Anex

Corsair RM850e ATX 3.0

Lab ID#: CR85002088
Receipt Date: Oct 29, 2022
Test Date: Nov 11, 2022

Report: 22PS2088A
Report Date: Nov 14, 2022

DUT INFORMATION

Brand	Corsair
Manufacturer (OEM)	HEC
Series	RMe
Model Number	RPS0178
Serial Number	C04699660
DUT Notes	CP-9020263

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	47-63
Rated Power (W)	850
Type	ATX12V
Cooling	120mm Rifle Bearing Fan (HA1225H12F-Z)
Semi-Passive Operation	✓
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	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.0 PSU Power Excursion	✓

115V

Average Efficiency	88.277%
Efficiency With 10W (≤500W) or 2% (>500W)	72.219
Average Efficiency 5VSB	77.385%
Standby Power Consumption (W)	0.0449000
Average PF	0.984
Avg Noise Output	26.34 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

230V

Average Efficiency	90.326%
Average Efficiency 5VSB	77.445%
Standby Power Consumption (W)	0.1126000
Average PF	0.943
Avg Noise Output	26.52 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.8	3	0
	Watts	150		850	15	0
Total Max. Power (W)		850				

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

Hold-Up Time (ms)	15.6
AC Loss to PWR_OK Hold Up Time (ms)	13.4
PWR_OK Inactive to DC Loss Delay (ms)	2.2

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	18-20AWG	No
4+4 pin EPS12V (640mm)	2	2	18AWG	No
6+2 pin PCIe (590mm+150mm)	1	2	16-18AWG	No
6+2 pin PCIe (590mm)	1	1	16AWG	No
12+4 pin PCIe (650mm) (600W)	1	1	16-24AWG	No
SATA (500mm+100mm+100mm)	1	3	18AWG	No
SATA (460mm+115mm+115mm+115mm)	1	4	18AWG	No
4 pin Molex (450mm+100mm+100mm+100mm)	1	4	18AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

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General Data	-
Manufacturer (OEM)	HEC
PCB Type	Double Sided
Primary Side	**-**
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV, 1x Power Integrations CAP200DG (Discharge IC)
Inrush Protection	NTC Thermistor SCK-056 (5 Ohm) & Relay
Bridge Rectifier(s)	2x MCC GBU15KL (800V, 15A @ 100°C)
APFC MOSFETs	2x GP36S60YERD
APFC Boost Diode	1x CREE C6D08065A (650V, 8A @ 155°C)
Bulk Cap(s)	1x Teapo (400V, 470uF, 2,000h @ 105°C, LS)
Main Switchers	2x Infineon IPA60R120P7 (600V, 16A @ 100°C, Rds(on): 0.12Ohm)
APFC Controller	Champion CM6500UN & CM03AX
Resonant Controller	Champion CM6901T6X
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	**-**
+12V MOSFETs	no info
5V & 3.3V	DC-DC Converters: 8x Potens Semiconductor PDD3906 (30V, 51A @ 100°C, Rds(on): 6mOhm) PWM Controller(s): 2x APEC APW7073
Filtering Capacitors	Electrolytic: 11x Teapo (1-3,000h @ 105°C, SC), 1x Nichicon (4-10,000h @ 105°C, HE) Polymer: 4x Elite, 6x Teapo, 12x no info
Supervisor IC	Weltrend WT7527RT (OCP, OVP, UVP, SCP, PG)
Fan Model	Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, Rifle Bearing Fan)
5VSB Circuit	**-**
Rectifier	1x PS1060L SBR (60V, 10A)
Standby PWM Controller	Power Integrations TNY290PG

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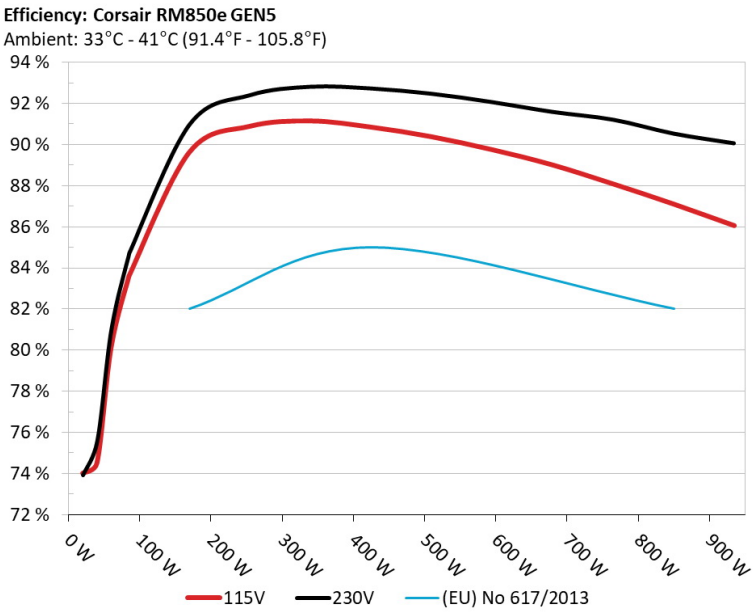
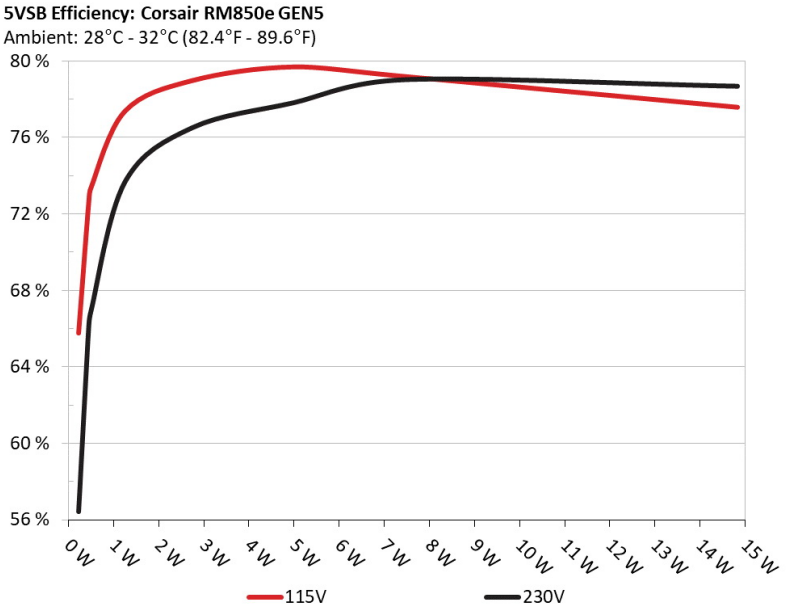
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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



INFO

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

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Corsair RM850e ATX 3.0

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.226W	65.627%	0.034
	5.011V	0.344W		114.92V
2	0.09A	0.451W	72.512%	0.061
	5.009V	0.622W		114.93V
3	0.55A	2.749W	78.839%	0.264
	4.997V	3.486W		114.93V
4	1A	4.988W	79.552%	0.35
	4.988V	6.27W		114.93V
5	1.5A	7.466W	79.049%	0.406
	4.977V	9.446W		114.92V
6	3A	14.837W	77.443%	0.476
	4.945V	19.159W		114.93V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.225W	56.258%	0.012
	5.007V	0.4W		229.9V
2	0.09A	0.451W	66.007%	0.02
	5.007V	0.682W		229.91V
3	0.55A	2.749W	76.368%	0.102
	4.996V	3.598W		229.89V
4	1A	4.987W	77.669%	0.168
	4.987V	6.421W		229.91V
5	1.5A	7.465W	78.879%	0.217
	4.976V	9.464W		229.91V
6	3A	14.836W	78.535%	0.328
	4.945V	18.89W		229.91V

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115V

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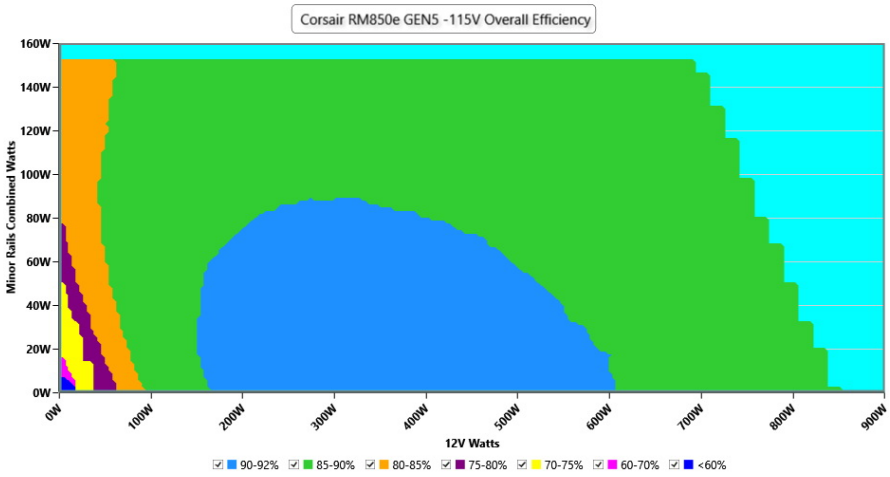
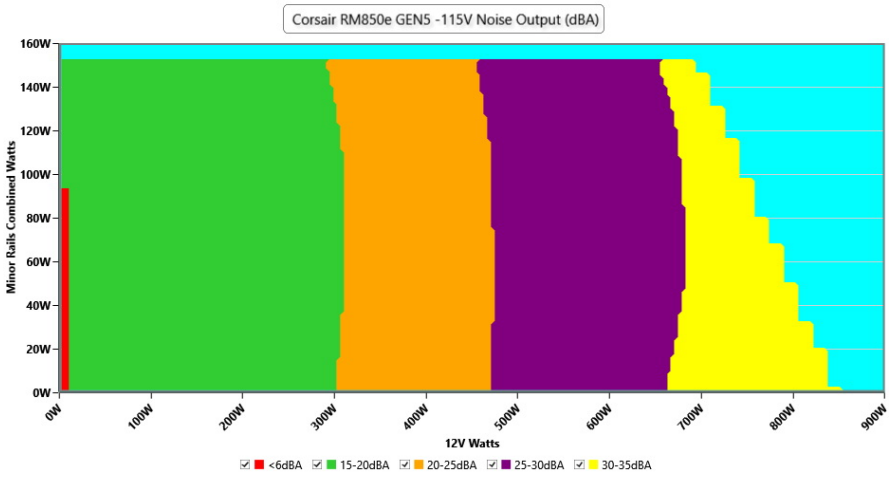
EFFICIENCY GRAPH 115V



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

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.93 V	114.89 V	113.85 V	114.97 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.96 Hz	59.40 Hz	60.02 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.15 %	0.12 %	N/A	0.20 %	2.00 %	PASS
Real Power:	0.045 W	0.011 W	N/A	0.071 W	N/A	N/A
Apparent Power:	9.992 W	9.974 W	N/A	10.014 W	N/A	N/A
Power Factor:	0.006	N/A	N/A	N/A	N/A	N/A

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
10%	5.228A	2A	1.991A	1.002A	85.007	83.715%	891	21.2	36.49°C	0.964
	12.127V	4.999V	3.314V	4.99V	101.546				40.75°C	114.92V
20%	11.488A	3.003A	2.991A	1.204A	169.949	89.626%	841	19.3	37.33°C	0.974
	12.104V	4.995V	3.31V	4.982V	189.616				41.88°C	114.9V
30%	18.101A	3.505A	3.493A	1.407A	254.951	90.884%	854	19.7	37.57°C	0.977
	12.093V	4.993V	3.306V	4.974V	280.525				42.69°C	114.87V
40%	24.735A	4.008A	3.997A	1.611A	340.037	91.14%	886	21.0	38.17°C	0.982
	12.082V	4.99V	3.302V	4.966V	373.094				43.74°C	114.85V
50%	31.021A	5.013A	5.003A	1.815A	424.928	90.84%	951	23.0	38.22°C	0.986
	12.070V	4.987V	3.298V	4.959V	467.776				44.27°C	114.83V
60%	37.286A	6.02A	6.011A	2A	509.339	90.374%	1027	25.1	38.69°C	0.988
	12.059V	4.984V	3.294V	4.951V	563.589				45.34°C	114.82V
70%	43.629A	7.028A	7.023A	2.226A	594.761	89.742%	1112	27.4	39.18°C	0.99
	12.048V	4.981V	3.29V	4.943V	662.743				46.38°C	114.77V
80%	49.989A	8.002A	8.034A	2.33A	679.452	89.002%	1216	30.4	39.31°C	0.991
	12.037V	4.977V	3.285V	4.937V	763.406				47.58°C	114.76V
90%	56.761A	8.546A	8.533A	2.434A	765.13	88.069%	1519	36.5	40.08°C	0.992
	12.026V	4.974V	3.281V	4.931V	868.783				49.17°C	114.74V
100%	63.284A	9.056A	9.065A	3.053A	849.962	87.092%	1757	40.4	40.14°C	0.993
	12.013V	4.971V	3.276V	4.914V	975.941				50.19°C	114.72V
110%	69.685A	10.069A	10.179A	3.056A	934.545	86.049%	2132	45.5	40.57°C	0.993
	12.000V	4.967V	3.271V	4.909V	1086.085				51.43°C	114.69V
CL1	0.116A	18.153A	18.04A	0A	151.323	81.501%	1114	27.5	38.46°C	0.975
	12.102V	4.976V	3.303V	5.002V	185.657				44.01°C	114.91V
CL2	0.115A	20.083A	0A	0A	101.415	80.259%	949	23.0	39.28°C	0.977
	12.131V	4.98V	3.314V	5.012V	126.359				46.28°C	114.91V
CL3	0.115A	0A	19.947A	0A	67.382	73.402%	991	24.1	40.43°C	0.964
	12.126V	5V	3.308V	5.006V	91.8				48.69°C	114.92V
CL4	70.676A	0A	0A	0A	849.587	88.129%	1315	32.8	41.98°C	0.993
	12.021V	4.985V	3.287V	4.986V	964.032				51.91°C	114.73V

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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])	Temps (In/Out)	PF/AC Volts
20W	1.226A	0.5A	0.497A	0.2A	20.002	74.007%	0	<6.0	36.41°C	0.808
	12.123V	5.002V	3.318V	5.006V	27.027				33.29°C	114.94V
40W	2.696A	0.7A	0.696A	0.3A	40.003	74.503%	828	19.0	34.07°C	0.93
	12.126V	5.001V	3.317V	5.005V	53.69				37.38°C	114.94V
60W	4.166A	0.9A	0.896A	0.4A	60.004	80.143%	853	19.6	35.58°C	0.953
	12.129V	5.001V	3.316V	5.003V	74.869				39.29°C	114.93V
80W	5.634A	1.1A	1.095A	0.5A	79.961	83.6%	883	20.9	36.01°C	0.963
	12.129V	5V	3.315V	5.001V	95.649				39.99°C	114.93V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	15.40mV	15.99mV	9.97mV	16.53mV	Pass
20% Load	26.59mV	16.24mV	11.81mV	15.76mV	Pass
30% Load	21.88mV	17.32mV	11.76mV	16.58mV	Pass
40% Load	20.04mV	19.00mV	11.71mV	16.22mV	Pass
50% Load	19.17mV	19.46mV	13.19mV	17.14mV	Pass
60% Load	19.58mV	20.94mV	14.52mV	18.02mV	Pass
70% Load	20.19mV	21.56mV	15.49mV	19.81mV	Pass
80% Load	20.57mV	22.63mV	16.21mV	22.52mV	Pass
90% Load	19.91mV	22.88mV	18.15mV	25.13mV	Pass
100% Load	34.33mV	26.51mV	19.74mV	32.49mV	Pass
110% Load	36.16mV	27.70mV	20.61mV	31.66mV	Pass
Crossload1	33.76mV	27.22mV	24.04mV	13.20mV	Pass
Crossload2	14.33mV	17.47mV	20.10mV	13.41mV	Pass
Crossload3	11.98mV	19.87mV	15.55mV	11.92mV	Pass
Crossload4	31.91mV	23.25mV	14.37mV	13.16mV	Pass

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230V

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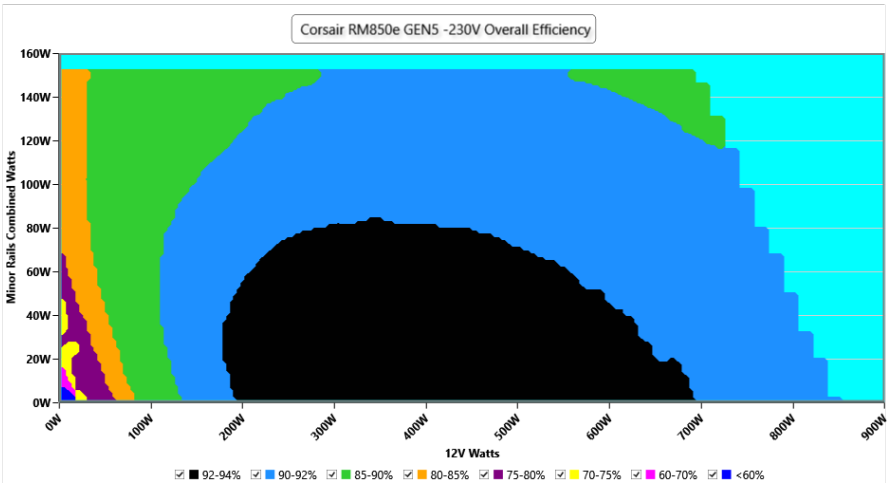
EFFICIENCY GRAPH 230V



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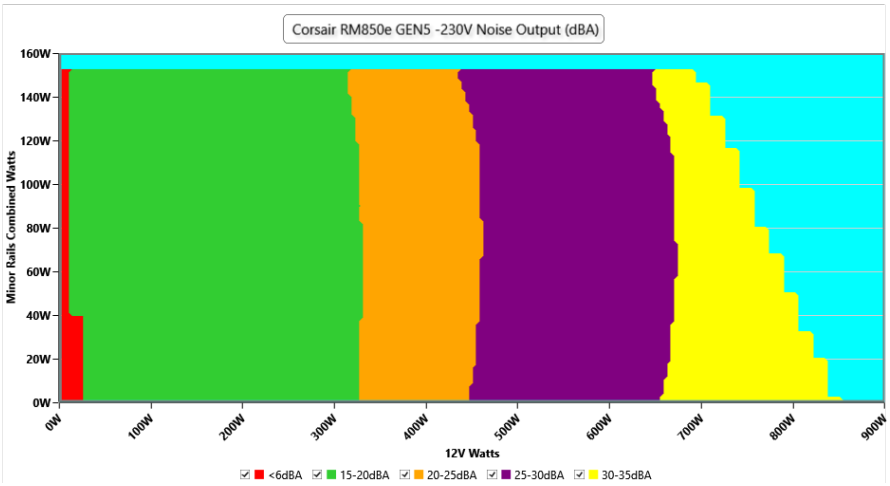
NOISE GRAPH 230V



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 -230V

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.89 V	229.84 V	227.70 V	229.96 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.416	1.416	1.340	1.417	1.490	PASS
Mains Voltage THD:	0.18 %	0.16 %	N/A	0.21 %	2.00 %	PASS
Real Power:	0.113 W	0.092 W	N/A	0.136 W	N/A	N/A
Apparent Power:	33.789 W	33.762 W	N/A	33.817 W	N/A	N/A
Power Factor:	0.003	N/A	N/A	N/A	N/A	N/A

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
10%	5.228A	2.001A	1.991A	1.002A	85.004	84.795%	892	21.3	35.57°C	0.804
	12.129V	4.998V	3.314V	4.99V	100.239				39.81°C	229.89V
20%	11.487A	3.003A	2.991A	1.204A	169.945	90.971%	843	19.3	36.01°C	0.902
	12.105V	4.995V	3.31V	4.982V	186.813				40.61°C	229.88V
30%	18.101A	3.505A	3.494A	1.407A	254.949	92.389%	847	19.4	36.58°C	0.935
	12.094V	4.993V	3.306V	4.974V	275.951				41.72°C	229.87V
40%	24.735A	4.008A	3.998A	1.611A	340.051	92.796%	880	20.8	36.94°C	0.95
	12.082V	4.99V	3.302V	4.966V	366.45				42.55°C	229.86V
50%	31.022A	5.014A	5.004A	1.815A	424.95	92.71%	962	23.3	37.08°C	0.959
	12.070V	4.987V	3.297V	4.958V	458.363				43.17°C	229.84V
60%	37.293A	6.021A	6.014A	2A	509.399	92.454%	987	24.0	37.25°C	0.964
	12.058V	4.983V	3.293V	4.951V	550.977				43.69°C	229.84V
70%	43.634A	7.03A	7.025A	2.226A	594.816	92.047%	1092	26.9	38.29°C	0.969
	12.048V	4.98V	3.289V	4.942V	646.218				45.38°C	229.82V
80%	49.992A	8.003A	8.036A	2.33A	679.492	91.573%	1196	29.9	39.13°C	0.973
	12.037V	4.977V	3.285V	4.937V	742.007				47.24°C	229.82V
90%	56.765A	8.547A	8.536A	2.434A	765.022	91.191%	1268	31.7	39.55°C	0.975
	12.023V	4.973V	3.28V	4.93V	838.923				48.64°C	229.81V
100%	63.274A	9.055A	9.064A	3.053A	849.868	90.516%	1663	39.4	40.13°C	0.977
	12.013V	4.971V	3.276V	4.914V	938.918				50.19°C	229.79V
110%	69.665A	10.067A	10.176A	3.055A	934.3	90.047%	1816	41.6	40.52°C	0.978
	12.000V	4.967V	3.271V	4.91V	1037.579				51.41°C	229.79V
CL1	0.115A	18.154A	18.042A	0A	151.303	82.916%	1110	27.4	37.11°C	0.901
	12.104V	4.975V	3.303V	5.002V	182.477				43.59°C	229.88V
CL2	0.115A	20.083A	0A	0A	101.408	81.493%	949	23.0	38.17°C	0.845
	12.131V	4.98V	3.315V	5.012V	124.442				45.24°C	229.89V
CL3	0.115A	0A	19.945A	0A	67.377	74.374%	1006	24.5	39.52°C	0.784
	12.127V	5V	3.308V	5.006V	90.595				47.57°C	229.89V
CL4	70.680A	0A	0A	0A	849.584	91.32%	1229	30.7	40.47°C	0.976
	12.021V	4.984V	3.283V	4.985V	930.307				49.45°C	229.8V

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Anex

Corsair RM850e ATX 3.0

20-80W 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
20W	1.226A	0.5A	0.497A	0.2A	20.005	73.907%	0	<6.0	36.25°C	0.454
	12.125V	5.001V	3.317V	5.007V	27.067				33.18°C	229.89V
40W	2.696A	0.7A	0.696A	0.3A	40.005	75.565%	829	19.0	33.51°C	0.64
	12.128V	5.001V	3.316V	5.005V	52.943				36.85°C	229.89V
60W	4.166A	0.9A	0.896A	0.4A	60.006	81.025%	849	19.5	33.88°C	0.734
	12.130V	5V	3.316V	5.003V	74.058				37.38°C	229.89V
80W	5.634A	1.1A	1.095A	0.5A	79.963	84.708%	876	20.6	34.24°C	0.792
	12.129V	4.999V	3.315V	5.001V	94.396				38.09°C	229.88V

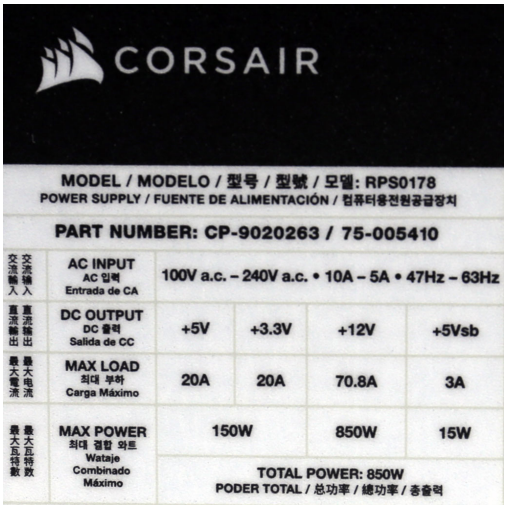
RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.66mV	14.40mV	9.56mV	16.17mV	Pass
20% Load	27.87mV	16.75mV	11.66mV	14.12mV	Pass
30% Load	22.24mV	17.72mV	11.71mV	14.79mV	Pass
40% Load	20.65mV	17.57mV	11.61mV	14.33mV	Pass
50% Load	19.27mV	19.51mV	12.63mV	17.25mV	Pass
60% Load	19.12mV	20.48mV	14.06mV	18.37mV	Pass
70% Load	19.22mV	21.09mV	15.24mV	18.99mV	Pass
80% Load	19.88mV	22.22mV	16.16mV	18.27mV	Pass
90% Load	21.27mV	23.19mV	18.00mV	25.49mV	Pass
100% Load	32.70mV	26.80mV	19.88mV	30.91mV	Pass
110% Load	33.21mV	28.07mV	20.94mV	35.10mV	Pass
Crossload1	33.34mV	26.46mV	24.22mV	13.33mV	Pass
Crossload2	13.10mV	19.61mV	20.10mV	12.90mV	Pass
Crossload3	12.03mV	20.79mV	16.21mV	12.74mV	Pass
Crossload4	30.02mV	23.74mV	14.39mV	12.84mV	Pass

Anex

Corsair RM850e ATX 3.0

Top side



Power specifications label

CERTIFICATIONS 115V

CERTIFICATIONS 230V

Aristeidis Bitziopoulos
Lab Director