

Anex

Corsair HX850

Lab ID#: 117

Receipt Date: -

Test Date: -

Report:

Report Date: May 30, 2018

DUT INFORMATION

Brand	Corsair
Manufacturer (OEM)	Channel Well Technology
Series	HX
Model Number	HX850
Serial Number	17027157000027050002
DUT Notes	CP-9020138

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12-6
Rated Frequency (Hz)	47-63
Rated Power (W)	850
Type	ATX12V
Cooling	135mm Fluid Dynamic Bearing Fan (NR135P)
Semi-Passive Operation	✓
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	70.8	3	0.8
	Watts	150		850	15	9.6
Total Max. Power (W)		850				

CABLES AND CONNECTORS

Modular Cables			
Description	Cable Count	Connector Count (Total)	Gauge
ATX connector 20+4 pin (600mm)	1	1	16-20AWG
4+4 pin EPS12V (650mm)	2	2	18AWG
6+2 pin PCIe (670mm+100mm)	3	6	16-18AWG
SATA (450mm+115mm+115mm+115mm)	2	8	18AWG
SATA (450mm+110mm+110mm+110mm)	2	8	18AWG
4 pin Molex (550mm+100mm+100mm)	2	6	18AWG
FDD Adapter (+100mm)	1	1	20AWG

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General Data	
Manufacturer (OEM)	CWT
Platform Model	-
Primary Side	
Transient Filter	6x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Diode
Bridge Rectifier(s)	2x VISHAY LVB2560 (600V, 25A @ 105°C)
APFC MOSFETS	2x Infineon IPZ60R125P6 (650V, 19A @ 100°C, 0.1130hm)
APFC Boost Diode	1x CREE C3D10060A (600V, 10A @ 153Å°C)
Hold-up Cap(s)	2x Chemi-Con (400V, 470uF, 2000h @ 105°C, KMW)
Main Switchers	2x Vishay SIHG33N60E (650V, 21A @ 100°C, 0.0990hm)
APFC Controller	Texas Instruments UCC28070 & CM03X
LLC Resonant Controller	Infineon ICE2HS01G
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	8x Infineon BSC014N04LS (40V, 100A @ 100°C, 1.4mOhm)
5V & 3.3V	DC-DC Converters: 6x Ubiq QM3004D (30V, 40A @ 100°C, 8.5mOhm) PWM Controller: 1x APW7159C
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (1-5,000 @ 105°C, KZE), Nippon Chemi-Con (4-10,000 @ 105°C, KY) Polymers: Nippon Chemi-Con, FPCAP
Supervisor IC	Weltrend WT7502 (OVP, UVP, PG, SCP), 2x Weltrend WT7518 (OCP, PG, SCP)
Fan Model	NR135P (135mm, 12V, 0.22A, Fluid Dynamic Bearing)
Fan Controller	Microchip PIC16F1503
5VSB Circuit	
Mosfet / Rectifier	1x M03N65D / 1x MBRU2045CT SBR (45V, 20A @ 125°C)
Standby PWM Controller	On-Bright OB5269CP

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	89.533
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	80.176
Standby Power Consumption (W) -115V	0.0438370
Standby Power Consumption (W) -230V	0.0765912
Average PF	0.995
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	20.25
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A

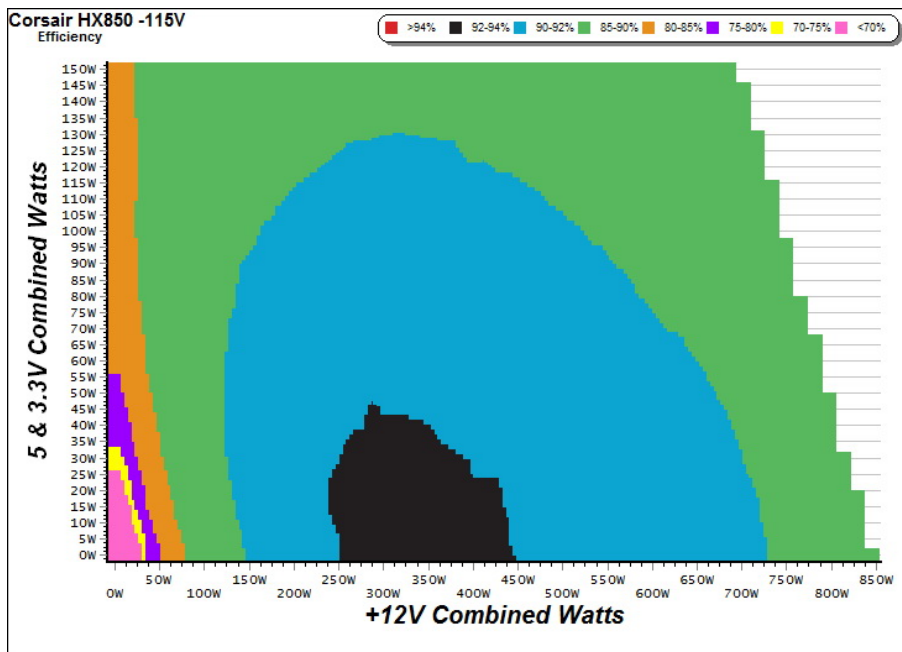
TEST EQUIPMENT		
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, Chroma 61604	
Power Analyzers	N4L PPA1530, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 2015 THD 6.5 Digit	
Sound Analyzer	Briel & Kjaer 2250-L G4	
Microphone	Briel & Kjaer Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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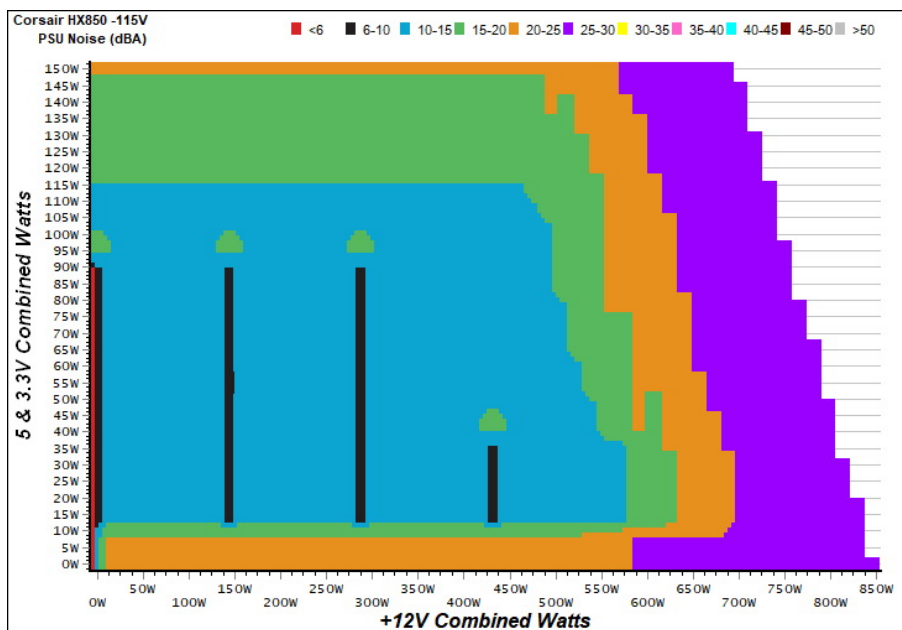
EFFICIENCY GRAPH



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



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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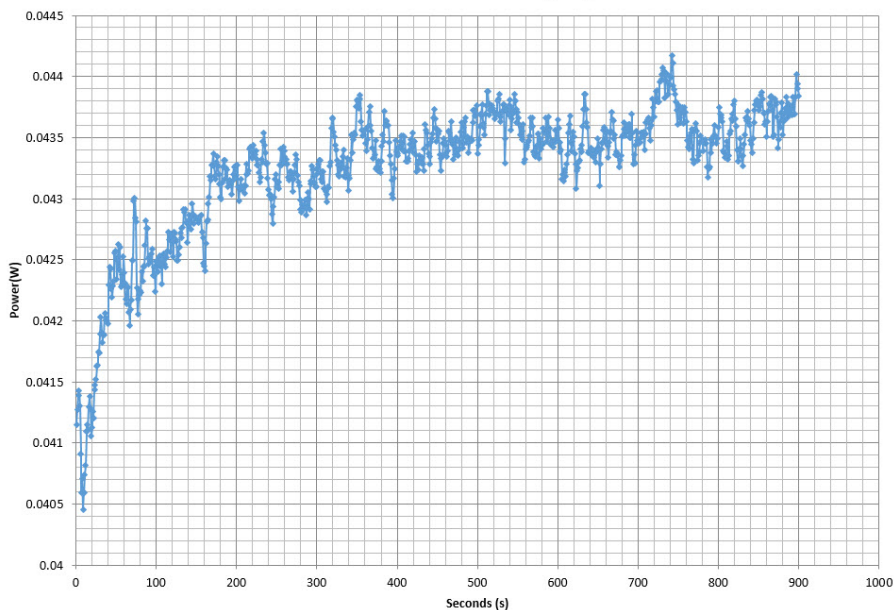
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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)				
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.212	70.199%	0.030
	5.070V	0.302		115.10V
2	0.088A	0.444	76.817%	0.057
	5.069V	0.578		115.12V
3	0.543A	2.746	80.884%	0.270
	5.061V	3.395		115.09V
4	1.002A	5.064	80.714%	0.388
	5.052V	6.274		115.09V
5	1.502A	7.571	80.500%	0.453
	5.041V	9.405		115.09V
6	3.002A	15.036	79.283%	0.523
	5.009V	18.965		115.11V

5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)				
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.212	61.988%	0.010
	5.069V	0.342		230.24V
2	0.088A	0.445	71.200%	0.019
	5.069V	0.625		230.26V
3	0.542A	2.745	79.473%	0.099
	5.060V	3.454		230.27V
4	1.003A	5.063	80.391%	0.169
	5.050V	6.298		230.26V
5	1.502A	7.570	80.523%	0.232
	5.040V	9.401		230.25V
6	3.001A	15.034	80.070%	0.351
	5.009V	18.776		230.25V

VAMPIRE POWER -115V

Power - 17027157000027050002 - 27/05/2017 - 10:09



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

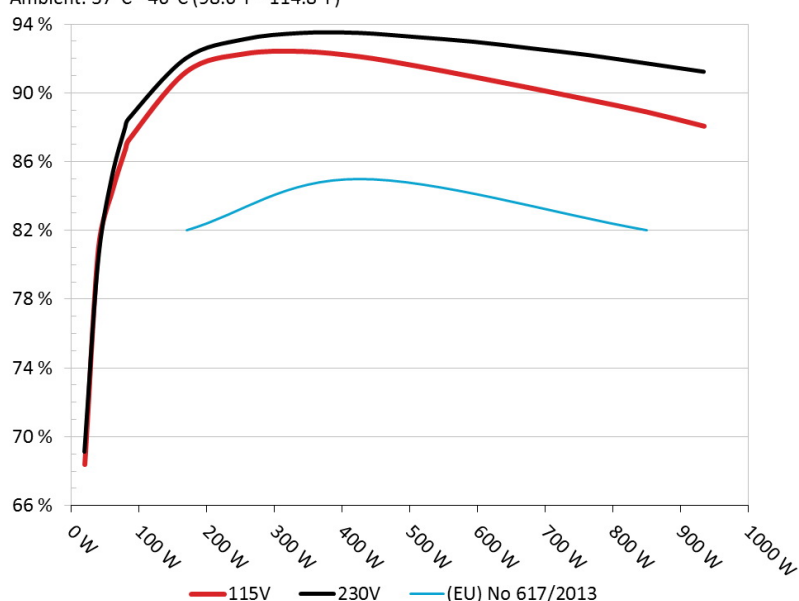
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Corsair HX850

Ambient: 37°C - 46°C (98.6°F - 114.8°F)



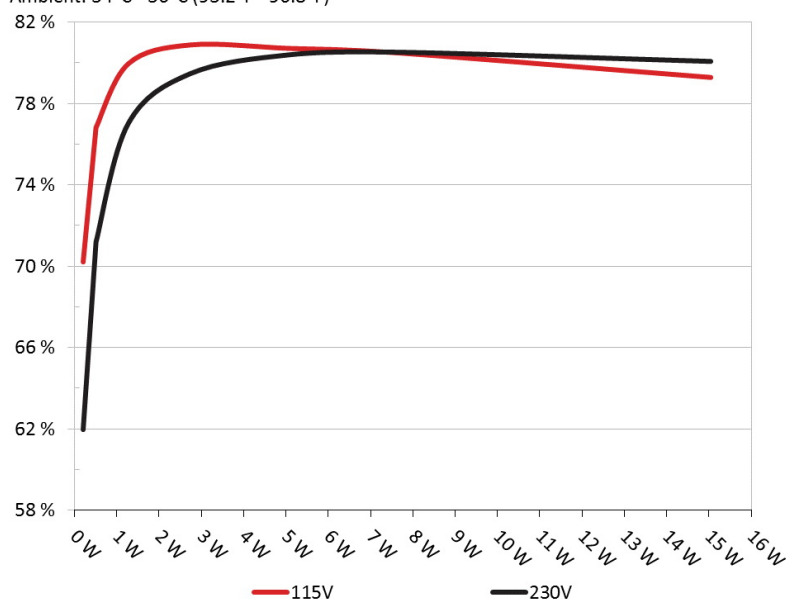
INFO

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: Corsair HX850

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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10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	5.245A	1.986A	1.984A	0.996A	84.840	87.275%	0	<6.0	46.57°C	0.973
	12.059V	5.036V	3.321V	5.020V	97.210				37.93°C	115.08V
2	11.525A	2.974A	2.979A	1.196A	169.675	91.245%	0	<6.0	46.86°C	0.992
	12.045V	5.034V	3.319V	5.015V	185.956				38.09°C	115.08V
3	18.189A	3.478A	3.494A	1.396A	254.907	92.286%	0	<6.0	47.48°C	0.995
	12.031V	5.030V	3.317V	5.008V	276.215				38.56°C	115.08V
4	24.849A	3.975A	3.979A	1.595A	339.765	92.430%	0	<6.0	48.15°C	0.997
	12.017V	5.028V	3.315V	5.002V	367.592				38.91°C	115.08V
5	31.179A	4.974A	4.976A	1.801A	424.690	92.130%	0	<6.0	48.96°C	0.998
	12.002V	5.024V	3.314V	4.997V	460.967				39.49°C	115.08V
6	37.525A	5.975A	5.977A	2.002A	509.663	91.579%	730	13.1	41.34°C	0.998
	11.989V	5.019V	3.312V	4.991V	556.529				52.64°C	115.08V
7	43.887A	6.981A	6.978A	2.205A	594.686	90.942%	730	13.1	41.72°C	0.999
	11.976V	5.015V	3.309V	4.986V	653.920				53.36°C	115.08V
8	50.272A	7.986A	7.980A	2.406A	679.611	90.286%	855	20.1	42.77°C	0.999
	11.959V	5.012V	3.308V	4.981V	752.731				54.74°C	115.08V
9	57.098A	8.483A	8.501A	2.409A	764.606	89.606%	1030	25.4	43.93°C	0.999
	11.945V	5.008V	3.305V	4.978V	853.296				56.12°C	115.09V
10	63.679A	8.997A	8.991A	3.019A	849.470	88.903%	1100	28.1	44.73°C	0.999
	11.931V	5.005V	3.303V	4.965V	955.502				58.04°C	115.08V
11	70.884A	9.003A	8.998A	3.021A	934.371	88.073%	1280	32.2	46.19°C	0.999
	11.916V	5.002V	3.300V	4.962V	1060.904				59.92°C	115.07V
CL1	0.100A	18.027A	18.002A	0.005A	151.707	83.968%	855	20.1	44.30°C	0.992
	12.030V	5.020V	3.332V	5.072V	180.672				55.69°C	115.09V
CL2	70.796A	1.003A	1.001A	1.002A	858.221	89.281%	1140	28.6	44.87°C	0.999
	11.934V	5.014V	3.301V	4.998V	961.261				57.89°C	115.08V

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20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.212A	0.491A	0.479A	0.197A	19.691	68.364%	0	<6.0	0.842
	12.074V	5.039V	3.321V	5.035V	28.803				115.08V
2	2.449A	0.990A	0.992A	0.396A	39.834	80.957%	0	<6.0	0.930
	12.070V	5.038V	3.321V	5.030V	49.204				115.09V
3	3.686A	1.478A	1.504A	0.596A	59.912	84.251%	0	<6.0	0.955
	12.066V	5.038V	3.321V	5.028V	71.111				115.08V
4	4.911A	1.984A	1.985A	0.796A	79.814	86.747%	0	<6.0	0.971
	12.061V	5.036V	3.321V	5.024V	92.008				115.08V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.7 mV	6.6 mV	8.4 mV	5.5 mV	Pass
20% Load	7.0 mV	6.1 mV	8.6 mV	5.3 mV	Pass
30% Load	8.2 mV	7.1 mV	8.7 mV	6.6 mV	Pass
40% Load	8.7 mV	6.8 mV	9.7 mV	6.0 mV	Pass
50% Load	9.7 mV	7.5 mV	11.3 mV	8.3 mV	Pass
60% Load	11.0 mV	6.7 mV	10.7 mV	8.2 mV	Pass
70% Load	9.9 mV	7.3 mV	10.8 mV	8.5 mV	Pass
80% Load	10.2 mV	7.4 mV	11.4 mV	8.8 mV	Pass
90% Load	11.2 mV	8.0 mV	13.6 mV	10.0 mV	Pass
100% Load	14.1 mV	9.9 mV	12.4 mV	12.0 mV	Pass
110% Load	14.8 mV	10.4 mV	13.1 mV	13.5 mV	Pass
Crossload 1	9.4 mV	10.6 mV	9.6 mV	9.8 mV	Pass
Crossload 2	12.8 mV	8.4 mV	11.8 mV	10.8 mV	Pass

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

Hold-Up Time (ms)	28.20
AC Loss to PWR_OK Hold Up Time (ms)	18.18
PWR_OK Inactive to DC Loss Delay (ms)	10.02



Top side



Power specifications label

CERTIFICATIONS



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