Anex

Corsair CX450 (CWT)

Lab ID#: 189
Receipt Date: -
Test Date: -

Report:
Report Date: May 10, 2018

DUT INFORMATION

Brand	Corsair
Manufacturer (OEM)	CWT
Series	CX
Model Number	CX450 (CWT)
Serial Number	17037185000017680408
DUT Notes	RPS0053 / CP-9020120

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	6-3
Rated Frequency (Hz)	47-63
Rated Power (W)	450
Type	ATX12V
Cooling	120mm Rifle Bearing Fan (D12SM-12)
Semi-Passive Operation	✗
Cable Design	Fixed cables

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	37.4	3	0.8
	Watts	110		448.8	15	9.6
Total Max. Power (W)		450				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	18-22AWG	No
4+4 pin EPS12V (670mm)	1	1	18AWG	No
6+2 pin PCIe (600mm)	1	1	18AWG	No
SATA (410mm+120mm)	2	4	18AWG	No
4 pin Molex (410mm+120mm+120mm+120mm)	1	4	18AWG	No
AC Power Cord (1370mm) - C13 coupler	1	1	18AWG	-

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General Data	
Manufacturer (OEM)	Channel Well Technology
Platform Model	Custom
Primary Side	
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor
Bridge Rectifier	1x
APFC MOSFETS	2x Silan Microelectronics SVF13N50F (500V, 10A @ 100°C, 0.52Ohm)
APFC Boost Diode	STi STTH8S06FP (600V, 8A @ 150°C)
Hold-up Cap	1x Nippon Chemi-Con (450V, 180uF, 2000h @ 105°C, KMR)
Main Switchers	2x Silan Microelectronics SVF13N50F (500V, 10A @ 100°C, 0.52Ohm)
APFC Controller	Infineon ICE3PCS01G - CM03X
Resonant Controller	Infineon ICE2HS01G
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x
5V & 3.3V	DC-DC Converters: 2x Ubiq QM3016D (30V, 68A @ 100°C, 4mOhm), 2x Ubiq QM3006D (30V, 57A @ 100°C, 5.5mOhm) PWM Controller: APW7159C
Filtering Capacitors	Electrolytics: Elite ED (2-5,000h @ 105°C), 1x Chemi-Con (4-10,000h @ 105°C, KY) Polymers: Elite (RP, RH, GT), Apaq
Supervisor IC	Weltrend WT7502 (OVP, UVP, SCP, PG)
Fan Model	Hong Hua HA1225M12F-Z (120mm, 12V, 0.45A, 2050RPM, Fluid Dynamic Bearing)
5VSB Circuit	
Rectifiers	CET CEF04N7G (700V, 4A, 3.3Ohm), Vishay SBL1040CT (40V, 10A)
Standby PWM Controller	On-Bright OB5269

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	84.935
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	78.172
Standby Power Consumption (W) -115V	0.0532540
Standby Power Consumption (W) -230V	0.0664015
Average PF	0.995
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	27.37
Efficiency Rating (ETA)	SILVER
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	Bruel & Kjaer 2250-L G4	
Microphone	Bruel & Kjaer Type 4955-A, Bruel & Kjaer Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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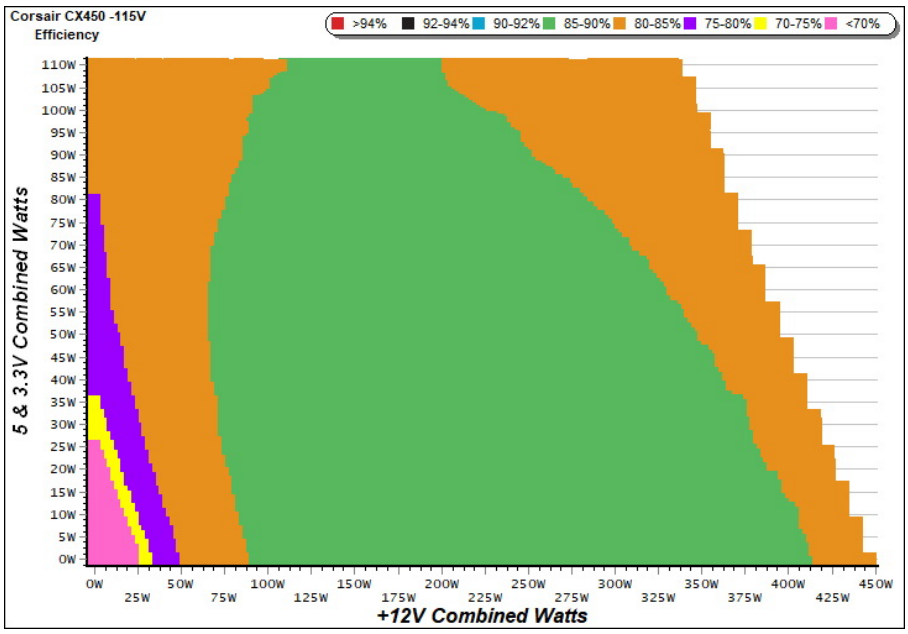
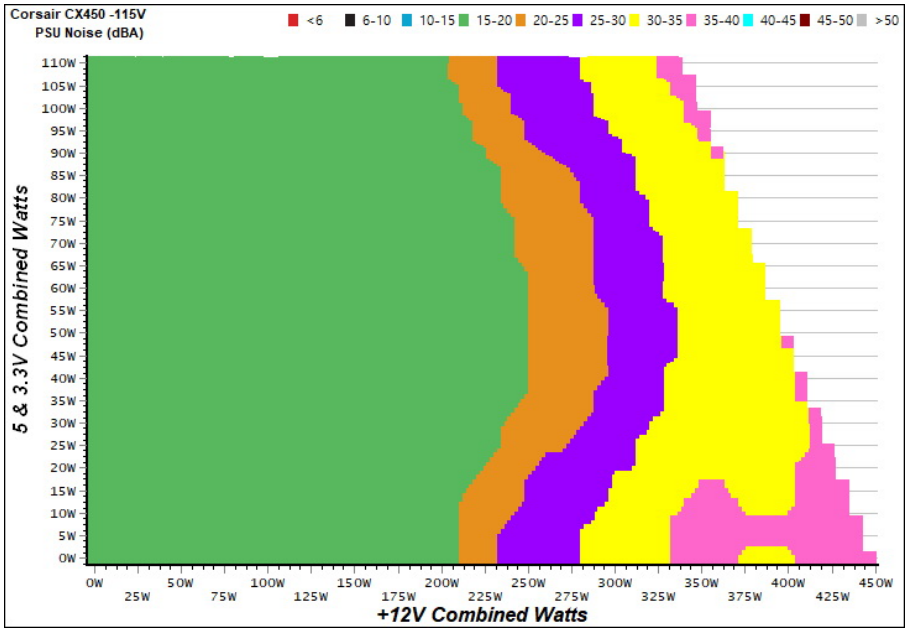
EFFICIENCY GRAPH



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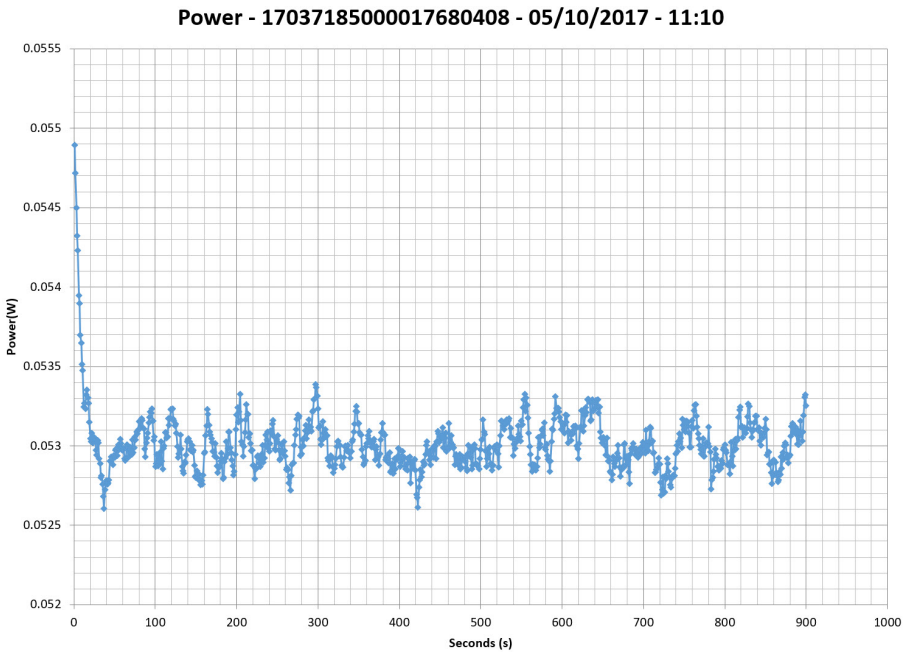
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.214	67.085%	0.049
	5.082V	0.319		115.09V
2	0.088A	0.446	73.719%	0.089
	5.082V	0.605		115.09V
3	0.542A	2.753	78.590%	0.313
	5.075V	3.503		115.07V
4	1.002A	5.080	78.857%	0.383
	5.068V	6.442		115.08V
5	1.502A	7.600	78.651%	0.418
	5.060V	9.663		115.09V
6	3.001A	15.115	77.553%	0.467
	5.036V	19.490		115.08V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.214	62.757%	0.016
	5.082V	0.341		230.22V
2	0.088A	0.446	70.016%	0.029
	5.082V	0.637		230.22V
3	0.543A	2.753	77.266%	0.145
	5.074V	3.563		230.22V
4	1.003A	5.080	78.034%	0.223
	5.067V	6.510		230.22V
5	1.502A	7.599	78.227%	0.276
	5.059V	9.714		230.22V
6	3.002A	15.114	78.165%	0.353
	5.035V	19.336		230.22V

VAMPIRE POWER -115V



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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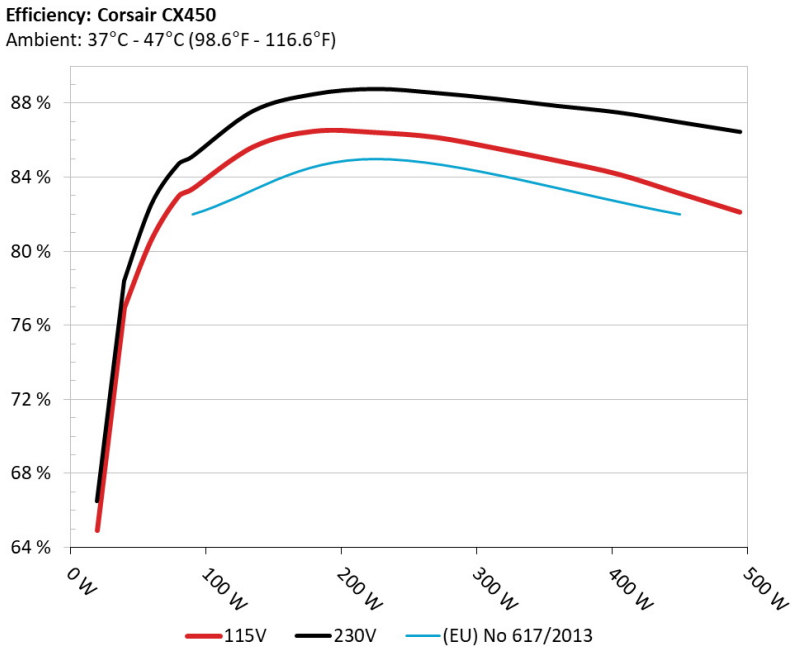
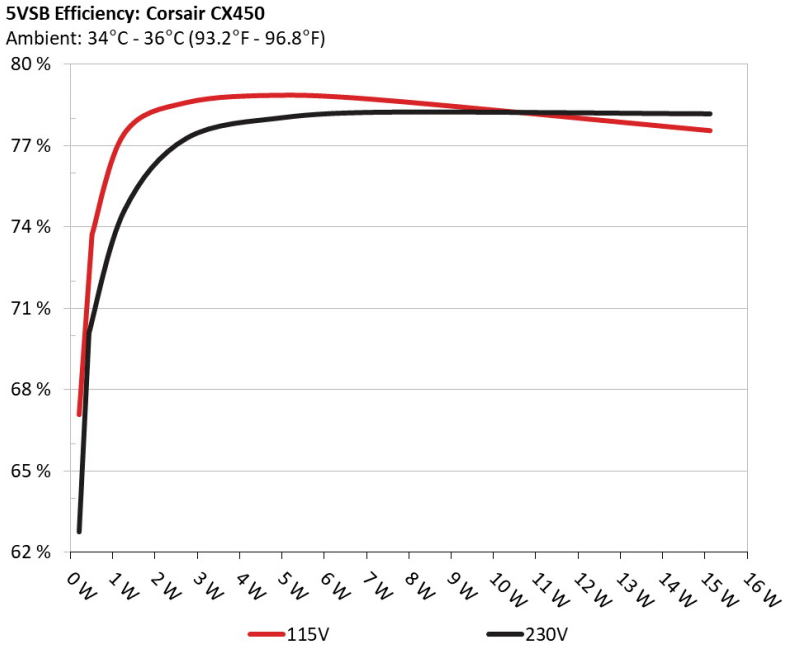
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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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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	1.925A	1.974A	1.998A	0.986A	44.755	76.962%	818	13.8	37.88°C	0.977
	12.056V	5.053V	3.296V	5.058V	58.152				44.53°C	115.12V
2	4.888A	2.962A	3.002A	1.186A	89.727	83.357%	818	13.8	38.08°C	0.991
	12.047V	5.052V	3.294V	5.049V	107.642				45.12°C	115.12V
3	8.208A	3.467A	3.519A	1.386A	134.899	85.645%	818	13.8	38.55°C	0.995
	12.039V	5.050V	3.293V	5.041V	157.510				46.96°C	115.12V
4	11.520A	3.961A	4.006A	1.585A	179.790	86.487%	818	13.8	39.06°C	0.996
	12.033V	5.049V	3.293V	5.034V	207.881				48.52°C	115.12V
5	14.490A	4.960A	5.010A	1.791A	224.794	86.423%	1015	21.1	39.74°C	0.997
	12.027V	5.048V	3.290V	5.026V	260.110				49.64°C	115.12V
6	17.481A	5.946A	6.017A	1.991A	269.741	86.157%	1286	28.5	40.52°C	0.998
	12.011V	5.045V	3.289V	5.017V	313.081				50.58°C	115.12V
7	20.458A	6.944A	7.022A	2.196A	314.715	85.560%	1578	34.1	41.67°C	0.998
	12.006V	5.043V	3.287V	5.007V	367.830				52.20°C	115.12V
8	23.440A	7.935A	8.034A	2.400A	359.676	84.894%	1630	35.1	42.14°C	0.998
	12.000V	5.042V	3.285V	4.998V	423.679				53.14°C	115.12V
9	26.871A	8.439A	8.553A	2.401A	404.800	84.164%	1630	35.1	44.01°C	0.998
	11.990V	5.041V	3.284V	4.993V	480.965				56.41°C	115.12V
10	30.031A	8.936A	9.042A	3.011A	449.570	83.142%	1630	35.1	45.34°C	0.998
	11.983V	5.039V	3.284V	4.977V	540.723				60.06°C	115.12V
11	33.815A	8.934A	9.044A	3.015A	494.534	82.117%	1630	35.1	46.52°C	0.998
	11.972V	5.039V	3.283V	4.972V	602.234				64.16°C	115.12V
CL1	0.100A	13.019A	13.004A	0.005A	109.758	80.682%	1381	30.8	44.16°C	0.993
	12.046V	5.049V	3.291V	5.047V	136.038				53.00°C	115.13V
CL2	37.478A	1.004A	1.003A	1.002A	462.348	83.718%	1630	35.1	44.95°C	0.998
	11.979V	5.046V	3.289V	5.024V	552.268				59.21°C	115.12V

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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	1.211A	0.493A	0.483A	0.196A	19.686	64.915%	818	13.8	0.930
	12.060V	5.057V	3.299V	5.075V	30.326				115.14V
2	2.448A	0.980A	0.999A	0.391A	39.744	76.855%	818	13.8	0.976
	12.056V	5.055V	3.298V	5.070V	51.713				115.13V
3	3.685A	1.478A	1.514A	0.591A	59.863	80.657%	818	13.8	0.983
	12.052V	5.053V	3.296V	5.064V	74.219				115.13V
4	4.915A	1.974A	1.998A	0.791A	79.780	82.976%	818	13.8	0.988
	12.049V	5.053V	3.295V	5.058V	96.148				115.12V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	15.3 mV	8.3 mV	9.2 mV	6.2 mV	Pass
20% Load	20.0 mV	8.2 mV	9.9 mV	7.0 mV	Pass
30% Load	19.2 mV	8.2 mV	10.0 mV	7.3 mV	Pass
40% Load	19.6 mV	9.2 mV	10.5 mV	7.8 mV	Pass
50% Load	32.5 mV	9.1 mV	11.4 mV	8.2 mV	Pass
60% Load	32.3 mV	8.5 mV	12.0 mV	8.5 mV	Pass
70% Load	33.9 mV	10.4 mV	17.6 mV	8.7 mV	Pass
80% Load	28.3 mV	11.3 mV	15.6 mV	11.5 mV	Pass
90% Load	29.0 mV	12.3 mV	16.1 mV	12.1 mV	Pass
100% Load	30.6 mV	12.6 mV	17.0 mV	14.1 mV	Pass
110% Load	32.1 mV	13.5 mV	17.7 mV	16.3 mV	Pass
Crossload 1	26.1 mV	7.3 mV	11.0 mV	8.7 mV	Pass
Crossload 2	33.8 mV	13.7 mV	16.1 mV	12.2 mV	Pass

Anex

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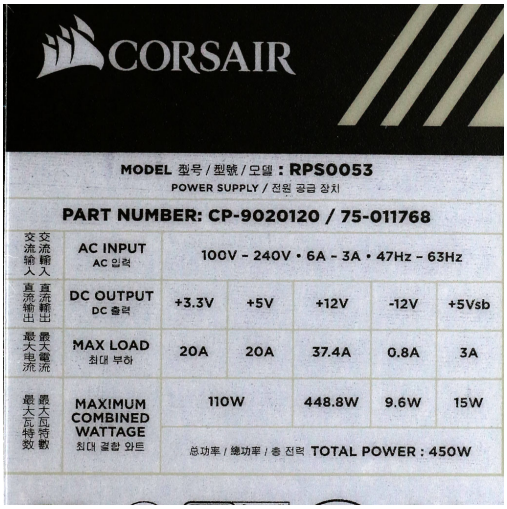
HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	11.19
AC Loss to PWR_OK Hold Up Time (ms)	8.78
PWR_OK Inactive to DC Loss Delay (ms)	2.41

Top side



Power specifications table

CERTIFICATIONS

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