

## Anex

## Thermaltake Toughpower SFX 850W

Lab ID#: TT85002125  
 Receipt Date: Dec 19, 2022  
 Test Date: Feb 1, 2023

Report: 23PS2125A  
 Report Date: Feb 9, 2023

### DUT INFORMATION

Brand	Thermaltake
Manufacturer (OEM)	HKC
Series	Toughpower SFX
Model Number	PS-STP-0850FNFAGU-1
Serial Number	PSSTP0850FNFAGU1SV000120
DUT Notes	

### DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	50-60
Rated Power (W)	850
Type	SFX
Cooling	92mm Fluid Dynamic Bearing Fan [TT-0925 (AV-F9215HS)]
Semi-Passive Operation	✓
Cable Design	Fully Modular

### TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P
Power Analyzers	RS HMC8015, N4L PPA1530, N4L PPA5530
Oscilloscopes	Picoscope 4444, Rigol DS7014, Siglent SDS2104X PLUS
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Temperature Logger	Picoscope TC-08
Tachometer	UNI-T UT372
Multimeters	Keysight 34465A, Keithley 2015 - THD
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Isolation Transformer	4kVA

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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 3.0 Ready	✓

### 115V

Average Efficiency	89.953%
Efficiency With 10W (≤500W) or 2% (>500W)	75.683
Average Efficiency 5VSB	78.067%
Standby Power Consumption (W)	0.0297000
Average PF	0.978
Avg Noise Output	37.35 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

### POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.8	3	0.3
	Watts	100		849.6	15	3.6
Total Max. Power (W)		850				

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

Hold-Up Time (ms)	21.7
AC Loss to PWR_OK Hold Up Time (ms)	20.4
PWR_OK Inactive to DC Loss Delay (ms)	1.3

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### CABLES AND CONNECTORS

#### Modular Cables

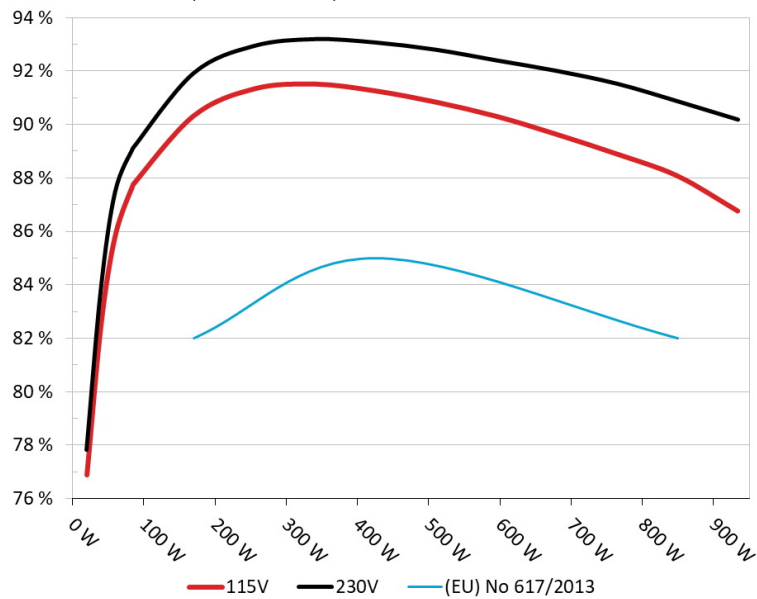
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (300mm)	1	1	16-18AWG	No
4+4 pin EPS12V (400mm)	2	2	16AWG	No
6+2 pin PCIe (400mm+150mm)	1	2	16-18AWG	No
12+4 pin PCIe (400mm) (600W)	1	1	16-26AWG	No
SATA (310mm+150mm+150mm+150mm)	2	8	18AWG	No
4-pin Molex (300mm+145mm+145mm+145mm)	1	4	18AWG	No
FDD Adapter (150mm)	1	1	22AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

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### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

**Efficiency: Thermaltake Toughpower SFX 850W**  
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

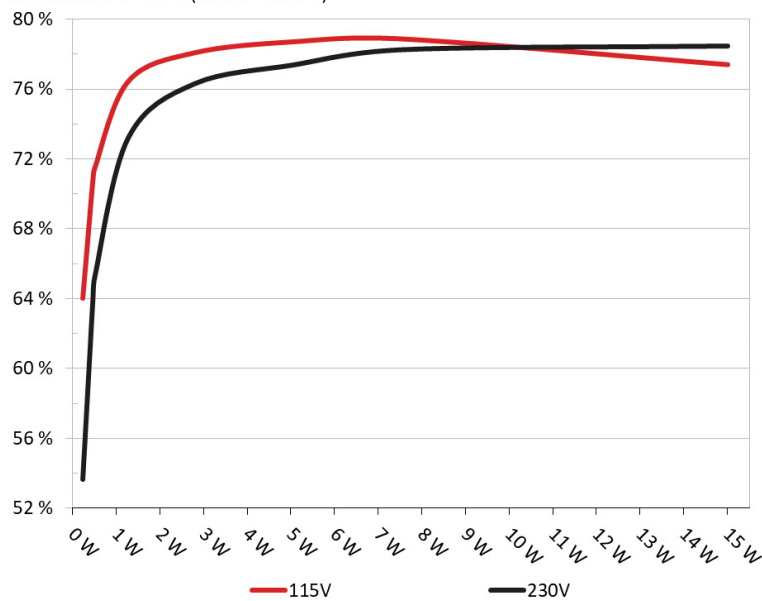


#### INFO

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: Thermaltake Toughpower SFX 850W**  
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	0.229W	64.028%	0.033
	5.093V	0.358W		115.1V
2	0.09A	0.458W	70.741%	0.058
	5.092V	0.648W		115.09V
3	0.55A	2.793W	78.099%	0.249
	5.078V	3.576W		115.1V
4	1A	5.064W	78.732%	0.324
	5.065V	6.432W		115.09V
5	1.5A	7.574W	78.887%	0.375
	5.049V	9.601W		115.09V
6	2.999A	15.007W	77.42%	0.44
	5.003V	19.384W		115.09V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229W	53.659%	0.012
	5.093V	0.427W		230.23V
2	0.09A	0.458W	63.869%	0.02
	5.092V	0.717W		230.23V
3	0.55A	2.793W	76.306%	0.097
	5.078V	3.661W		230.22V
4	1A	5.064W	77.382%	0.16
	5.064V	6.544W		230.22V
5	1.5A	7.574W	78.253%	0.209
	5.049V	9.678W		230.22V
6	3A	15.007W	78.46%	0.303
	5.003V	19.126W		230.22V

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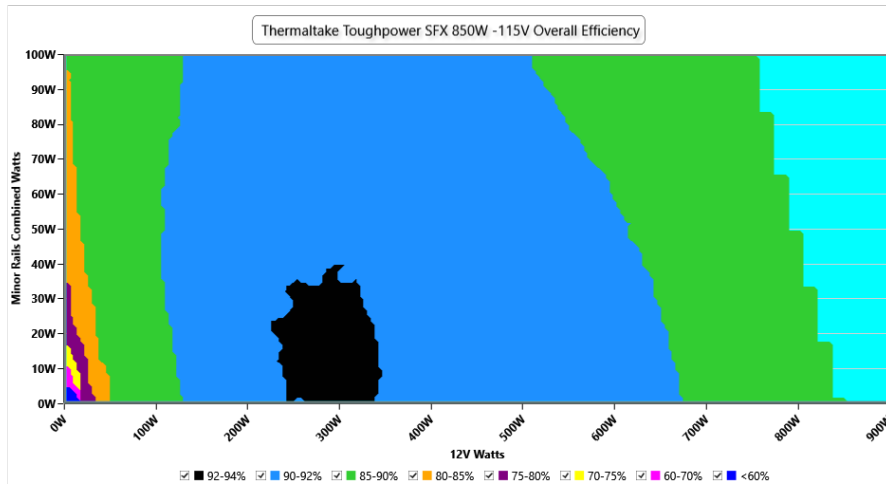
# 115V

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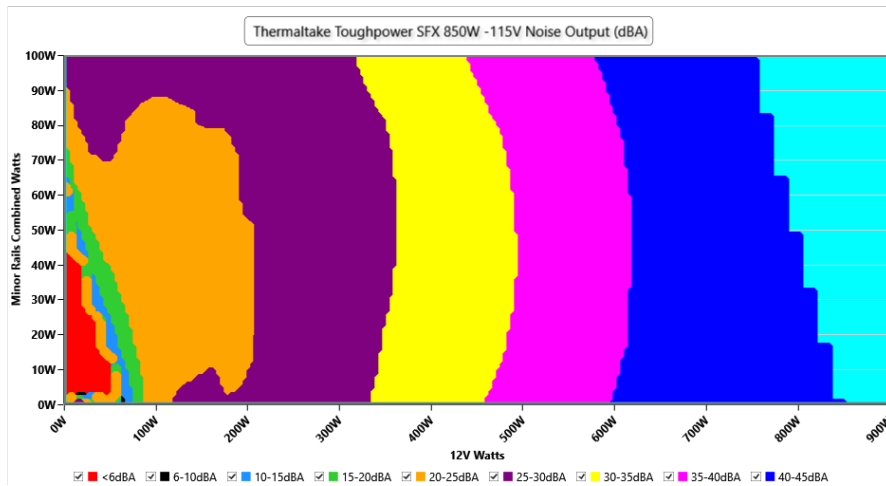
### EFFICIENCY GRAPH 115V



#### 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:	115.11 V	115.06 V	113.85 V	115.14 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.13 %	0.10 %	N/A	0.18 %	2.00 %	PASS
Real Power:	0.030 W	0.010 W	N/A	0.056 W	N/A	N/A
Apparent Power:	10.962 W	10.874 W	N/A	11.045 W	N/A	N/A
Power Factor:	0.004	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%	5.240A	1.974A	1.977A	0.989A	84.99	87.413%	1431	26.4	40.19°C	0.938
	12.099V	5.065V	3.338V	5.057V	97.228				44.29°C	115.07V
20%	11.508A	2.966A	2.972A	1.189A	169.927	90.337%	1963	35	40.53°C	0.967
	12.081V	5.058V	3.331V	5.045V	188.103				44.86°C	115.05V
30%	18.144A	3.464A	3.475A	1.391A	254.922	91.348%	2103	37.5	41.22°C	0.973
	12.063V	5.052V	3.324V	5.034V	279.063				45.96°C	115.03V
40%	24.805A	3.965A	3.979A	1.593A	340.001	91.527%	2195	38.5	41.53°C	0.98
	12.046V	5.045V	3.317V	5.022V	371.477				46.56°C	115V
50%	31.112A	4.963A	4.986A	1.797A	424.745	91.272%	2344	41.3	42.24°C	0.985
	12.028V	5.038V	3.309V	5.009V	465.356				47.72°C	114.98V
60%	37.417A	5.963A	5.997A	2A	509.252	90.857%	2472	42.2	42.63°C	0.988
	12.012V	5.032V	3.302V	4.997V	560.496				48.73°C	114.95V
70%	43.812A	6.967A	7.014A	2.207A	594.567	90.323%	2552	43	43°C	0.991
	11.994V	5.025V	3.294V	4.983V	658.267				50.02°C	114.93V
80%	50.224A	7.974A	8.031A	2.312A	679.376	89.647%	2702	44	43.46°C	0.992
	11.976V	5.018V	3.286V	4.973V	757.845				51.53°C	114.9V
90%	57.062A	8.48A	8.537A	2.417A	764.765	88.903%	2746	44.6	44.27°C	0.993
	11.957V	5.011V	3.278V	4.963V	860.22				53.4°C	114.87V
100%	63.655A	8.993A	9.077A	3.038A	849.537	88.085%	2979	46.5	45.13°C	0.993
	11.937V	5.003V	3.27V	4.936V	964.453				55.21°C	114.84V
110%	70.130A	10.006A	10.206A	3.045A	934.138	86.772%	3100	48.3	47.17°C	0.982
	11.919V	4.996V	3.261V	4.926V	1076.552				57.99°C	114.83V
CL1	0.114A	11.898A	11.943A	0A	101.252	85.425%	2238	38.8	40.71°C	0.942
	12.099V	5.058V	3.323V	5.08V	118.531				45.99°C	115.07V
CL2	0.114A	19.749A	0A	0A	101.376	83.968%	2140	39.3	41.76°C	0.943
	12.106V	5.063V	3.325V	5.084V	120.728				49.04°C	115.07V
CL4	71.176A	0A	0A	0A	849.479	88.212%	2998	46.9	45.24°C	0.991
	11.936V	5.014V	3.285V	5.045V	962.996				56.19°C	114.84V

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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	1.232A	0.493A	0.493A	0.197A	19.993	76.879%	0	<6.0	40.09°C	0.793
	12.044V	5.071V	3.345V	5.087V	26.006				37.01°C	115.09V
40W	2.699A	0.69A	0.691A	0.295A	39.99	82.537%	0	<6.0	40.57°C	0.877
	12.109V	5.07V	3.343V	5.082V	48.452				37.28°C	115.09V
60W	4.174A	0.888A	0.889A	0.394A	59.988	85.868%	896	12.1	37.49°C	0.913
	12.102V	5.068V	3.341V	5.078V	69.864				41.28°C	115.08V
80W	5.646A	1.086A	1.087A	0.493A	79.942	87.769%	1315	22.9	39.11°C	0.934
	12.098V	5.066V	3.34V	5.074V	91.082				43.08°C	115.07V

### RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.35mV	7.98mV	6.92mV	22.21mV	Pass
20% Load	10.97mV	14.33mV	6.82mV	18.22mV	Pass
30% Load	9.34mV	10.27mV	6.87mV	15.38mV	Pass
40% Load	9.29mV	18.39mV	6.88mV	16.50mV	Pass
50% Load	12.66mV	18.45mV	7.84mV	22.36mV	Pass
60% Load	12.08mV	17.28mV	7.48mV	21.10mV	Pass
70% Load	9.14mV	16.36mV	7.48mV	24.80mV	Pass
80% Load	9.97mV	18.91mV	8.80mV	24.89mV	Pass
90% Load	11.95mV	19.77mV	8.39mV	23.98mV	Pass
100% Load	17.69mV	13.17mV	9.42mV	29.69mV	Pass
110% Load	20.50mV	15.83mV	9.78mV	30.60mV	Pass
Crossload1	15.65mV	9.11mV	9.56mV	7.31mV	Pass
Crossload2	12.63mV	14.18mV	10.16mV	16.39mV	Pass
Crossload3	0.00mV	0.00mV	0.00mV	0.00mV	Pass
Crossload4	18.95mV	10.75mV	8.45mV	13.44mV	Pass

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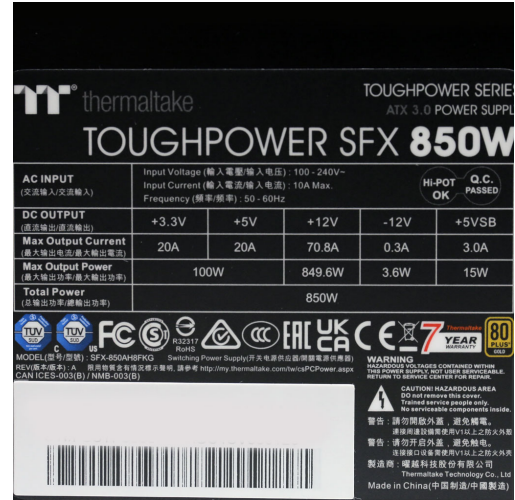
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Top side



Power specifications label

## CERTIFICATIONS 115V



**Aristeidis Bitziopoulos**  
Lab Director

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