

## Anex

Deepcool DQ850-M-V2L

Lab ID#: DC85001659  
 Receipt Date: May 21, 2020  
 Test Date: May 27, 2020

Report: 20PS1659A

Report Date: Jun 1, 2020

### DUT INFORMATION

Brand	Deepcool
Manufacturer (OEM)	Channel Well Technology
Series	DQ-M V2L
Model Number	
Serial Number	DQ850M-V2L-2002000048
DUT Notes	

### DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12
Rated Frequency (Hz)	47-63
Rated Power (W)	850
Type	ATX12V
Cooling	120mm Sleeve Bearing Fan (HA1225H12S-Z)
Semi-Passive Operation	x
Cable Design	Fully Modular

### TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

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### RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

### 115V

Average Efficiency	89.034%
Efficiency With 10W (≤500W) or 2% (>500W)	66.003
Average Efficiency 5VSB	79.570%
Standby Power Consumption (W)	0.0436150
Average PF	0.979
Avg Noise Output	35.50 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

### 230V

Average Efficiency	91.130%
Average Efficiency 5VSB	78.816%
Standby Power Consumption (W)	0.0827356
Average PF	0.931
Avg Noise Output	35.19 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	Standard+

### POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.5	2.5	0.3
	Watts	110		846	12.5	3.6
Total Max. Power (W)		850				

### HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	21
AC Loss to PWR_OK Hold Up Time (ms)	19
PWR_OK Inactive to DC Loss Delay (ms)	2

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### CABLES AND CONNECTORS

#### Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (550mm)	1	1	18AWG	No
4+4 pin EPS12V (700mm)	2	2	18AWG	No
6+2 pin PCIe (500mm+100mm)	2	4	18AWG	No
SATA (550mm+150mm+150mm+150mm)	1	4	20AWG	No
4-pin Molex (450mm+150mm) / SATA (+150mm+150mm)	3	6 / 6	20AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

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<b>General Data</b>	-
Manufacturer (OEM)	CWT
PCB Type	Double Sided
<b>Primary Side</b>	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x CAP200DG (Discharge IC)
Inrush Protection	NTC Thermistor (SCK055) & Relay
Bridge Rectifier(s)	1x GBU1506 (600V, 15A @ 100°C)
APFC MOSFETs	2x Great Power GP28S50 (500V, 28A, Rds(on): 0.125Ohm)
APFC Boost Diode	1x ON Semiconductor FFSP0665A (650V, 6A @ 153°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (400V, 680uF, 2,000h @ 105°C, KMR)
Main Switchers	4x Silan Microelectronics SVF20N50F (500V, 12.6A @ 100°C, Rds(on): 0.27Ohm)
APFC Controller	Champion CM6500UNX & Champion CM03X
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
<b>Secondary Side</b>	-
+12V MOSFETs	6 x IPS 014N04SA
5V & 3.3V	DC-DC Converters: 4x Sync Power SPN3006 (30V, 57A @ 100°C, Rds(on): 5.5mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 3x Nippon Chemi-Con (1-5,000h @ 105°C, 16V, KZE), 9x Nippon Chemi-Con (4-10,000h @ 105°C, 5V - 16V, KY), 1x Nippon Chemi-Con (4-10,000h @ 105°C, 25V, KYA), 1x Nippon Chemi-Con (1-2,000h @ 105°C, 16V, KMG), 1x Nichicon (1,000h @ 105°C, 16V, VZ) Polymer: 23x FCAP
Supervisor IC	Sitronix ST9S429-PG14 (OVP, UVP, OCP, SCP, PG)
Fan Model	Hong Hua HA1225H12S-Z (120mm, 12V, 0.58A, Rifle Bearing Fan)
<b>5VSB Circuit</b>	-
Standby PWM Controller	Power Integrations TNY287PG

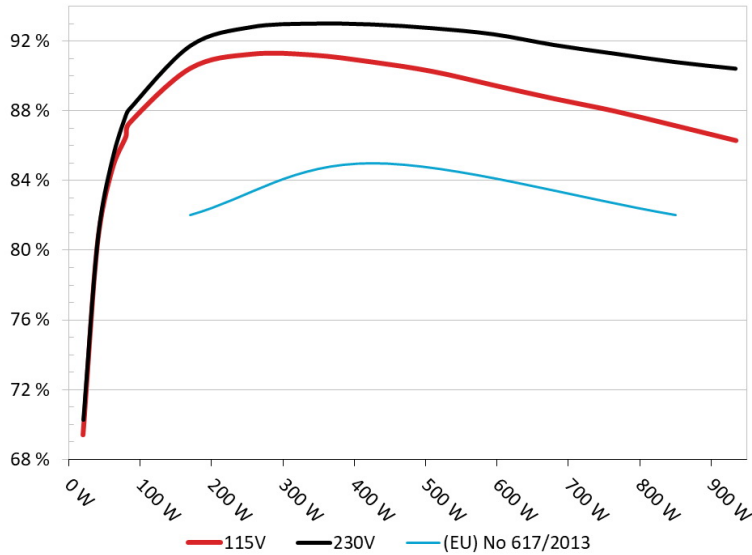
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### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Deepcool DQ850-M-V2L  
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

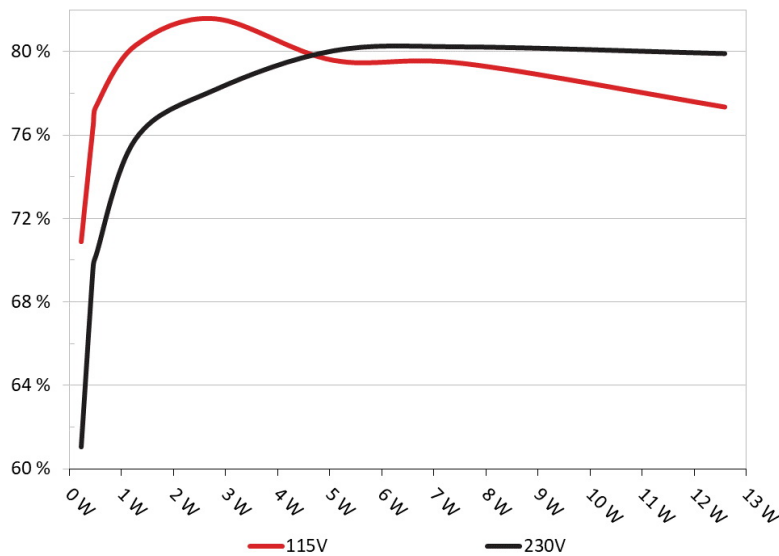


#### INFO

The PSU's efficiency under high ambient temperatures with 115V and 230V input. For this graph the results of the 10-110% load regulation table are used

### 5VSB EFFICIENCY

5VSB Efficiency: Deepcool DQ850-M-V2L  
Ambient: 34°C - 36°C (93.2°F - 96.8°F)



#### INFO

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

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### 5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229	70.898%	0.032
	5.094V	0.323		115.17V
2	0.090A	0.458	76.461%	0.058
	5.093V	0.599		115.17V
3	0.550A	2.795	81.582%	0.255
	5.083V	3.426		115.17V
4	1.000A	5.073	79.589%	0.353
	5.073V	6.374		115.17V
5	1.500A	7.592	79.431%	0.406
	5.061V	9.558		115.17V
6	2.499A	12.595	77.351%	0.461
	5.039V	16.283		115.17V

### 5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229	61.067%	0.011
	5.094V	0.375		230.33V
2	0.090A	0.458	69.711%	0.019
	5.093V	0.657		230.33V
3	0.550A	2.795	78.160%	0.099
	5.082V	3.576		230.32V
4	1.000A	5.073	80.028%	0.163
	5.073V	6.339		230.33V
5	1.500A	7.591	80.218%	0.220
	5.061V	9.463		230.33V
6	2.499A	12.594	79.896%	0.298
	5.039V	15.763		230.33V

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Deepcool DQ850-M-V2L

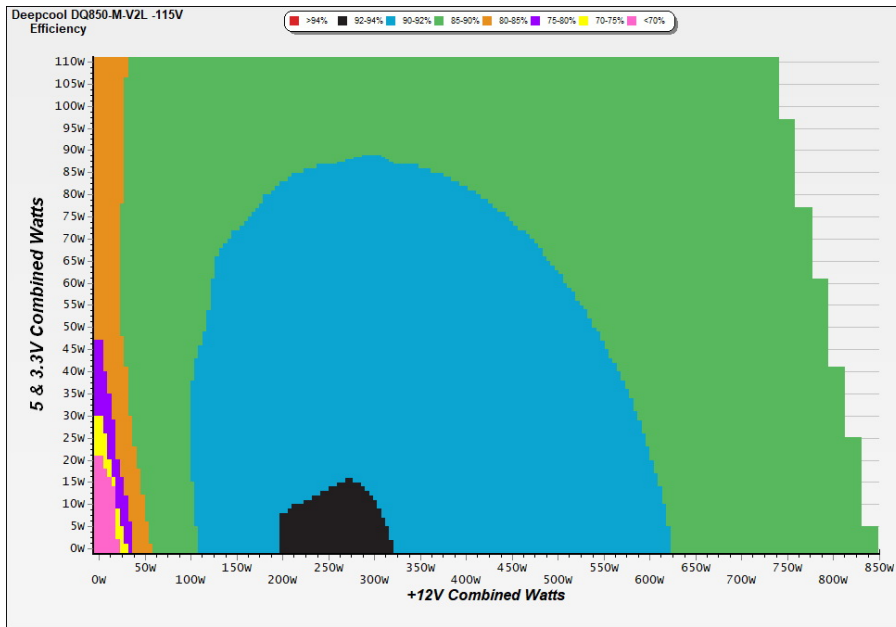
# 115V

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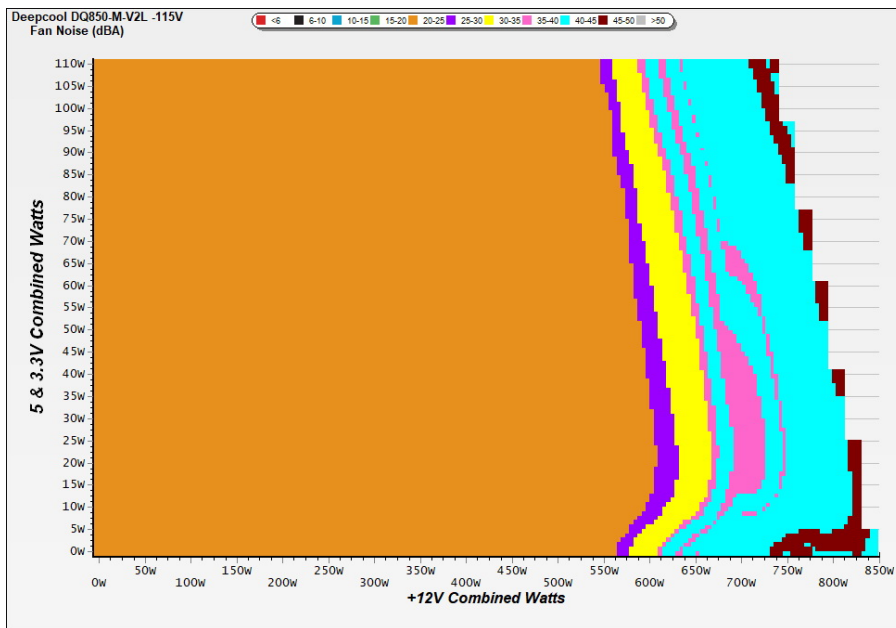
#### EFFICIENCY GRAPH 115V



#### INFO

This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations

#### NOISE GRAPH 115V



#### INFO

The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

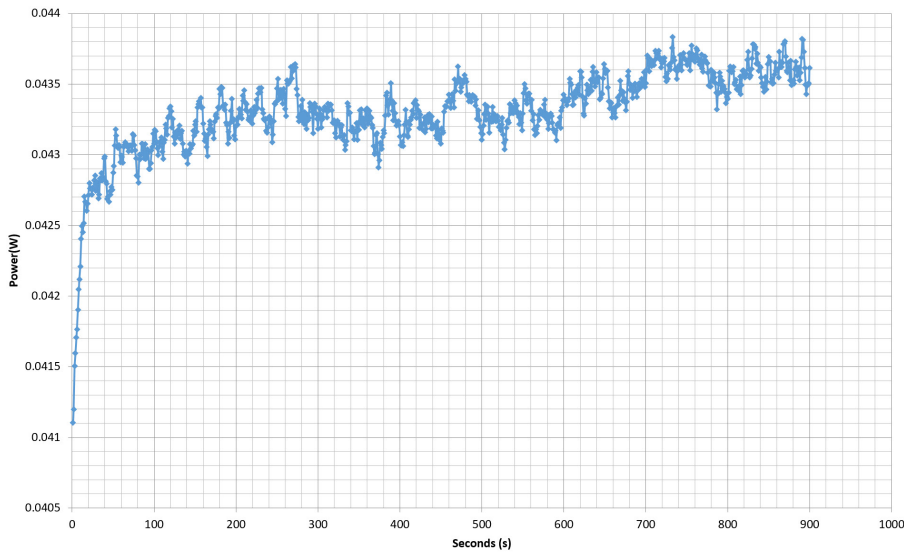
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**VAMPIRE POWER -115V**

Power - DQ850M-V2L-2002000048 - 22/05/2020 - 11:33



**INFO**

*This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing*

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### 10-110% LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	5.241A	1.994A	2.019A	0.988A	84.958	87.286%	944	23.1	40.42°C	0.955
	12.088V	5.017V	3.269V	5.063V	97.333				43.61°C	115.16V
2	11.502A	2.992A	3.031A	1.188A	170.022	90.424%	947	23.7	41.12°C	0.982
	12.095V	5.014V	3.267V	5.052V	188.027				44.59°C	115.16V
3	18.106A	3.491A	3.538A	1.389A	255.026	91.236%	950	23.7	41.29°C	0.985
	12.094V	5.013V	3.265V	5.040V	279.522				45.29°C	115.16V
4	24.713A	3.993A	4.044A	1.591A	340.033	91.196%	952	23.5	41.42°C	0.981
	12.092V	5.011V	3.263V	5.028V	372.860				46.14°C	115.16V
5	30.963A	4.990A	5.061A	1.795A	424.910	90.790%	958	23.0	42.68°C	0.980
	12.092V	5.010V	3.261V	5.015V	468.012				47.85°C	115.16V
6	37.181A	5.991A	6.075A	1.999A	509.443	90.246%	963	23.2	42.77°C	0.982
	12.093V	5.009V	3.260V	5.002V	564.505				48.48°C	115.16V
7	43.467A	6.991A	7.090A	2.205A	594.758	89.460%	1167	29.0	43.70°C	0.984
	12.093V	5.008V	3.258V	4.989V	664.828				50.71°C	115.15V
8	49.760A	7.993A	8.107A	2.410A	680.055	88.683%	1717	39.2	43.87°C	0.985
	12.091V	5.006V	3.256V	4.978V	766.836				51.38°C	115.15V
9	56.451A	8.495A	8.605A	2.413A	764.923	87.968%	2348	51.2	44.88°C	0.987
	12.089V	5.003V	3.253V	4.971V	869.546				52.88°C	115.14V
10	63.068A	8.998A	9.131A	2.519A	849.626	87.136%	2347	51.2	45.18°C	0.988
	12.089V	5.002V	3.252V	4.960V	975.058				53.77°C	115.13V
11	70.085A	8.998A	9.133A	2.523A	934.365	86.284%	2349	51.3	45.91°C	0.988
	12.088V	5.000V	3.251V	4.953V	1082.893				54.80°C	115.11V
CL1	0.100A	12.999A	12.997A	0.000A	108.862	83.409%	972	24.2	42.34°C	0.970
	12.106V	5.018V	3.264V	5.072V	130.516				47.39°C	115.16V
CL2	70.499A	1.001A	1.0001A	1.000A	865.531	87.728%	2344	51.3	45.05°C	0.988
	12.089V	5.005V	3.258V	5.000V	986.602				53.90°C	115.12V

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### 20-80W LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.227A	0.498A	0.506A	0.197A	19.984	69.403%	934	21.8	0.756
	12.084V	5.019V	3.272V	5.088V	28.794				115.15V
2	2.455A	0.997A	1.009A	0.394A	39.974	80.311%	938	22.2	0.887
	12.085V	5.018V	3.271V	5.082V	49.774				115.14V
3	3.687A	1.495A	1.514A	0.591A	60.005	84.531%	938	22.2	0.930
	12.084V	5.017V	3.270V	5.075V	70.986				115.15V
4	4.919A	1.995A	2.022A	0.789A	79.951	86.506%	945	23.1	0.955
	12.067V	5.008V	3.265V	5.070V	92.422				115.12V

### RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	25.60mV	7.70mV	6.30mV	8.20mV	Pass
20% Load	16.30mV	8.90mV	6.40mV	11.90mV	Pass
30% Load	17.90mV	15.50mV	6.70mV	15.90mV	Pass
40% Load	18.60mV	20.00mV	7.50mV	18.40mV	Pass
50% Load	14.00mV	15.00mV	7.60mV	24.00mV	Pass
60% Load	11.30mV	15.10mV	8.00mV	22.60mV	Pass
70% Load	10.20mV	17.80mV	8.90mV	15.90mV	Pass
80% Load	10.60mV	18.20mV	11.30mV	17.40mV	Pass
90% Load	11.50mV	18.00mV	11.60mV	19.00mV	Pass
100% Load	18.00mV	19.40mV	13.10mV	19.30mV	Pass
110% Load	19.60mV	19.30mV	13.40mV	19.60mV	Pass
Crossload1	23.40mV	15.00mV	12.40mV	5.50mV	Pass
Crossload2	17.20mV	16.90mV	9.60mV	22.40mV	Pass

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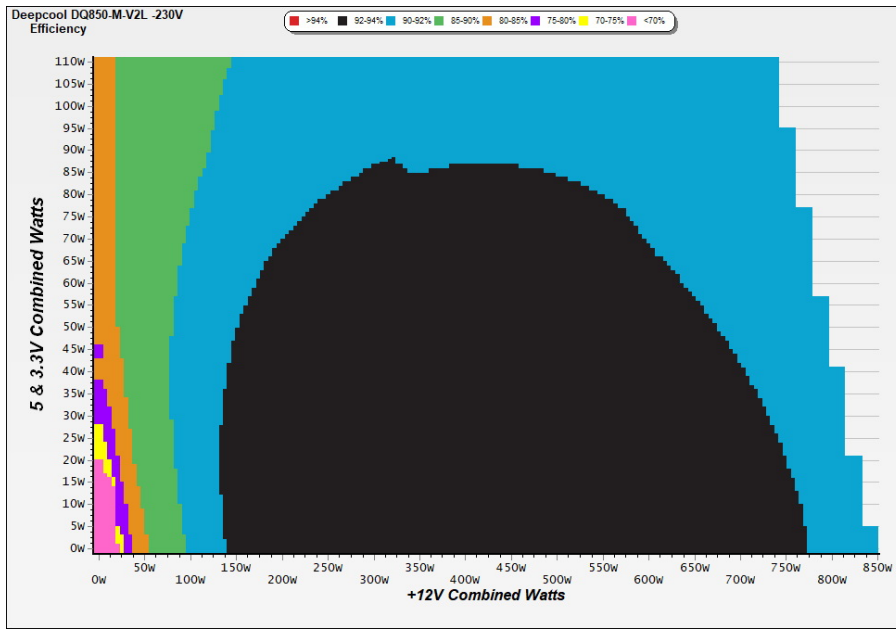
# 230V

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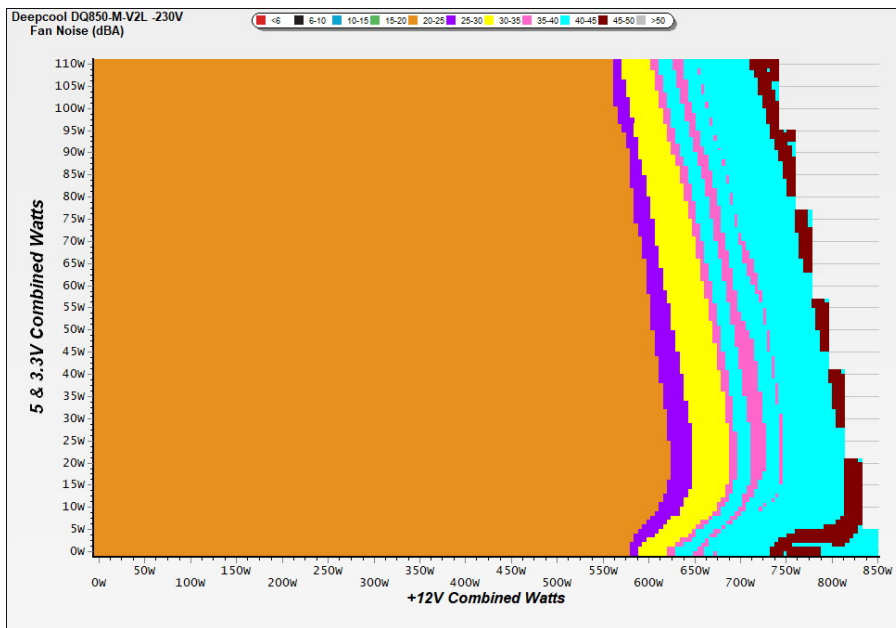
#### EFFICIENCY GRAPH 230V



#### INFO

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#### NOISE GRAPH 230V



#### INFO

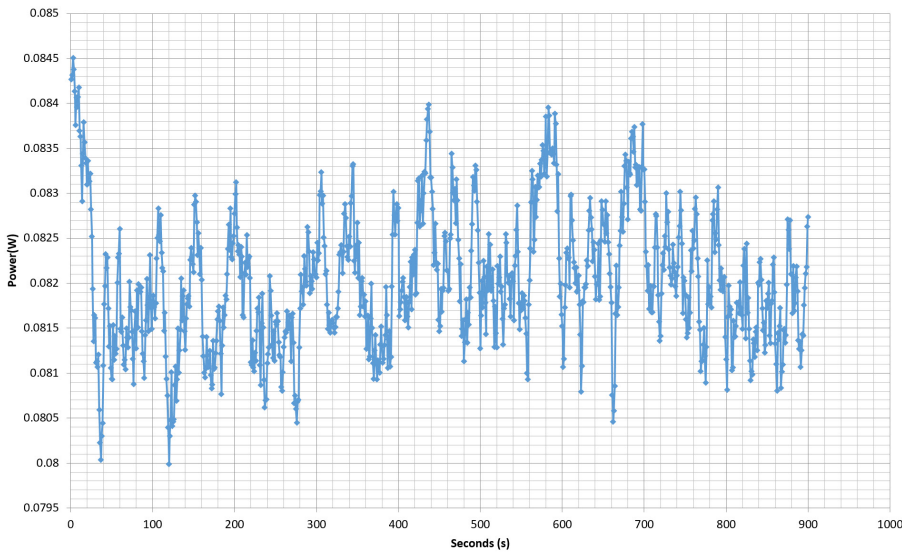
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### 10-110% LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	5.241A	1.993A	2.018A	0.988A	84.955	88.108%	948	23.9	40.30°C	0.784
	12.089V	5.016V	3.269V	5.063V	96.421				43.44°C	230.33V
2	11.502A	2.992A	3.032A	1.188A	170.014	91.719%	952	23.5	40.31°C	0.902
	12.094V	5.014V	3.267V	5.052V	185.363				43.80°C	230.34V
3	18.107A	3.491A	3.538A	1.389A	255.017	92.786%	955	23.3	41.70°C	0.936
	12.093V	5.012V	3.265V	5.040V	274.844				45.76°C	230.33V
4	24.712A	3.991A	4.047A	1.591A	340.021	92.985%	957	23.1	41.95°C	0.948
	12.092V	5.011V	3.263V	5.028V	365.671				46.63°C	230.33V
5	30.957A	4.992A	5.059A	1.795A	424.810	92.941%	962	23.2	42.22°C	0.955
	12.091V	5.010V	3.261V	5.015V	457.075				47.25°C	230.33V
6	37.179A	5.991A	6.077A	1.999A	509.352	92.726%	964	23.6	42.89°C	0.959
	12.091V	5.009V	3.260V	5.003V	549.310				48.32°C	230.33V
7	43.466A	6.991A	7.090A	2.204A	594.655	92.380%	981	23.9	43.71°C	0.963
	12.091V	5.008V	3.258V	4.990V	643.705				49.50°C	230.33V
8	49.760A	7.994A	8.106A	2.411A	680.000	91.763%	1763	41.3	44.05°C	0.965
	12.090V	5.006V	3.255V	4.977V	741.043				50.29°C	230.33V
9	56.446A	8.492A	8.605A	2.415A	764.910	91.265%	2353	51.0	44.31°C	0.967
	12.090V	5.003V	3.253V	4.969V	838.122				51.42°C	230.34V
10	63.069A	8.996A	9.131A	2.521A	849.632	90.784%	2355	50.9	45.71°C	0.969
	12.089V	5.002V	3.252V	4.958V	935.883				53.52°C	230.34V
11	70.086A	9.000A	9.135A	2.525A	934.389	90.407%	2357	50.9	46.59°C	0.970
	12.088V	5.000V	3.250V	4.951V	1033.539				55.40°C	230.34V
CL1	0.100A	12.999A	12.997A	0.000A	108.861	84.219%	975	24.0	41.71°C	0.847
	12.104V	5.018V	3.264V	5.071V	129.260				47.44°C	230.34V
CL2	70.501A	1.000A	1.000A	1.000A	865.551	91.403%	2358	50.9	45.64°C	0.969
	12.089V	5.007V	3.258V	5.000V	946.960				53.36°C	230.34V

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### 20-80W LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.227A	0.498A	0.505A	0.197A	19.981	70.274%	941	22.8	0.414
	12.083V	5.019V	3.272V	5.088V	28.433				230.32V
2	2.456A	0.998A	1.007A	0.394A	39.971	80.549%	937	22.0	0.577
	12.080V	5.017V	3.271V	5.081V	49.623				230.33V
3	3.688A	1.495A	1.514A	0.591A	60.003	85.109%	941	22.8	0.690
	12.081V	5.016V	3.270V	5.075V	70.501				230.33V
4	4.911A	1.993A	2.020A	0.789A	79.954	87.790%	946	23.7	0.770
	12.086V	5.016V	3.269V	5.069V	91.074				230.33V

### RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	24.30mV	8.30mV	7.20mV	7.90mV	Pass
20% Load	15.90mV	9.70mV	7.00mV	11.60mV	Pass
30% Load	18.10mV	15.90mV	7.30mV	16.50mV	Pass
40% Load	18.00mV	21.40mV	7.70mV	11.60mV	Pass
50% Load	14.20mV	15.10mV	8.20mV	24.00mV	Pass
60% Load	11.00mV	16.40mV	8.60mV	22.30mV	Pass
70% Load	10.10mV	19.60mV	9.50mV	16.70mV	Pass
80% Load	10.80mV	18.70mV	12.00mV	17.20mV	Pass
90% Load	12.30mV	18.00mV	12.40mV	18.70mV	Pass
100% Load	17.80mV	19.10mV	13.30mV	20.80mV	Pass
110% Load	19.50mV	20.20mV	13.40mV	20.30mV	Pass
Crossload1	22.30mV	16.70mV	14.80mV	5.40mV	Pass
Crossload2	17.10mV	16.90mV	10.10mV	22.60mV	Pass

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case



## Anex

## Deepcool DQ850-M-V2L

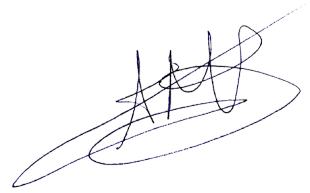


Top side



Power specifications label

### CERTIFICATIONS 115V

**Aristeidis Bitziopoulos**  
Lab Director

### CERTIFICATIONS 230V



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