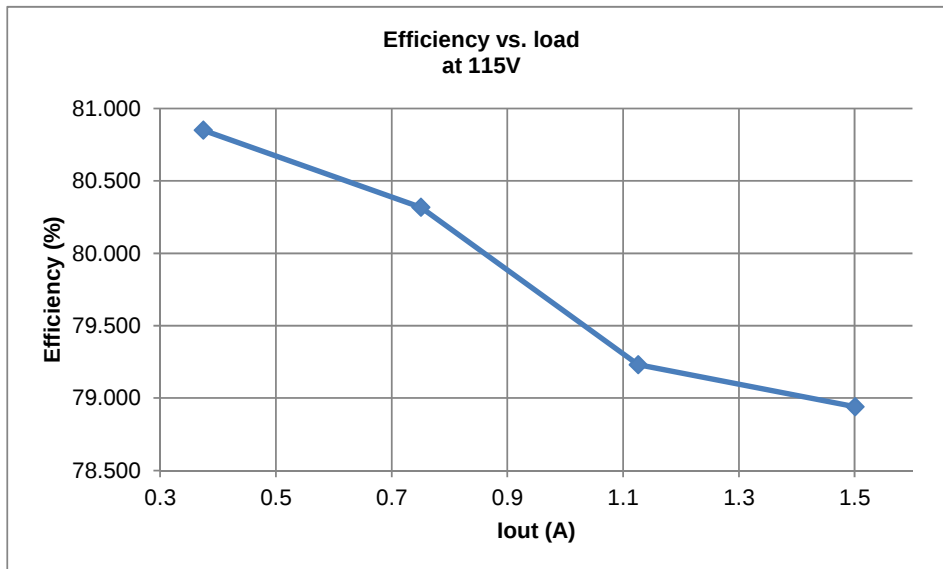


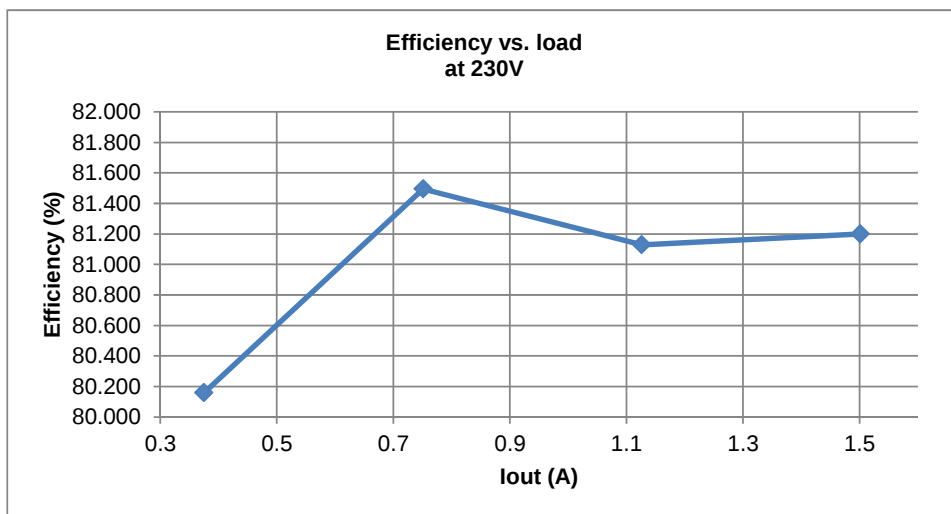
Average Efficiency Tests

Vin(V)	F(Hz)	Pin(W)	Iout(A)	Vout (V)	Pout (W)	Eff(%)	Avg Eff (%)
115	60	9.611	1.501	5.056	7.587	78.940	79.834
		7.163	1.126	5.042	5.676	79.230	
		4.700	0.751	5.030	3.775	80.317	
		2.333	0.375	5.023	1.886	80.849	
230	50	9.363	1.501	5.067	7.603	81.200	80.996
		7.005	1.126	5.049	5.683	81.129	
		4.640	0.751	5.037	3.781	81.495	
		2.353	0.375	5.023	1.886	80.159	

No Load Power

Vin(V)	Pin(mW)	Vout(V)
85	13.60	5.055
115	13.58	5.059
230	15.41	5.066
264	16.44	5.068





Load Regulation

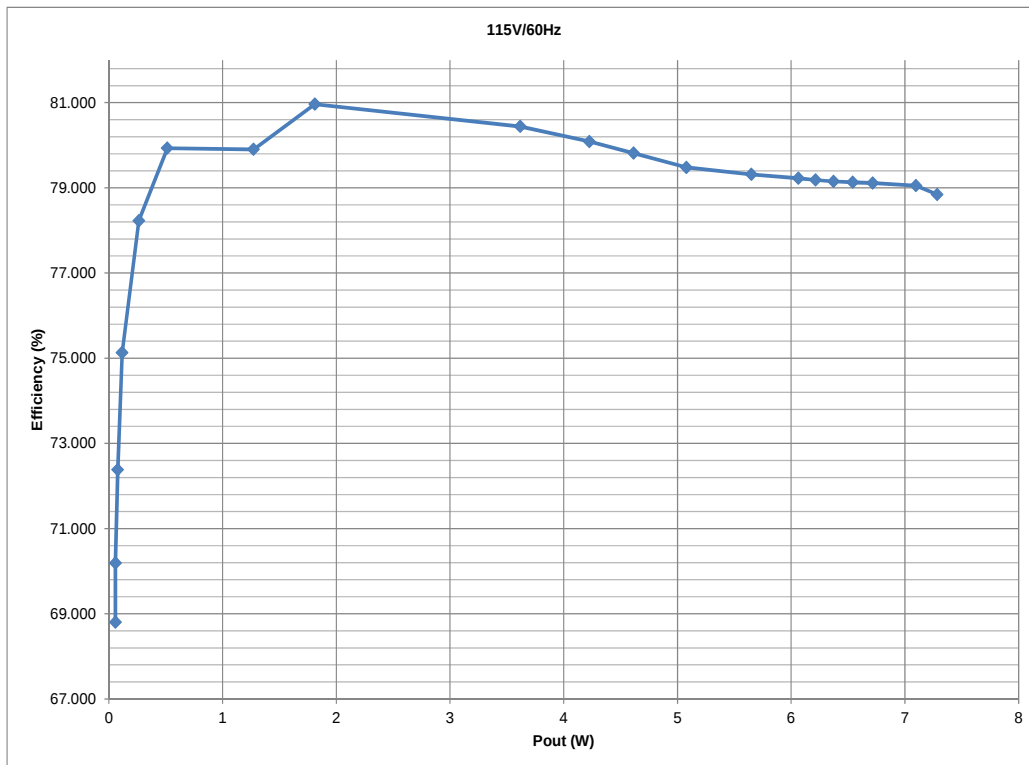
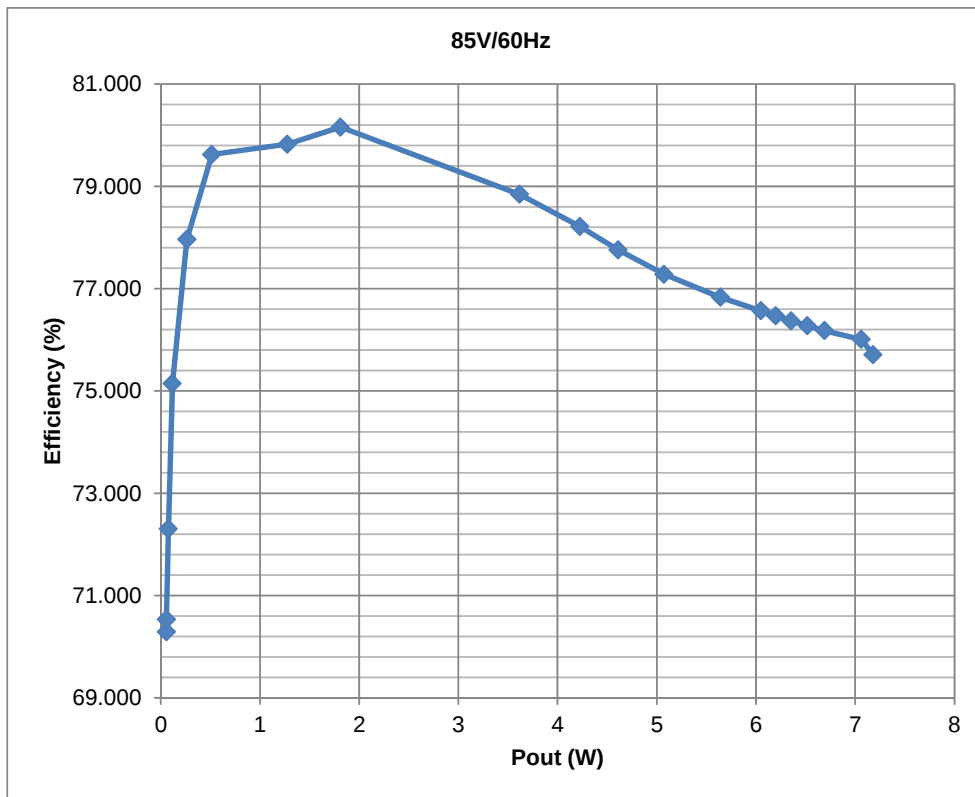
Vin (V)	Freq (Hz)	Iout (A)	Vout (V)	Pin (W)	Eff %	Vpp (V)	Vout spec (V)		
							Vout min	Vout max	Vout pp
85	47	0.000	5.05	0.02	15.1	0.068	4.75	5.25	0.200
		0.101	5.00	0.64	78.2	0.080			
		0.200	5.01	1.18	85.4	0.128			
		0.300	5.01	1.84	82.0	0.107			
		0.400	5.01	2.44	82.3	0.103			
		0.501	5.01	3.07	81.8	0.093			
		0.601	5.01	3.75	80.2	0.091			
		0.701	5.02	4.39	80.0	0.095			
		0.801	5.02	5.17	77.7	0.099			
		0.901	5.02	5.78	78.3	0.102			
		1.001	5.03	6.44	78.1	0.104			
		1.101	5.03	7.12	77.7	0.108			
		1.201	5.03	7.90	76.5	0.109			
		1.301	5.04	8.57	76.4	0.109			
		1.401	5.04	9.25	76.3	0.119			
115	60	0.001	5.05	0.02	15.0	0.070	4.75	5.25	0.200
		0.100	5.00	0.64	78.4	0.082			
		0.200	5.01	1.23	81.9	0.132			
		0.300	5.01	1.82	82.9	0.110			
		0.400	5.02	2.43	82.8	0.108			
		0.501	5.01	3.07	81.6	0.100			
		0.601	5.02	3.69	81.7	0.090			
		0.701	5.02	4.40	80.0	0.093			
		0.801	5.02	5.05	79.6	0.098			
		0.901	5.03	5.66	79.9	0.101			
		1.001	5.03	6.29	80.0	0.104			
		1.101	5.03	6.98	79.3	0.108			

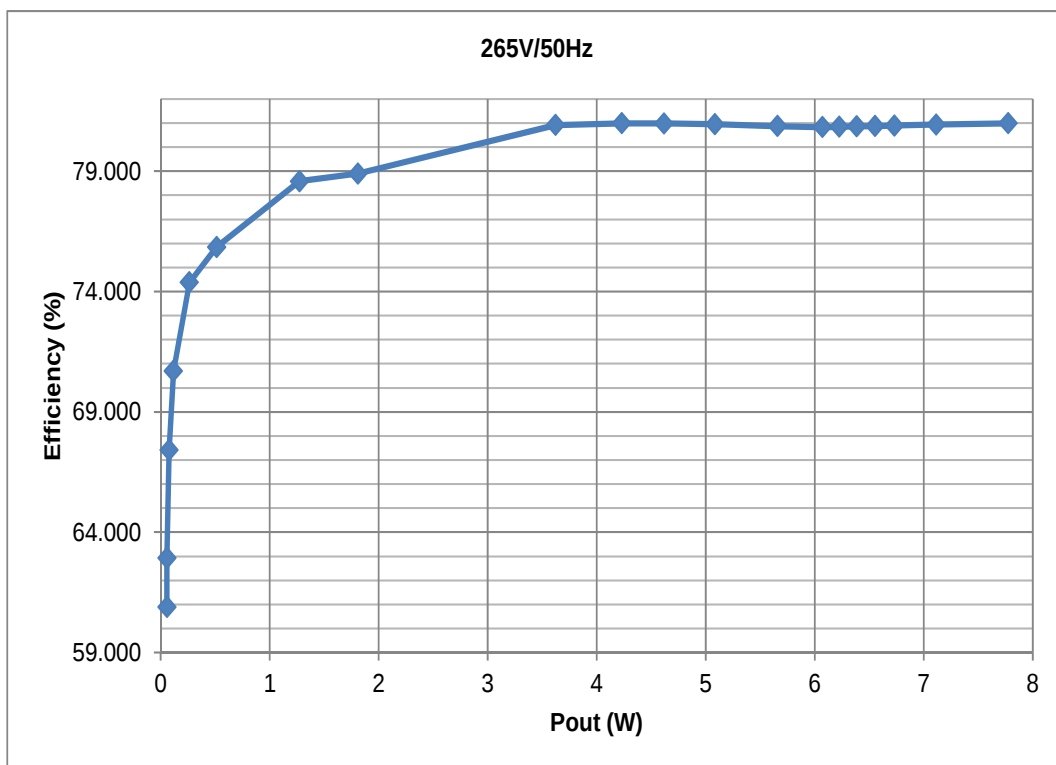
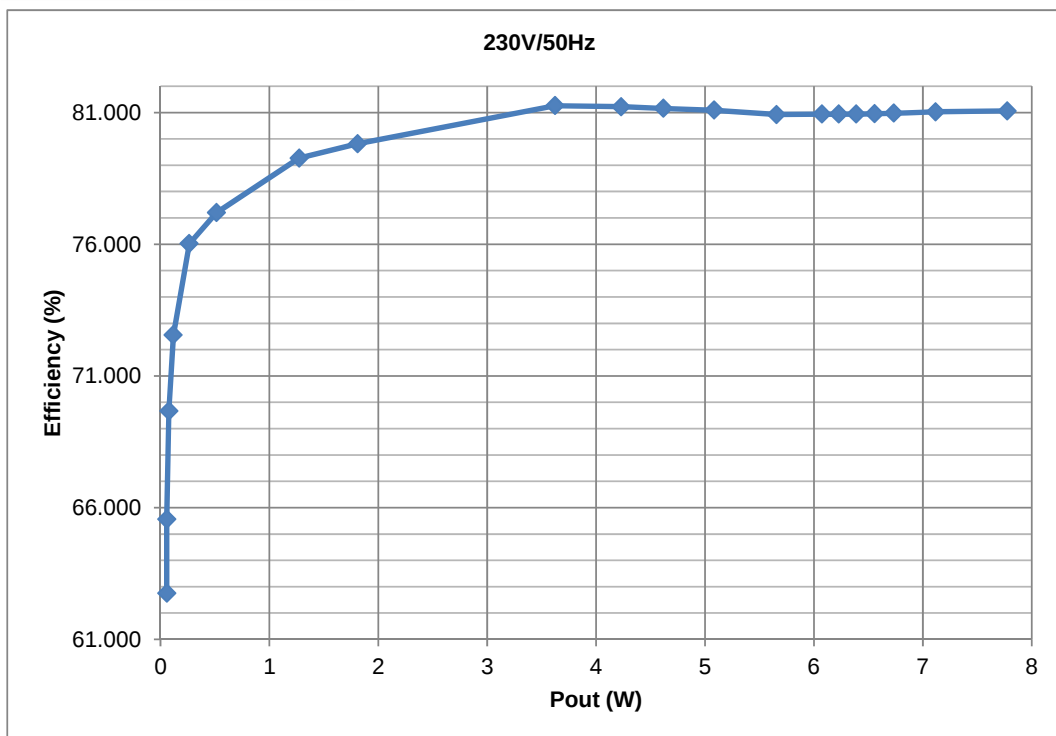
		1.201	5.04	7.61	79.5	0.112			
		1.301	5.04	8.25	79.5	0.115			
		1.401	5.05	8.97	78.8	0.115			
230	50	0.000	5.06	0.02	11.7	0.074	4.75	5.25	0.200
		0.100	5.01	0.66	75.9	0.095			
		0.200	5.01	1.24	80.9	0.141			
		0.300	5.01	1.85	81.6	0.147			
		0.400	5.01	2.52	79.6	0.113			
		0.501	5.02	3.12	80.4	0.111			
		0.601	5.02	3.72	81.0	0.103			
		0.701	5.02	4.36	80.7	0.100			
		0.801	5.03	4.97	80.9	0.101			
		0.901	5.03	5.59	81.0	0.100			
		1.001	5.03	6.15	81.9	0.104			
		1.101	5.04	6.87	80.7	0.107			
		1.201	5.04	7.48	80.9	0.115			
		1.301	5.05	8.09	81.2	0.116			
		1.401	5.05	8.76	80.8	0.118			
265	50	0.000	5.07	0.02	10.5	0.081	4.75	5.25	0.200
		0.101	5.01	0.67	74.8	0.096			
		0.200	5.01	1.28	78.4	0.141			
		0.300	5.02	1.90	79.3	0.149			
		0.400	5.01	2.54	79.0	0.112			
		0.501	5.02	3.14	79.9	0.112			
		0.601	5.02	3.74	80.7	0.102			
		0.701	5.02	4.33	81.2	0.101			
		0.801	5.02	4.99	80.6	0.102			
		0.901	5.03	5.59	81.0	0.103			
		1.001	5.03	6.19	81.3	0.105			
		1.101	5.03	6.88	80.6	0.108			
		1.201	5.04	7.47	81.0	0.113			
		1.301	5.05	8.11	80.9	0.115			
		1.401	5.05	8.72	81.1	0.117			

Vin (V)	Freq (Hz)	Rload (Ohm)	Pin (W)	Vout (V)	Iout (A)	Pout (W)	Eff (%)
85	47	600.00	0.083	5.032	0.012	0.058	70.291
		400.00	0.083	5.031	0.012	0.058	70.532
		250.00	0.107	5.028	0.015	0.078	72.303
		100.00	0.156	5.024	0.023	0.117	75.144
		50.00	0.339	5.012	0.053	0.264	77.961
		20.00	0.645	4.998	0.103	0.514	79.621
		14.00	1.597	5.017	0.254	1.275	79.821
		7.00	2.260	5.018	0.361	1.812	80.157
		6.00	4.589	5.022	0.720	3.618	78.842
		5.50	5.400	5.025	0.841	4.224	78.216
		5.00	5.928	5.027	0.917	4.609	77.757
		4.50	6.565	5.029	1.009	5.073	77.282
		4.20	7.344	5.032	1.121	5.642	76.832
		4.10	7.903	5.035	1.202	6.051	76.567
		3.30	9.292	5.037	1.402	7.062	76.007
		3.00	9.481	4.862	1.476	7.178	75.709
		2.50	8.771	4.451	1.487	6.618	75.446
		1.90	7.387	3.711	1.487	5.518	74.694

		1.60	5.740	2.813	1.484	4.174	72.722
		1.40	4.915	2.366	1.481	3.504	71.288
		1.20	4.369	2.066	1.478	3.053	69.880
		600.00	0.084	5.032	0.012	0.058	68.801
		400.00	0.083	5.030	0.012	0.058	70.193
		250.00	0.107	5.029	0.015	0.078	72.380
		100.00	0.155	5.023	0.023	0.117	75.129
115	60	50.00	0.337	5.011	0.053	0.264	78.225
		20.00	0.643	4.998	0.103	0.514	79.933
		14.00	1.592	5.014	0.254	1.272	79.902
		7.00	2.237	5.018	0.361	1.811	80.965
		6.00	4.498	5.022	0.720	3.618	80.441
		5.50	5.277	5.026	0.841	4.226	80.086
		5.00	5.781	5.029	0.917	4.614	79.814
		4.50	6.390	5.032	1.009	5.078	79.479
		4.20	7.125	5.037	1.122	5.651	79.315
		4.10	7.653	5.040	1.203	6.063	79.224
		4.00	7.847	5.041	1.233	6.214	79.184
		3.90	8.052	5.043	1.264	6.373	79.150
		3.80	8.265	5.045	1.296	6.541	79.132
		3.60	8.492	5.047	1.331	6.718	79.112
		3.30	8.979	5.049	1.406	7.098	79.052
		3.00	9.239	4.898	1.487	7.284	78.843
		2.50	8.471	4.458	1.489	6.637	78.355
		1.90	7.165	3.715	1.489	5.531	77.191
		1.60	5.588	2.818	1.486	4.186	74.915
		1.40	4.798	2.367	1.482	3.510	73.140
		1.20	4.272	2.068	1.479	3.058	71.584
		600.00	0.093	5.043	0.012	0.058	62.757
		400.00	0.089	5.040	0.012	0.058	65.557
		250.00	0.112	5.033	0.015	0.078	69.671
		100.00	0.161	5.026	0.023	0.117	72.552
230	50	50.00	0.347	5.013	0.053	0.264	76.021
		20.00	0.666	5.003	0.103	0.514	77.200
		14.00	1.607	5.017	0.254	1.274	79.270
		7.00	2.268	5.015	0.361	1.811	79.817
		6.00	4.457	5.025	0.721	3.622	81.258
		5.50	5.209	5.029	0.841	4.231	81.217
		5.00	5.691	5.032	0.918	4.619	81.157
		4.50	6.272	5.035	1.010	5.085	81.087
		4.20	6.989	5.039	1.122	5.656	80.923
		4.10	7.504	5.044	1.204	6.074	80.940
		4.00	7.694	5.047	1.234	6.228	80.940
		3.90	7.893	5.049	1.265	6.388	80.941
		3.80	8.099	5.051	1.298	6.557	80.952
		3.60	8.316	5.053	1.333	6.734	80.974
		3.30	8.785	5.057	1.408	7.118	81.024
		3.00	9.595	5.061	1.537	7.777	81.059
		2.50	8.368	4.479	1.496	6.700	80.068
		1.90	7.082	3.733	1.496	5.585	78.871
		1.60	5.535	2.830	1.492	4.222	76.286
		1.40	4.762	2.378	1.489	3.540	74.353
		1.20	4.244	2.076	1.486	3.084	72.661
		600.00	0.096	5.045	0.012	0.058	60.891
		400.00	0.092	5.042	0.012	0.058	62.922

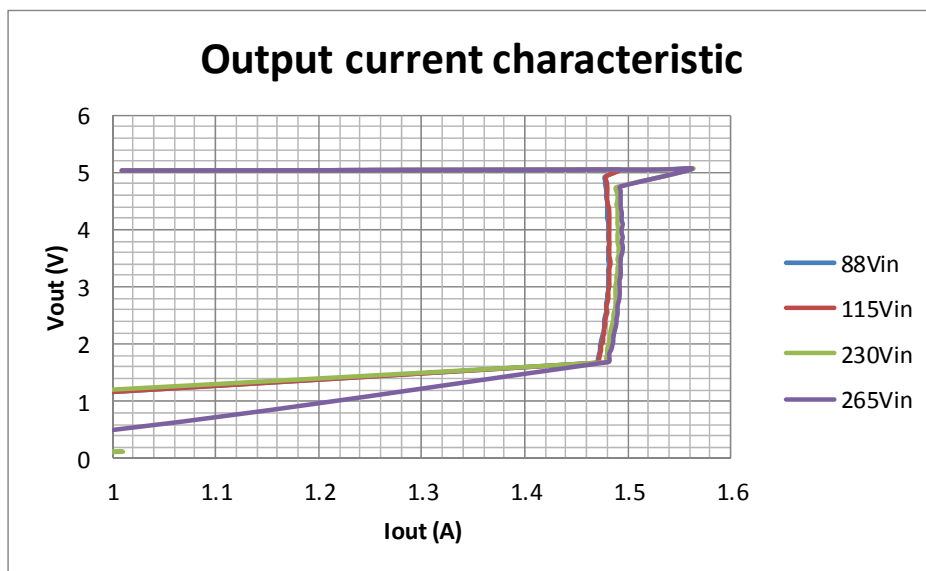
265	50	250.00	0.115	5.034	0.015	0.078	67.414
		100.00	0.165	5.028	0.023	0.117	70.701
		50.00	0.354	5.014	0.053	0.264	74.383
		20.00	0.678	5.005	0.103	0.514	75.850
		14.00	1.621	5.017	0.254	1.274	78.581
		7.00	2.294	5.015	0.361	1.810	78.902
		6.00	4.477	5.025	0.721	3.623	80.920
		5.50	5.225	5.030	0.841	4.231	80.987
		5.00	5.704	5.032	0.918	4.619	80.982
		4.50	6.283	5.036	1.010	5.086	80.954
		4.20	6.997	5.040	1.123	5.659	80.877
		4.10	7.510	5.043	1.204	6.071	80.830
		4.00	7.699	5.045	1.234	6.225	80.845
		3.90	7.896	5.048	1.265	6.386	80.869
		3.80	8.105	5.050	1.298	6.554	80.872
		3.60	8.322	5.052	1.332	6.732	80.892
		3.30	8.791	5.056	1.407	7.115	80.940
		3.00	9.602	5.061	1.536	7.777	80.991
		2.50	8.401	4.488	1.499	6.727	80.071
		1.90	7.119	3.743	1.500	5.613	78.841
		1.60	5.573	2.838	1.496	4.245	76.168
		1.40	4.792	2.384	1.492	3.557	74.225
		1.20	4.271	2.080	1.488	3.095	72.465





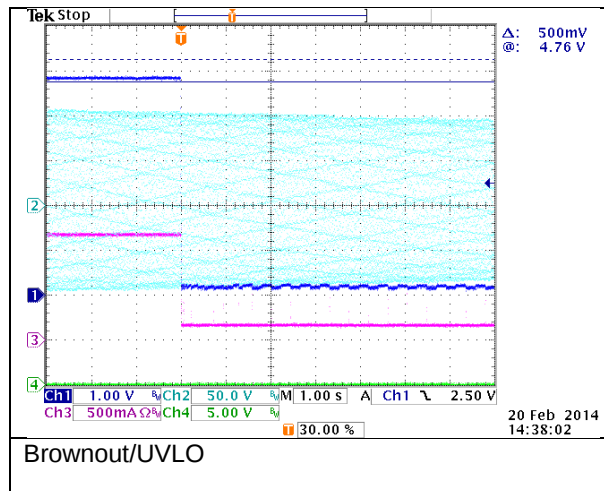
88Vin, lo	88Vin	115in, lo	115Vin	230Vin, lo	230Vin	265Vin, lo	265Vin
1.009	5.031	1.009	5.030	1.009	5.031	1.009	5.030
1.019	5.031	1.019	5.031	1.019	5.031	1.019	5.031
1.030	5.032	1.030	5.032	1.030	5.031	1.030	5.031
1.043	5.032	1.043	5.032	1.042	5.032	1.042	5.031
1.053	5.032	1.053	5.032	1.053	5.032	1.053	5.032
1.065	5.032	1.065	5.033	1.065	5.033	1.064	5.032
1.076	5.033	1.076	5.033	1.076	5.033	1.076	5.032
1.088	5.033	1.088	5.034	1.088	5.033	1.087	5.032
1.099	5.034	1.099	5.034	1.099	5.033	1.099	5.033
1.112	5.034	1.112	5.034	1.112	5.033	1.112	5.033
1.124	5.034	1.124	5.035	1.124	5.034	1.124	5.033
1.137	5.035	1.137	5.035	1.137	5.034	1.137	5.034
1.150	5.035	1.150	5.036	1.150	5.034	1.150	5.034
1.163	5.036	1.163	5.036	1.163	5.035	1.163	5.034
1.177	5.036	1.177	5.037	1.177	5.036	1.176	5.035
1.191	5.036	1.191	5.037	1.191	5.037	1.191	5.035
1.205	5.037	1.205	5.037	1.205	5.037	1.205	5.036
1.220	5.037	1.220	5.038	1.220	5.038	1.219	5.037
1.235	5.038	1.235	5.038	1.235	5.039	1.235	5.037
1.250	5.038	1.250	5.040	1.250	5.039	1.250	5.038
1.266	5.039	1.266	5.040	1.266	5.040	1.266	5.039
1.282	5.039	1.282	5.041	1.282	5.041	1.282	5.040
1.298	5.040	1.299	5.041	1.299	5.041	1.299	5.040
1.316	5.041	1.316	5.042	1.316	5.042	1.316	5.041
1.333	5.041	1.334	5.042	1.334	5.043	1.333	5.042
1.351	5.042	1.351	5.043	1.351	5.043	1.351	5.043
1.369	5.042	1.370	5.044	1.370	5.044	1.370	5.043
1.388	5.043	1.389	5.044	1.389	5.044	1.389	5.044
1.408	5.044	1.408	5.045	1.408	5.045	1.408	5.044
1.428	5.044	1.428	5.046	1.428	5.046	1.428	5.045
1.449	5.045	1.449	5.046	1.449	5.047	1.449	5.046
1.469	5.046	1.470	5.047	1.470	5.047	1.470	5.047
1.492	5.047	1.492	5.048	1.492	5.048	1.492	5.047
1.478	4.927	1.479	4.930	1.515	5.049	1.514	5.048
1.478	4.852	1.479	4.857	1.538	5.050	1.537	5.049
1.478	4.781	1.480	4.785	1.562	5.051	1.561	5.049
1.479	4.708	1.480	4.712	1.489	4.740	1.493	4.752
1.479	4.634	1.480	4.639	1.489	4.667	1.493	4.678
1.479	4.560	1.480	4.566	1.490	4.594	1.493	4.604
1.480	4.491	1.480	4.492	1.490	4.519	1.493	4.529
1.480	4.416	1.481	4.419	1.489	4.444	1.493	4.455
1.480	4.344	1.482	4.347	1.490	4.373	1.493	4.383
1.480	4.271	1.482	4.275	1.490	4.297	1.494	4.310
1.480	4.196	1.482	4.202	1.490	4.223	1.494	4.234
1.481	4.123	1.482	4.126	1.490	4.150	1.494	4.160
1.481	4.049	1.482	4.052	1.490	4.076	1.495	4.087
1.481	3.976	1.482	3.979	1.491	4.003	1.494	4.012
1.481	3.903	1.482	3.904	1.490	3.928	1.494	3.938
1.481	3.830	1.482	3.832	1.490	3.852	1.495	3.864
1.482	3.756	1.482	3.757	1.490	3.779	1.494	3.788
1.481	3.682	1.482	3.683	1.491	3.705	1.495	3.714
1.481	3.608	1.482	3.610	1.491	3.630	1.495	3.640
1.481	3.534	1.482	3.536	1.491	3.556	1.494	3.563
1.481	3.459	1.483	3.463	1.490	3.480	1.493	3.488

1.482	3.387	1.483	3.388	1.491	3.407	1.493	3.413
1.481	3.312	1.482	3.315	1.490	3.331	1.493	3.338
1.481	3.238	1.482	3.241	1.490	3.258	1.493	3.263
1.481	3.164	1.482	3.166	1.489	3.180	1.493	3.190
1.481	3.090	1.482	3.091	1.489	3.107	1.492	3.113
1.481	3.016	1.482	3.017	1.488	3.030	1.492	3.038
1.481	2.940	1.481	2.942	1.488	2.957	1.492	2.963
1.480	2.866	1.481	2.867	1.488	2.881	1.492	2.890
1.480	2.792	1.481	2.793	1.488	2.807	1.492	2.814
1.479	2.717	1.480	2.719	1.488	2.732	1.491	2.739
1.479	2.642	1.479	2.644	1.488	2.658	1.490	2.663
1.479	2.568	1.480	2.570	1.487	2.582	1.490	2.588
1.478	2.494	1.479	2.494	1.486	2.508	1.490	2.514
1.477	2.419	1.478	2.419	1.486	2.432	1.489	2.438
1.477	2.345	1.478	2.346	1.485	2.357	1.489	2.363
1.477	2.270	1.477	2.271	1.484	2.282	1.488	2.288
1.476	2.196	1.477	2.197	1.483	2.206	1.487	2.212
1.475	2.121	1.476	2.122	1.483	2.132	1.486	2.137
1.474	2.046	1.476	2.047	1.482	2.057	1.486	2.062
1.473	1.971	1.474	1.972	1.481	1.981	1.485	1.986
1.473	1.897	1.474	1.898	1.480	1.907	1.484	1.911
1.472	1.822	1.473	1.823	1.480	1.832	1.482	1.835
1.471	1.747	1.472	1.748	1.479	1.756	1.482	1.760
1.469	1.672	1.470	1.673	1.478	1.682	1.481	1.686
0.000	0.102	0.000	0.103	0.000	0.104	0.770	0.122
0.000	0.103	0.000	0.105	1.010	0.121	0.000	0.108
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

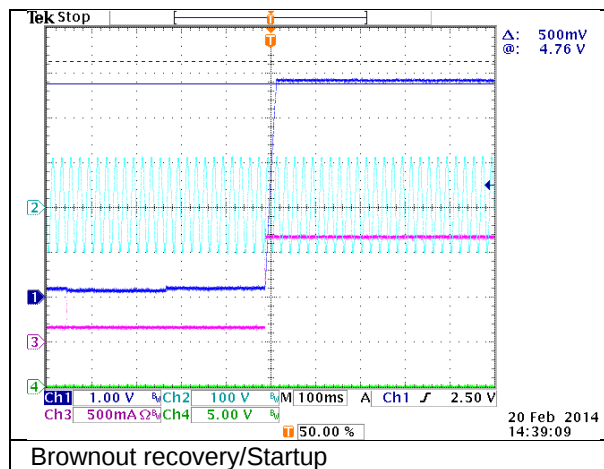


Brownout and Recovery

Vin_start (V)	F (Hz)	Vin_step (V)	Delay (ms)	Load (A)	V_UVLO (V)
90	50	1	1000	1.000	69

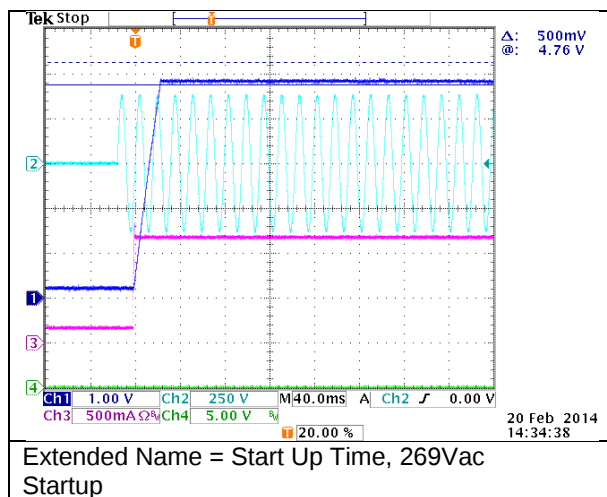
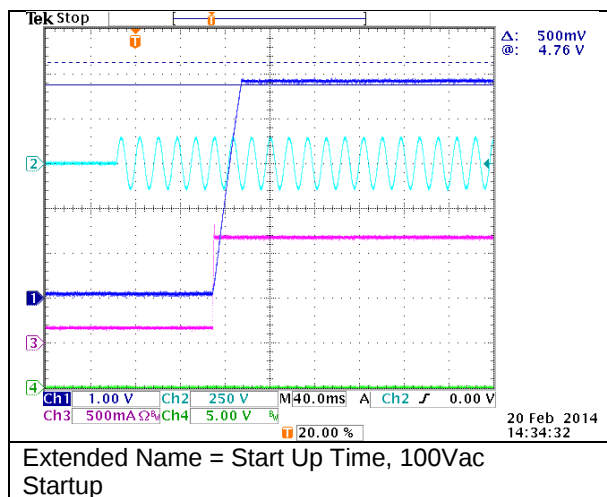


Vin_start (V)	F (Hz)	Vin_step (V)	Delay (ms)	Load (A)	Vout_trigger (V)	Vin_startup (V)
20.0	50	1.0	1000.0	1.000	3	75



Startup

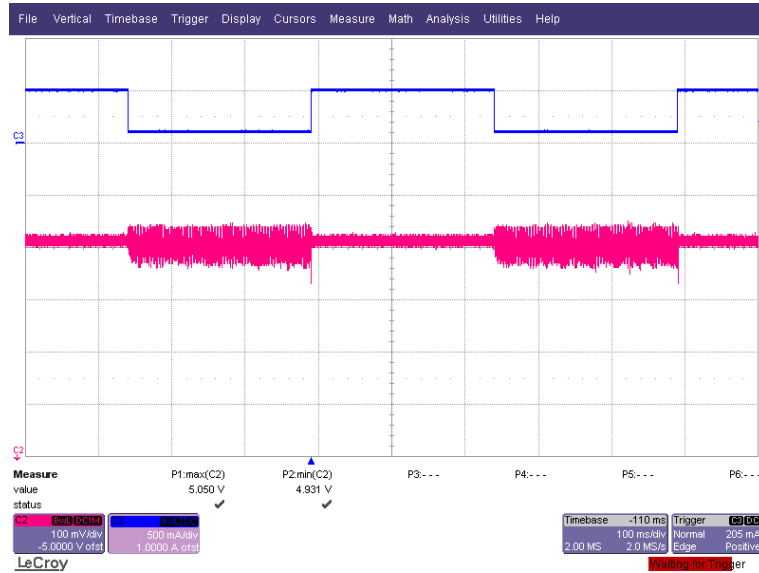
Vin (V)	F (Hz)	Load (A)	Startup time (ms); measured
100	60	1.000	110
269	63	1.000	37



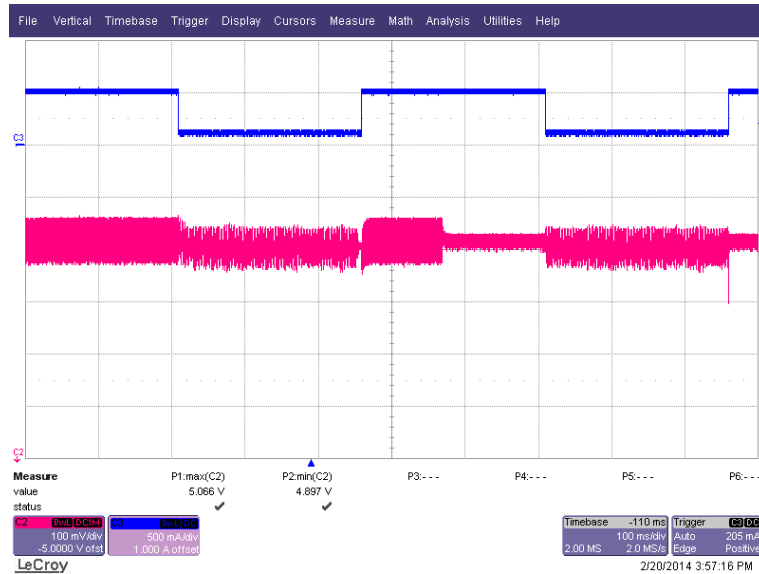
Step Load

Vin (V)	Load_1 (A)	Time_1 (ms)	Load_2 (A)	Time_2 (ms)	Slew rate (A/us)	Vpk min meas'd (V)	Vpk max meas'd (V)
85	0.100	250	0.5	250	0.250	4.931	5.050
265	0.100	250	0.5	250	0.250	4.897	5.066

85Vac

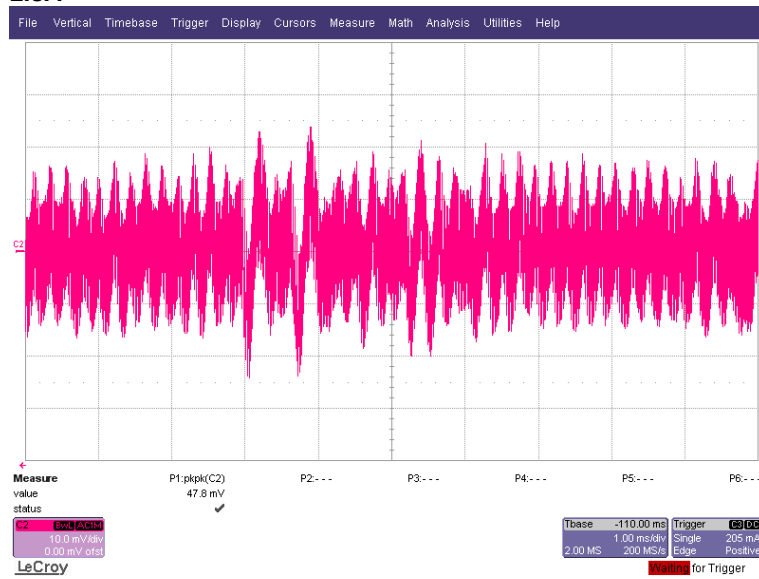


265Vac

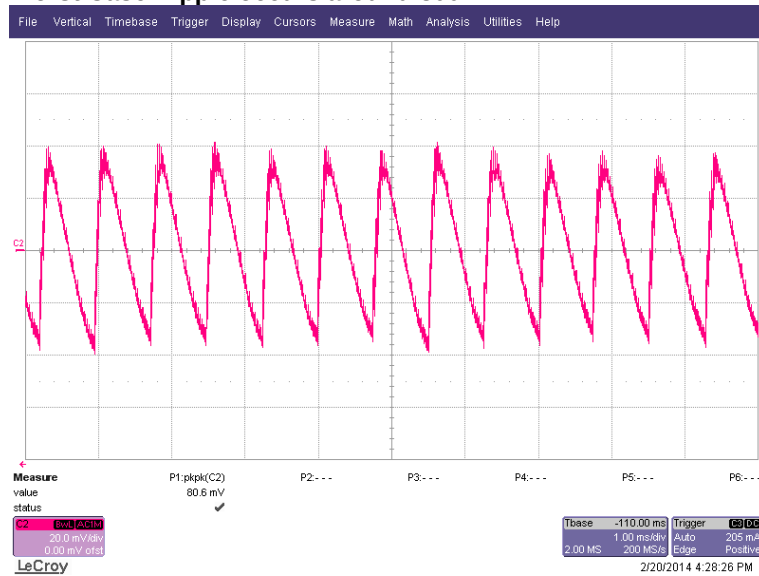


Output Ripple at 115Vac

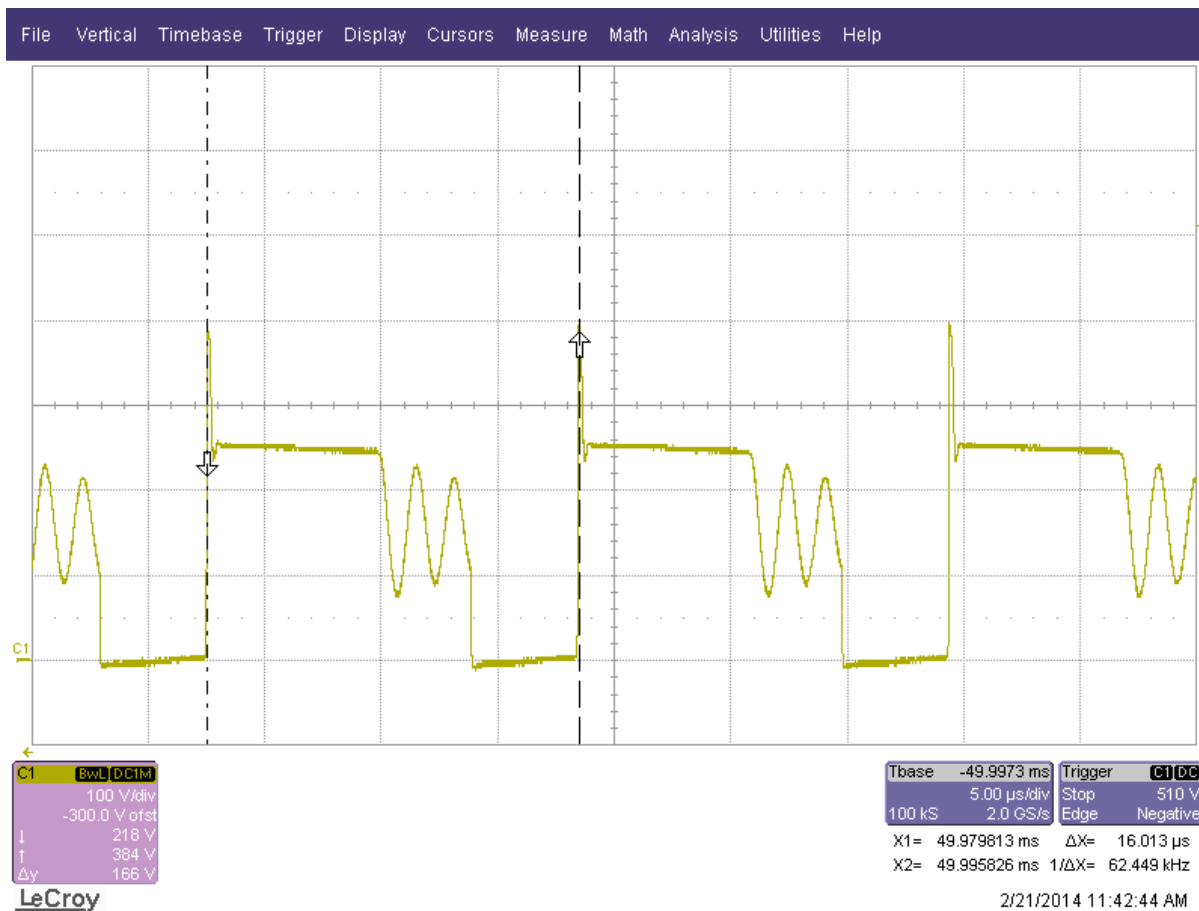
1.5A



Worst Case Ripple occurs around 300mA

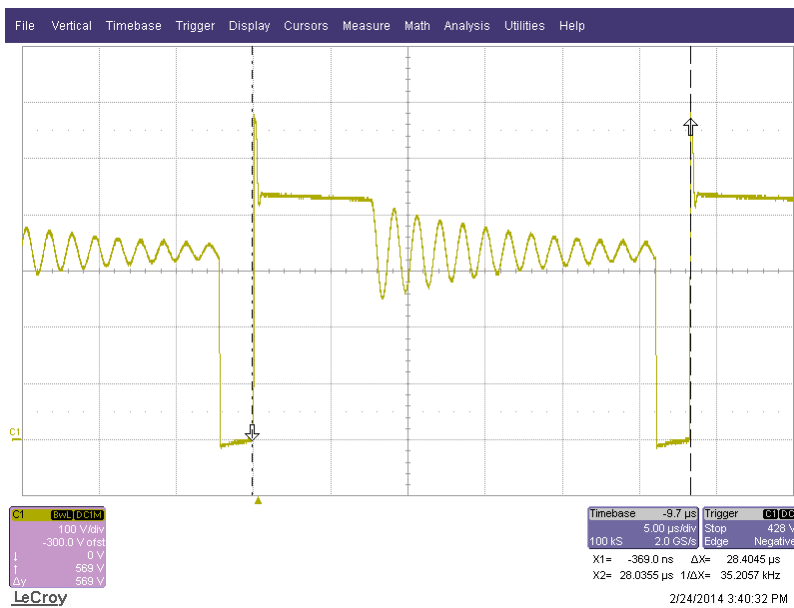


Drain Voltage at 1.5A 115Vac

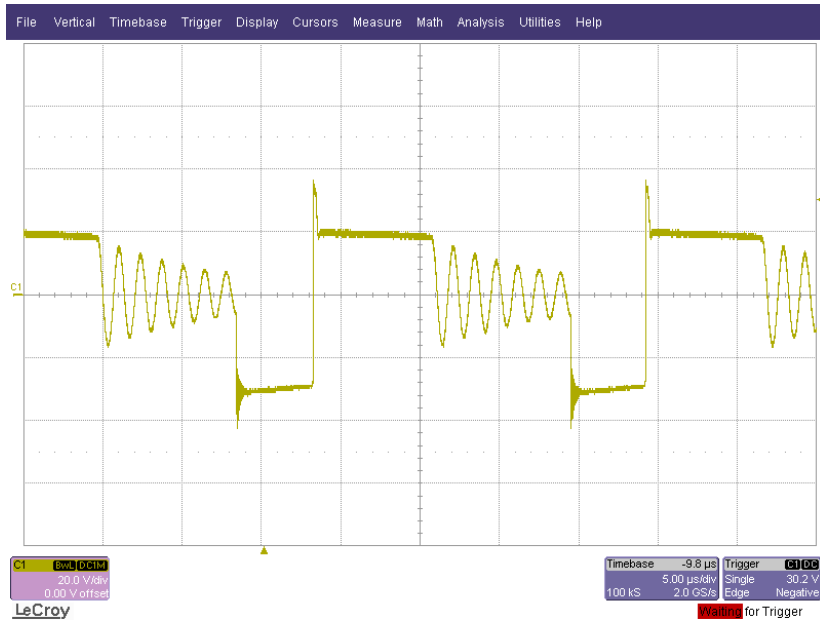


+

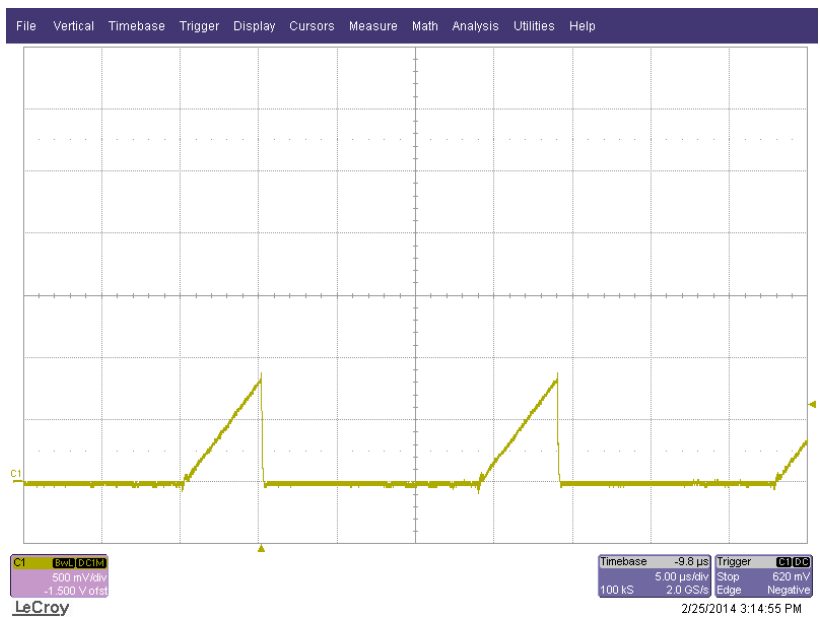
Drain Voltage at 1.5A 230Vac



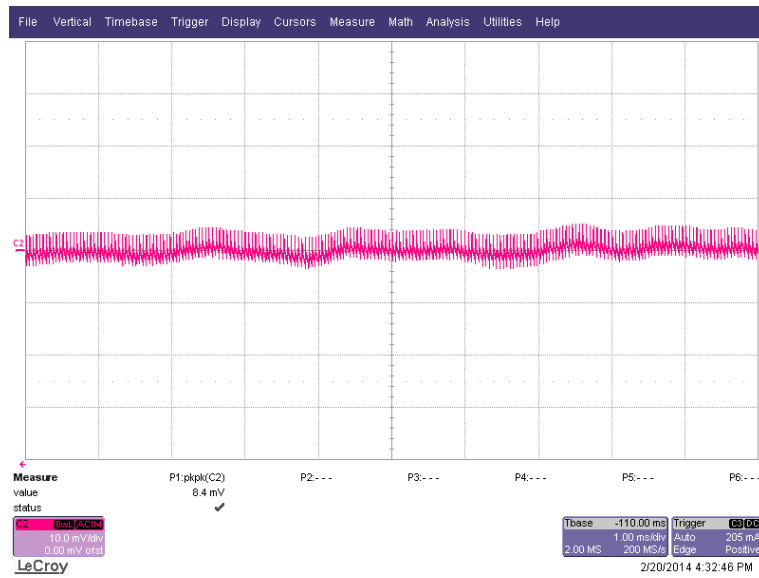
Voltage on auxiliary winding at 1.5A 115Vac



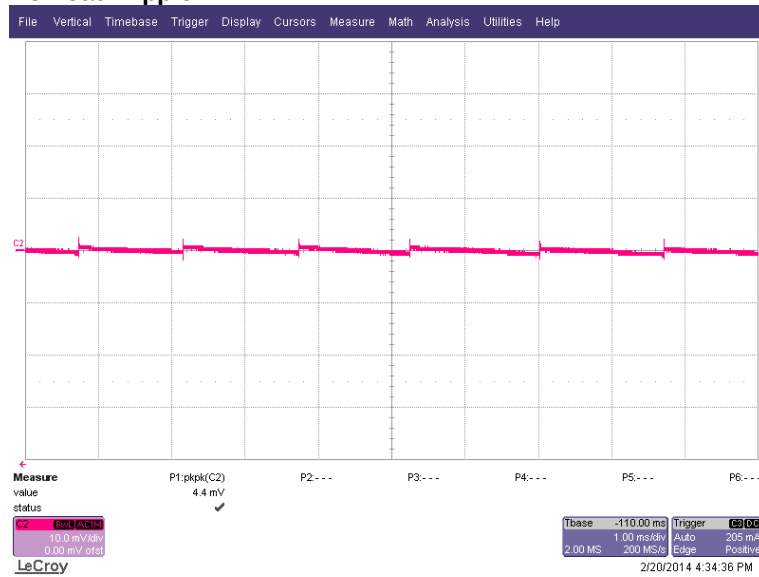
Voltage RIPK at 1.5A 115Vac



80mA Ripple



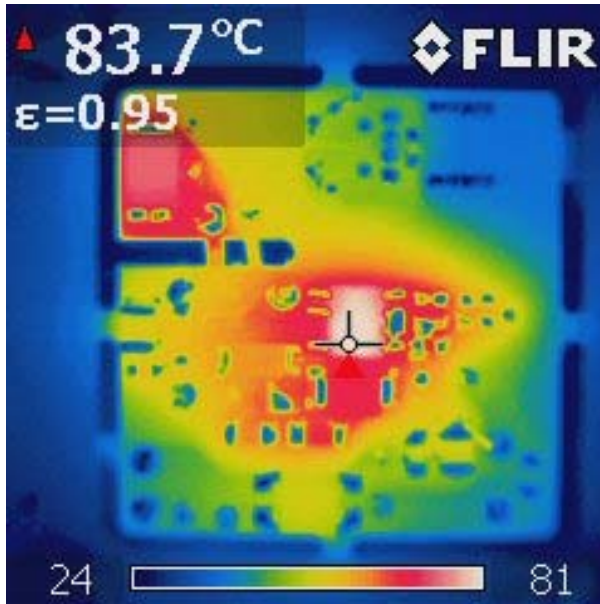
No Load Ripple



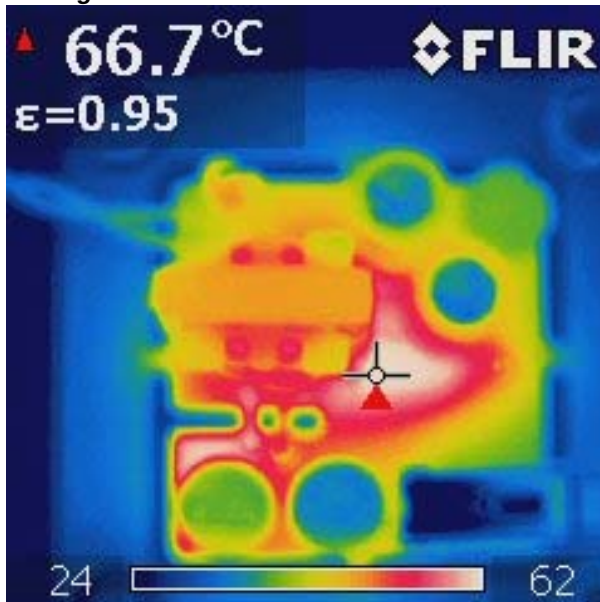
Thermal Images

90Vac 1.5A Load

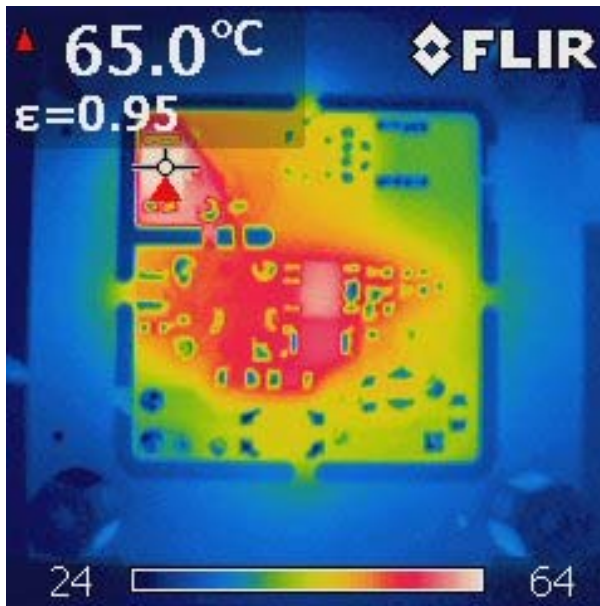
Surface mount side



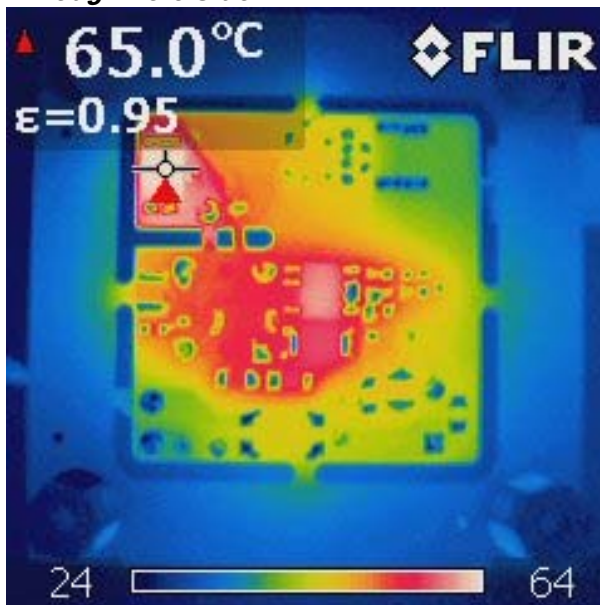
Through hole side



240Vac 1.5A Load
Surface mount side

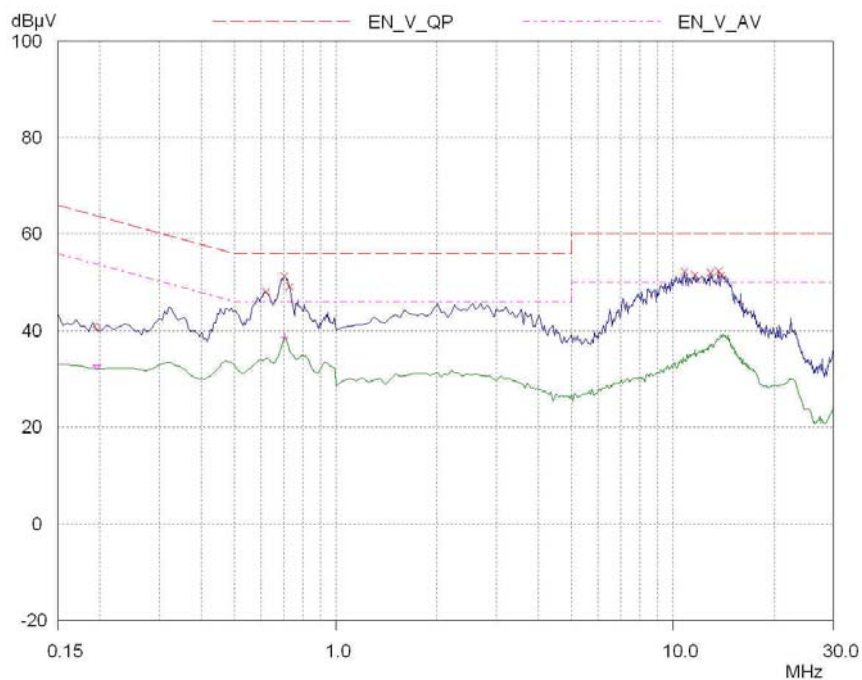


Through hole side

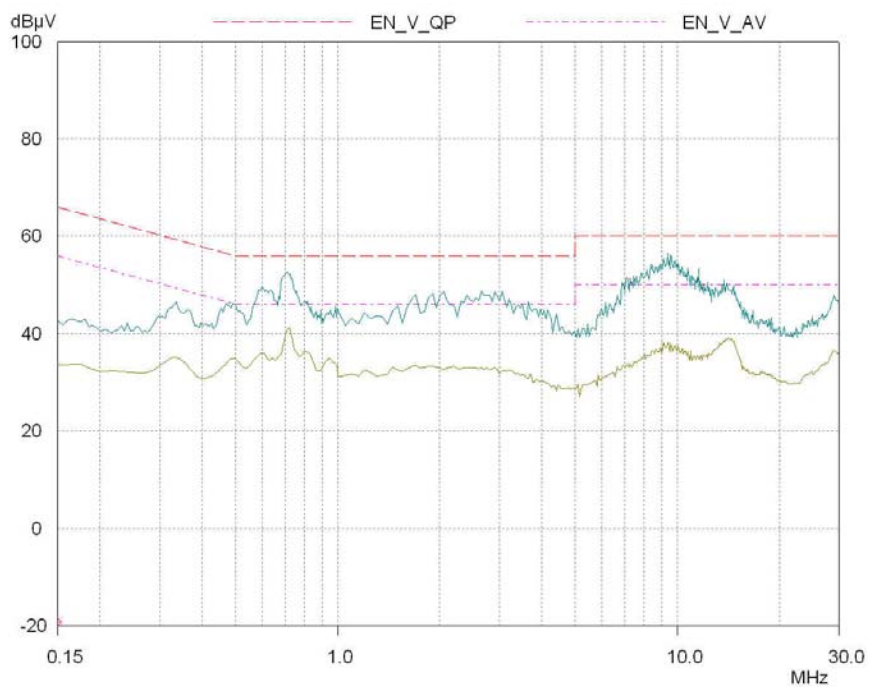


EMI

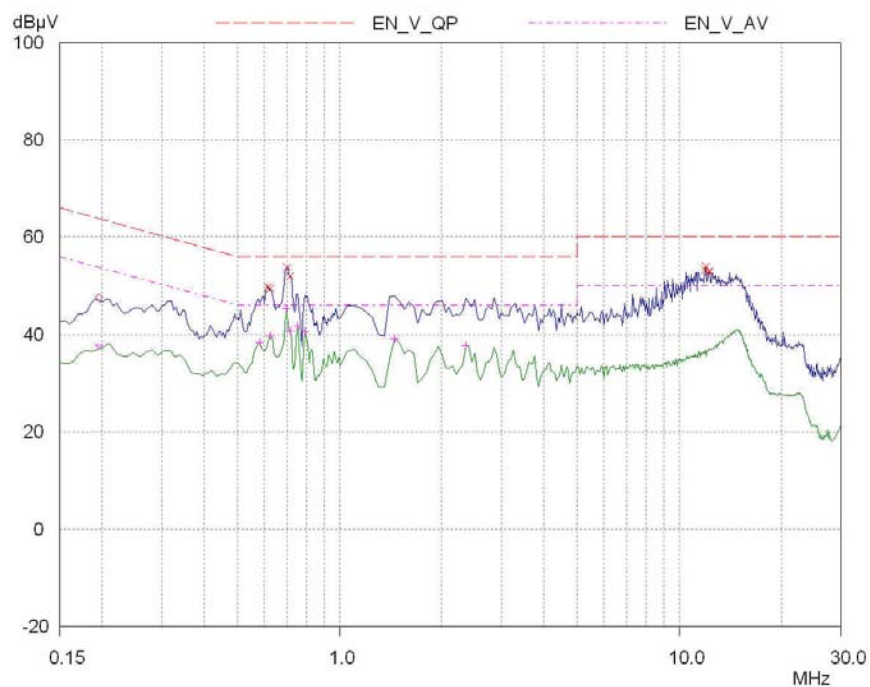
115Vac Ungrounded



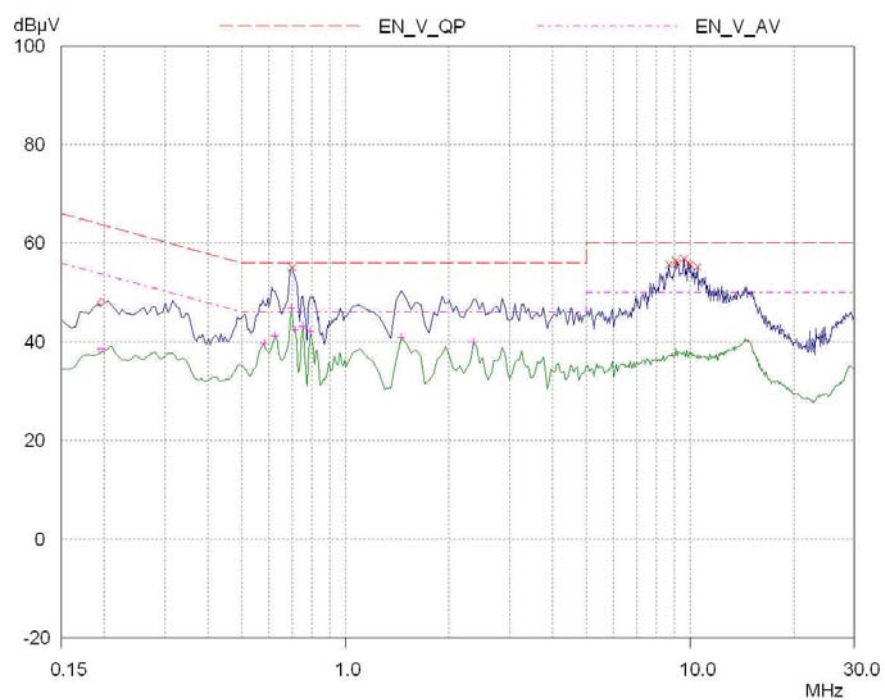
115Vac grounded



230Vac Ungrounded



230Vac grounded



IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale (<https://www.ti.com/legal/termsofsale.html>) or other applicable terms available either on [ti.com](https://www.ti.com) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2021, Texas Instruments Incorporated