAC/50Hz

Iout	Vout	Vin	Iin	Pin	PFC Vout	PF	Pout	Losses	Efficiency
0.000	45.3	231.1	0.087	4.89	382.3	0.243	0.00	4.889	0.0%
0.601	41.5	231.1	0.161	29.77	379.2	0.802	24.94	4.829	83.8%
1.201	41.5	231.1	0.263	56.12	379.1	0.923	49.84	6.278	88.8%
1.804	41.5	231.1	0.374	82.75	379.1	0.957	74.87	7.884	90.5%
2.403	41.5	231.0	0.487	109.28	379.0	0.972	99.72	9.555	91.3%
3.004	41.5	231.0	0.600	135.60	379.0	0.979	124.67	10.934	91.9%
3.604	41.5	231.0	0.716	162.62	379.0	0.983	149.57	13.054	92.0%
4.196	41.5	231.0	0.832	189.53	378.9	0.986	174.13	15.396	91.9%
4.796	41.5	230.9	0.950	216.70	378.9	0.988	199.03	17.666	91.8%
5.396	41.5	230.9	1.065	243.20	378.9	0.989	223.93	19.266	92.1%
5.997	41.5	230.9	1.184	270.60	378.9	0.99	248.88	21.725	92.0%

3 12V Buck Efficiency

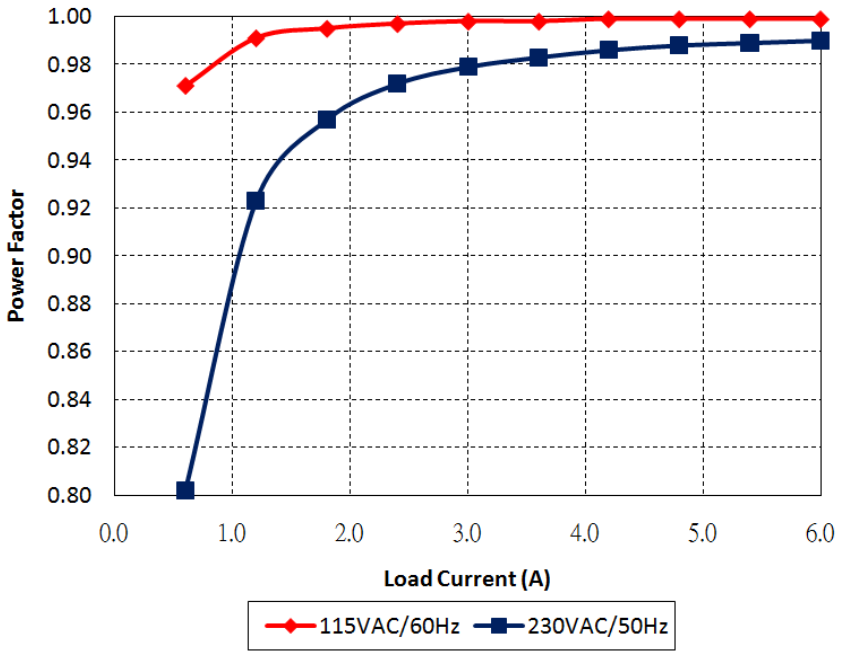
The efficiency of the 12V buck supply is shown in the table and graph below. R27 was removed for this test. An external DC voltage source was applied to the 42V output.



Iout	Vout	Vin	Iin	Pin	Pout	Losses	Efficiency
0.000	11.99	42.0	0.00085	0.04	0.00	0.036	0.0%
0.025	11.99	42.0	0.00969	0.41	0.30	0.107	73.7%
0.050	11.99	42.0	0.01722	0.72	0.60	0.124	82.9%
0.075	11.99	42.0	0.02547	1.07	0.90	0.170	84.1%
0.100	11.99	42.0	0.03293	1.38	1.20	0.184	86.7%
0.125	11.99	42.0	0.0405	1.70	1.50	0.202	88.1%
0.150	11.99	42.0	0.0482	2.02	1.80	0.226	88.8%
0.175	11.99	42.0	0.0557	2.34	2.10	0.241	89.7%
0.200	11.99	42.0	0.0633	2.66	2.40	0.261	90.2%
0.225	11.99	42.0	0.071	2.98	2.70	0.284	90.5%
0.250	11.99	42.0	0.0787	3.31	3.00	0.308	90.7%

4 Power Factor

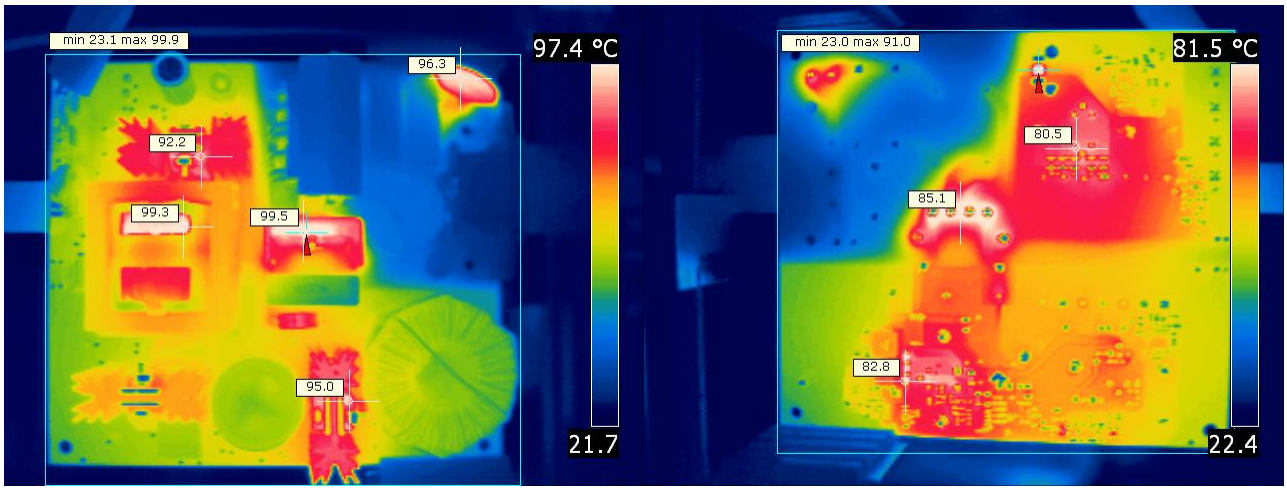
The power factor is shown in the plot below.



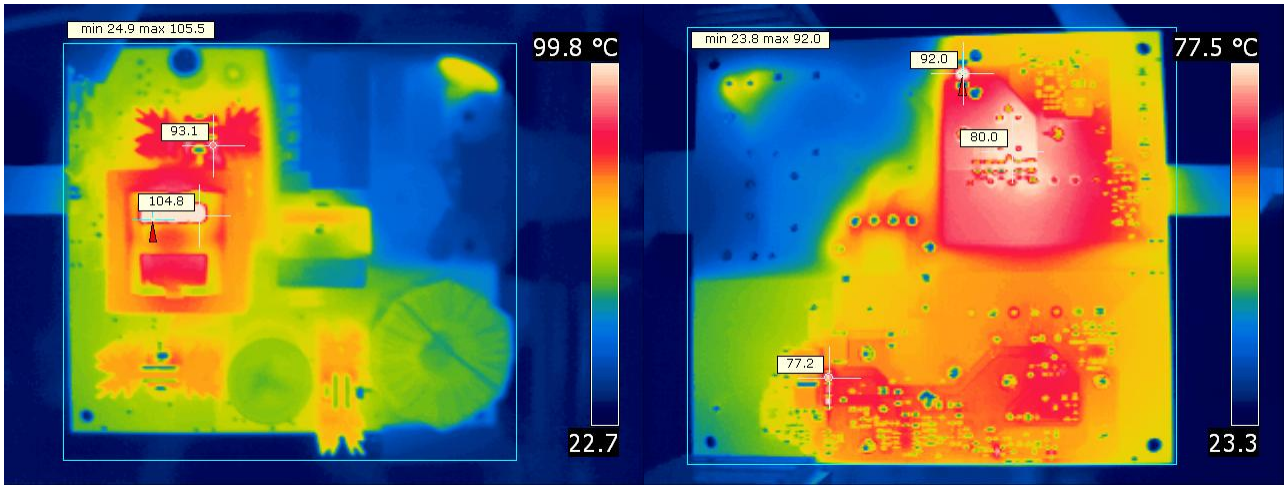
5 Thermal Images

The images below show thermal images of the board with a 6A load on the 42V output. The ambient temperature was 26ºC with no forced air flow. The images on the left show a top view, while the images on the right show a bottom view. Loads above 3A require forced air flow.

5.1 115VAC/60Hz



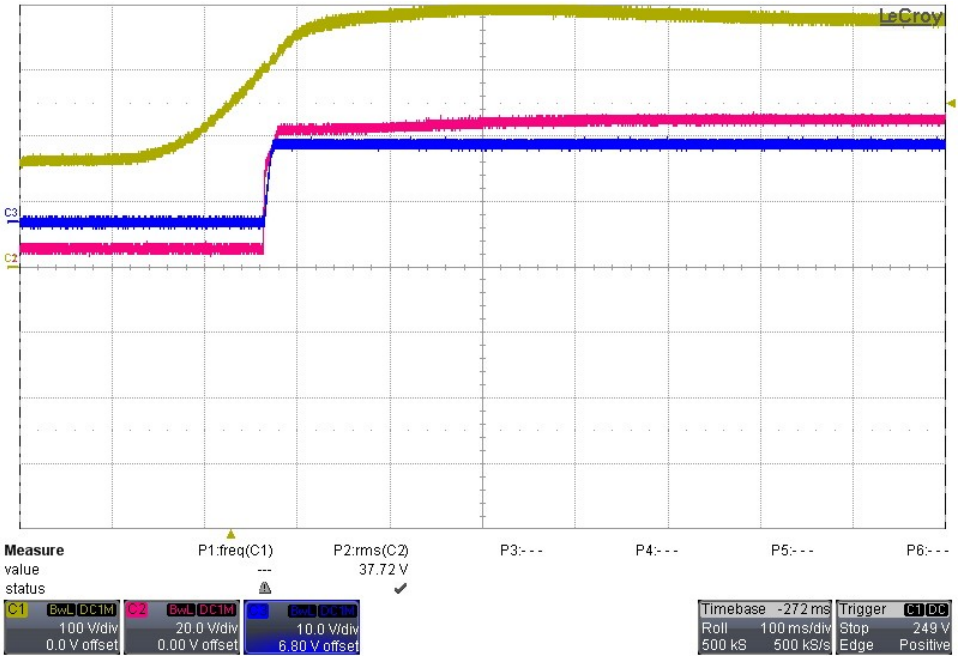
5.2 230VAC/50Hz



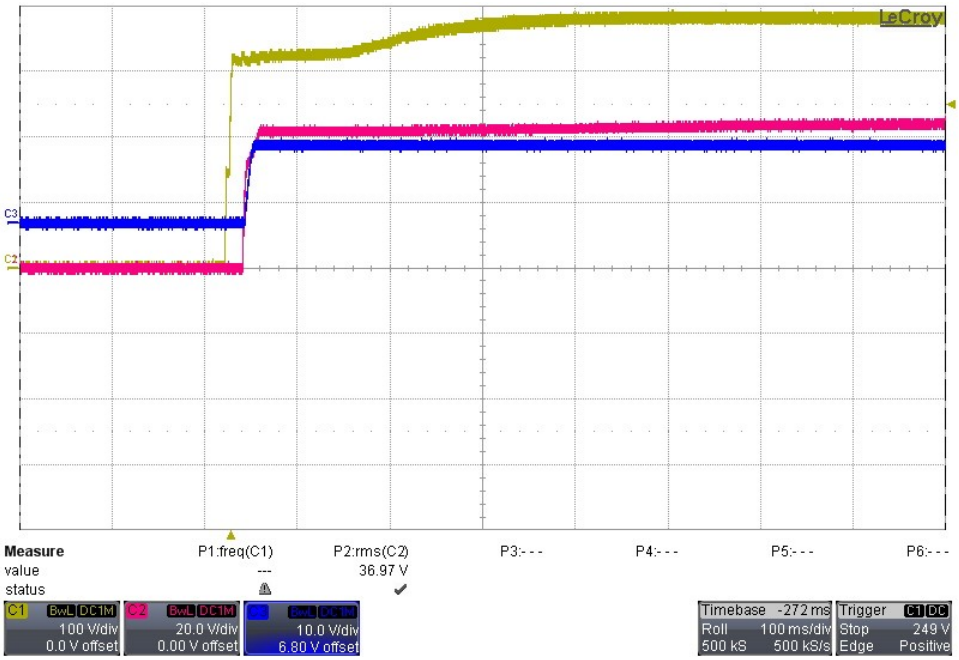
6 Startup

The voltages at startup are shown in the images below. The PFC output is shown on channel 1. The 42V output is shown on channel 2. The 12V output is shown on channel 3.

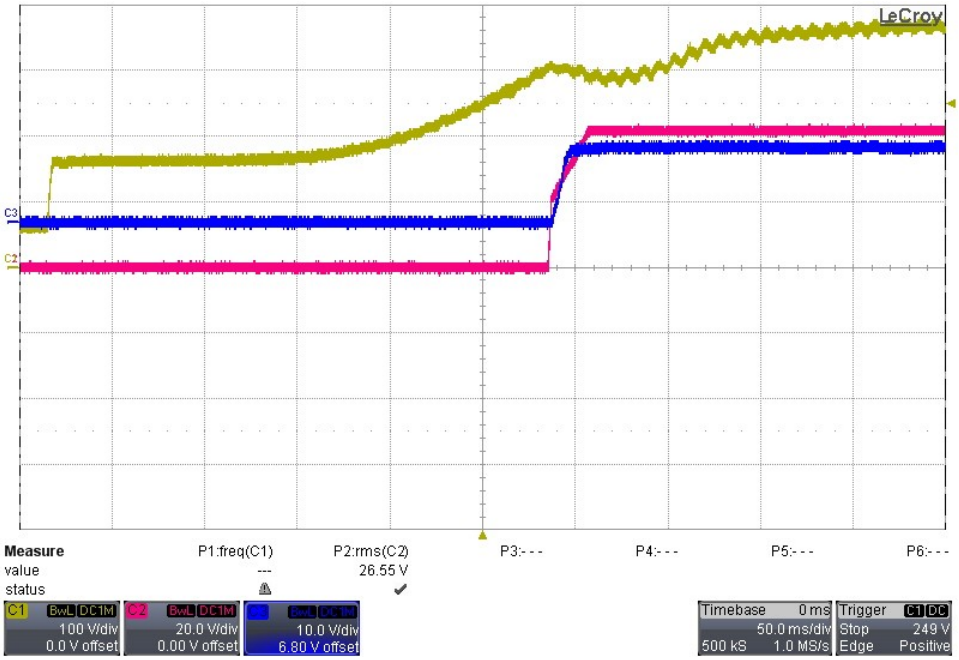
6.1 115VAC/60Hz – No Load



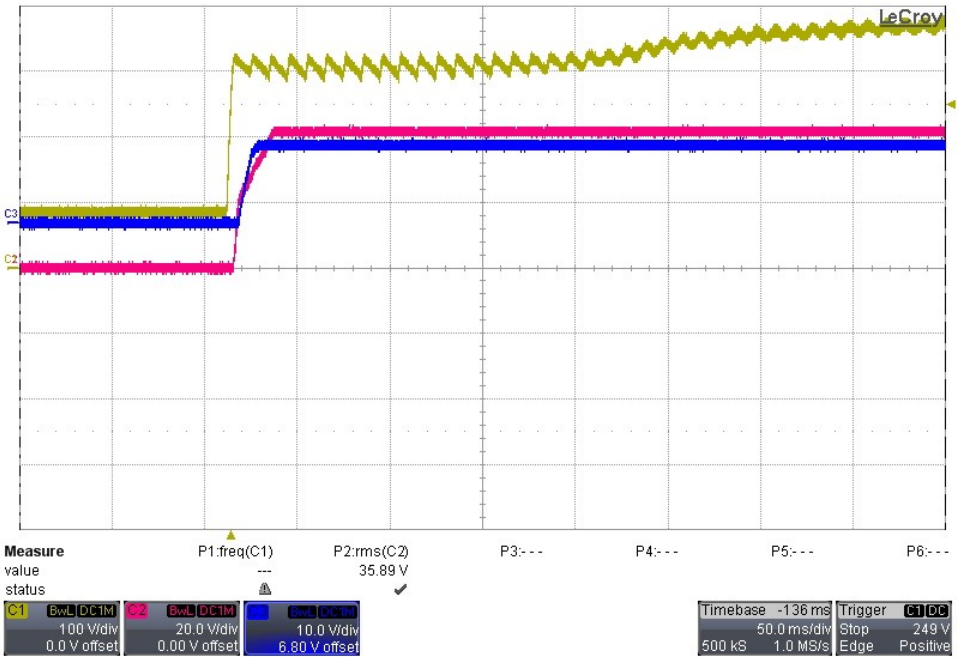
6.2 230VAC/50Hz – No Load



6.3 115VAC/60Hz – 3A Load

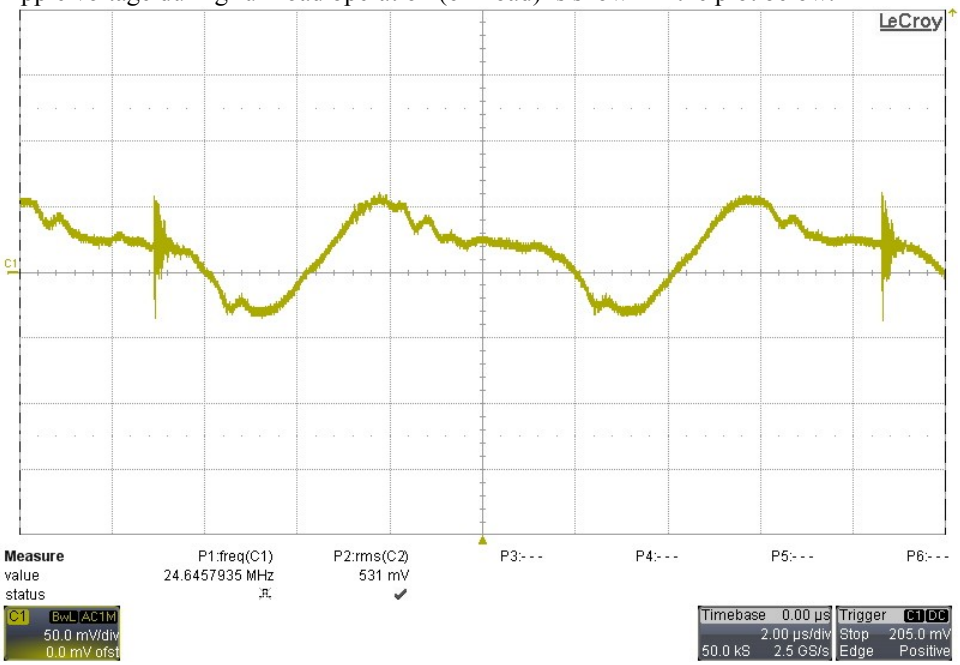


6.4 230VAC/50Hz – 3A Load



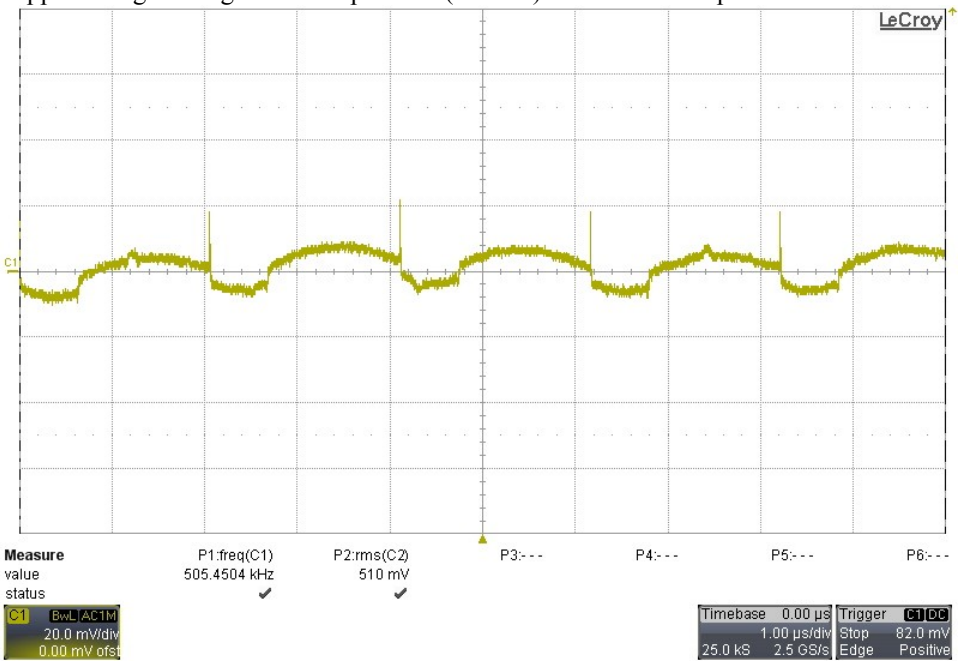
7 42V Output Ripple Voltage

The 42Voutput ripple voltage during full load operation (6A load) is shown in the plot below.



8 12V Output Ripple Voltage

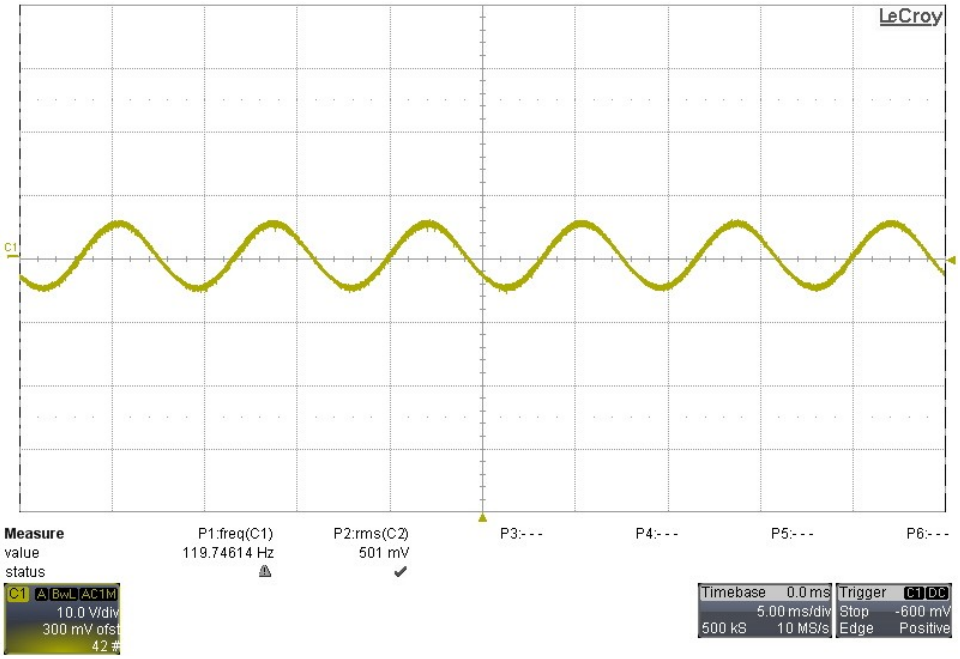
The 12V output ripple voltage during full load operation (250mA) is shown in the plot below.



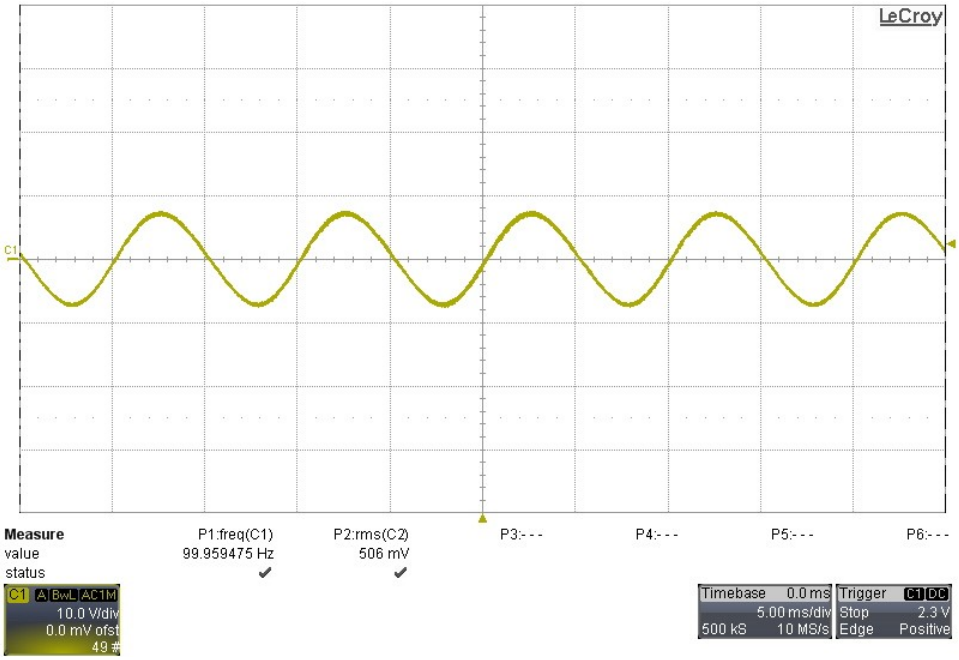
9 PFC Output Ripple Voltage

The PFC output ripple voltage during full load operation is shown in the plots below.

9.1 115VAC/60Hz

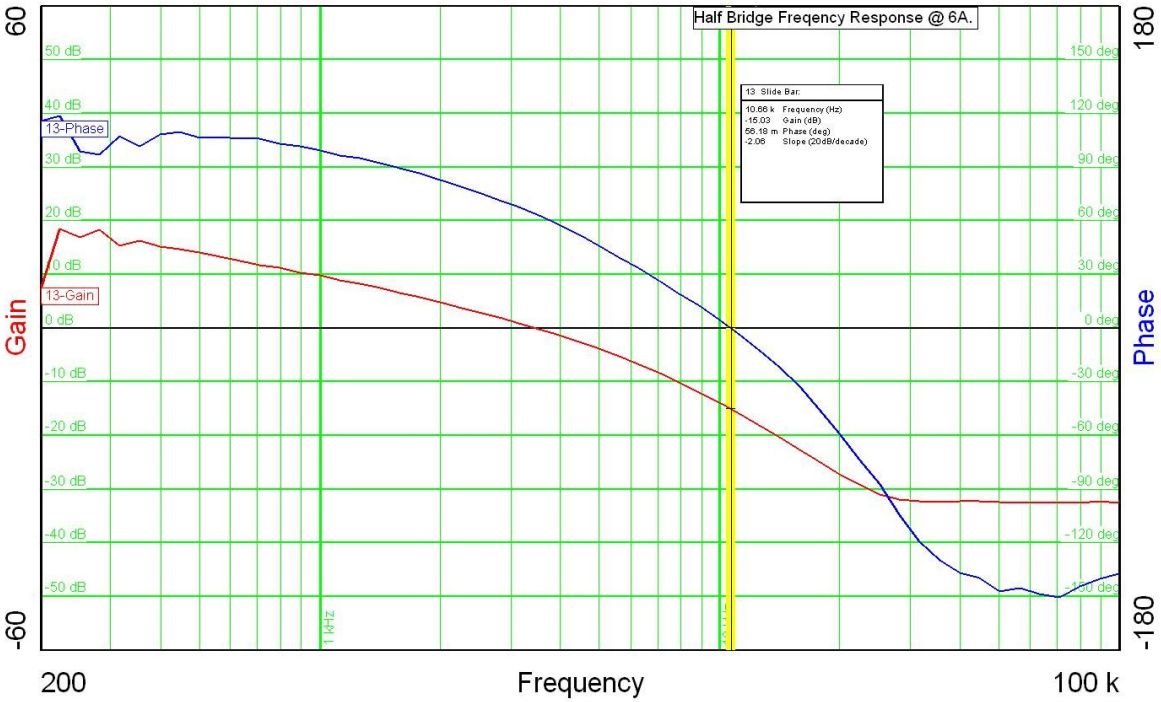


9.2 230VAC/50Hz



10 Half Bridge Frequency Response

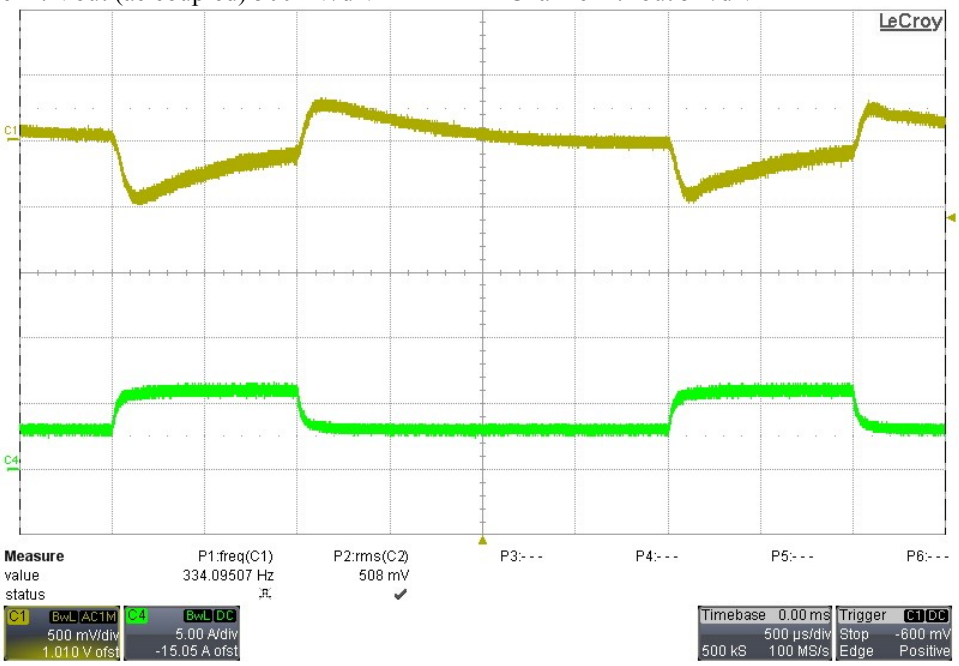
The frequency response of the feedback loop is shown in the plot below. The output was loaded with 6A.



11 Half Bridge Load Transient Response

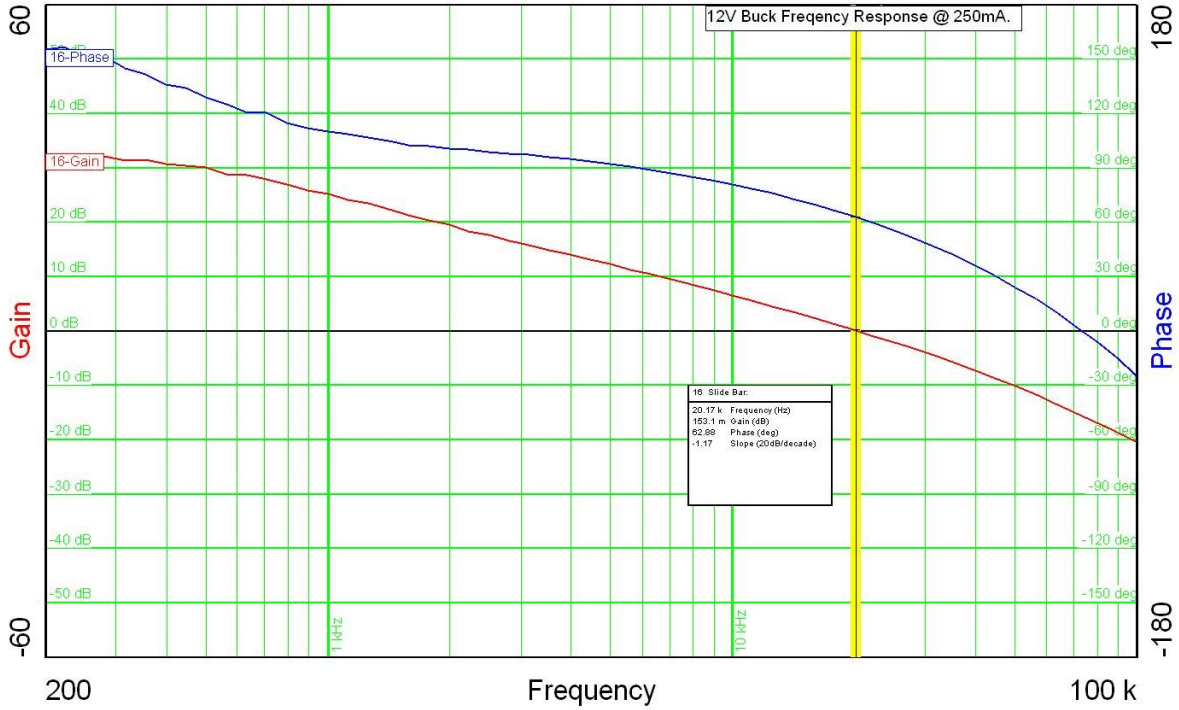
The image below shows the response to a 3A to 6A load transient.

Channel 1: Vout (ac coupled) 500mV/div Channel 4: Iout 5A/div



12 12V Buck Frequency Response

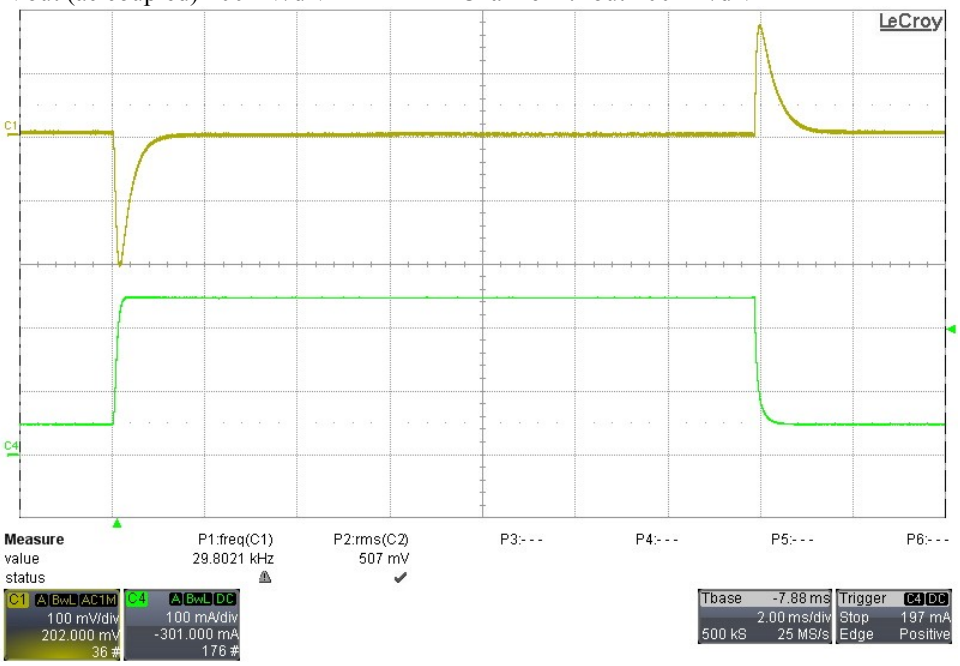
The frequency response of the feedback loop is shown in the plot below. The output was loaded with 250mA.



13 12V Buck Load Transient Response

The image below shows the response to a 50mA to 250mA load transient.

Channel 1: Vout (ac coupled) 100mV/div Channel 4: Iout 100mA/div



14 PFC Load Transient Response

The images below show the PFC response to a 3A to 6A load transient on the 42V output. The top plot is with a 115VAC/60Hz input. The lower plot is with a 230VAC/50Hz input

Channel 1: PFC Vout (ac coupled) 20V/div Channel 4: Iout 2A/div