

Anex

Cougar GX-F750

Lab ID#: 292

Receipt Date: -

Test Date: -

Report:

Report Date: Feb 20, 2018

DUT INFORMATION

Brand	Cougar
Manufacturer (OEM)	HEC
Series	GX-F
Model Number	GX-F750
Serial Number	H1801006855
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	11-5
Rated Frequency (Hz)	47-63
Rated Power (W)	750
Type	ATX12V
Cooling	135mm Hydro Dynamic Bearing Fan (RL4Z S1352512H)
Semi-Passive Operation	X
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	62	3	0.5
	Watts	150		744	15	6
Total Max. Power (W)		750				

CABLES AND CONNECTORS

Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (580mm)	1	1	16-18AWG	No
4+4 pin EPS12V (700mm)	1	1	16AWG	No
6+2 pin PCIe (600mm+120mm)	2	4	18AWG	No
SATA (450mm+120mm+120mm)	2	6	18AWG	No
SATA (450mm+120mm)	1	2	18AWG	No
4 pin Molex (400mm+120mm+120mm)	1	3	18AWG	No
AC Power Cord (1680mm) - C13 coupler	1	1	17AWG	-

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Cougar GX-F750

General Data	
Manufacturer (OEM)	HEC/Compucase
Platform Model	TPK
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x MPS HF81 (X Capacitor Bleeder)
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x
APFC MOSFETS	2x Infineon IPA60R125P6 (650V, 19A @ 100°C, 0.125Ohm)
APFC Boost Diode	1x Hestia H2S060H006 (600V, 6A @ 152°C)
Hold-up Cap(s)	1x Chemi-Con (400V, 680uF, 2000h @ 105°C, KMW)
Main Switchers	2x Infineon IPP65R150CFD (700V, 14.2A @ 100°C, 0.15Ohm)
APFC Controller	Champion CM6502S
Resonant Controller	Champion CM6901
Topology	Primary side: Half-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	6x FETs
5V & 3.3V	DC-DC Converters: 2x TI CSD87355Q5D (30V, 45A @ 125°C) PWM Controller: 2x APW7073
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (1-5,000 @ 105°C, KY), Teapo (1-3,000h @ 105°C, SC) Polymers: APAQ
Supervisor IC	Weltrend WT7527V (OVP, UVP, OCP, SCP, PG)
Fan Model	Globe Fan RL4Z S1352512HÅ (12V, 0.33A, 1550 RPM, Hydro Dynamic Bearing)
5VSB Circuit	
Rectifier	1x PFR10L60CT SBR (60V, 10A)
Standby PWM Controller	TinySwitch-III TNY280PN
-12V Circuit	
Rectifier	KIA7912PI

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	88.472
Efficiency With 10W ($\leq 500W$) or 2% ($> 500W$) Load -115V	0.000
Average Efficiency 5VSB	77.357
Standby Power Consumption (W) -115V	0.0490039
Standby Power Consumption (W) -230V	0.0979206
Average PF	0.987
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	33.67
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

TEST EQUIPMENT

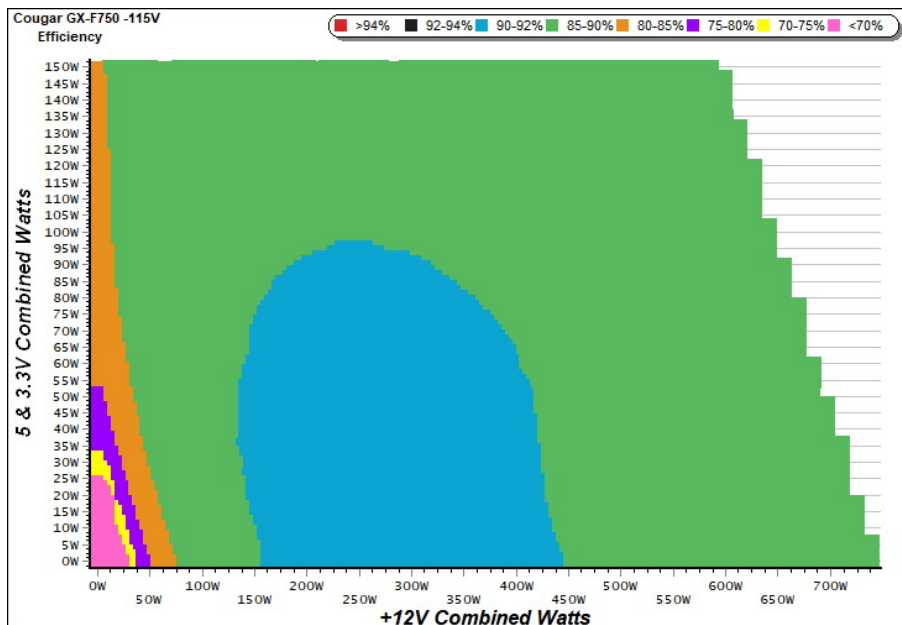
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, Chroma 61604	
Power Analyzers	N4L PPA1530, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 2015 THD 6.5 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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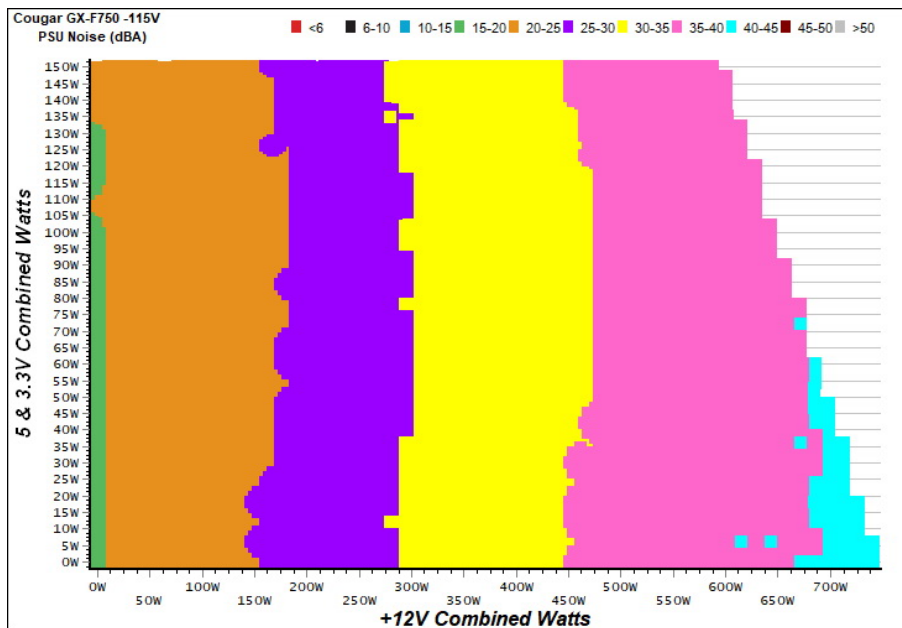
EFFICIENCY GRAPH



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)

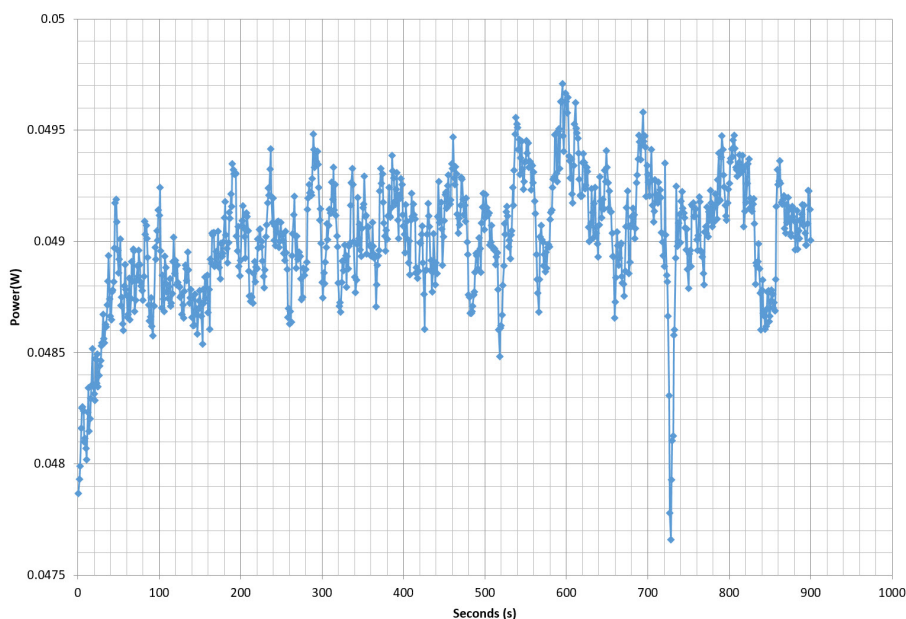
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.216	67.081%	0.033
	5.123V	0.322		115.04V
2	0.087A	0.448	73.322%	0.061
	5.121V	0.611		115.04V
3	0.542A	2.772	78.372%	0.257
	5.110V	3.537		115.03V
4	1.002A	5.112	79.158%	0.339
	5.101V	6.458		115.04V
5	1.502A	7.643	77.210%	0.389
	5.089V	9.899		115.03V
6	3.002A	15.170	75.930%	0.447
	5.054V	19.979		115.03V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.216	57.447%	0.012
	5.122V	0.376		230.18V
2	0.087A	0.448	66.667%	0.021
	5.121V	0.672		230.18V
3	0.543A	2.773	75.931%	0.104
	5.111V	3.652		230.14V
4	1.003A	5.113	77.236%	0.172
	5.100V	6.620		230.15V
5	1.502A	7.643	77.062%	0.228
	5.088V	9.918		230.16V
6	3.001A	15.169	76.630%	0.322
	5.054V	19.795		230.16V

VAMPIRE POWER -115V

Power - H1801006855 - 12/02/2018 - 11:16



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

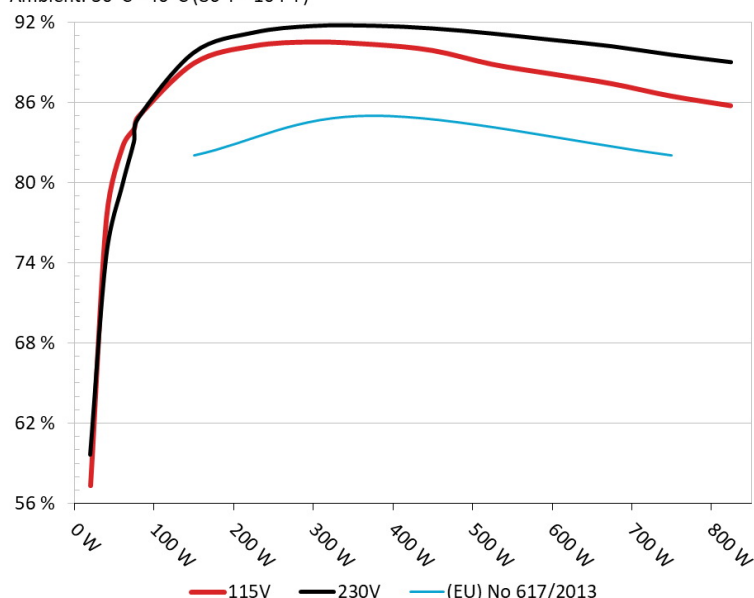
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Cougar GX-F750

Ambient: 30°C - 40°C (86°F - 104°F)



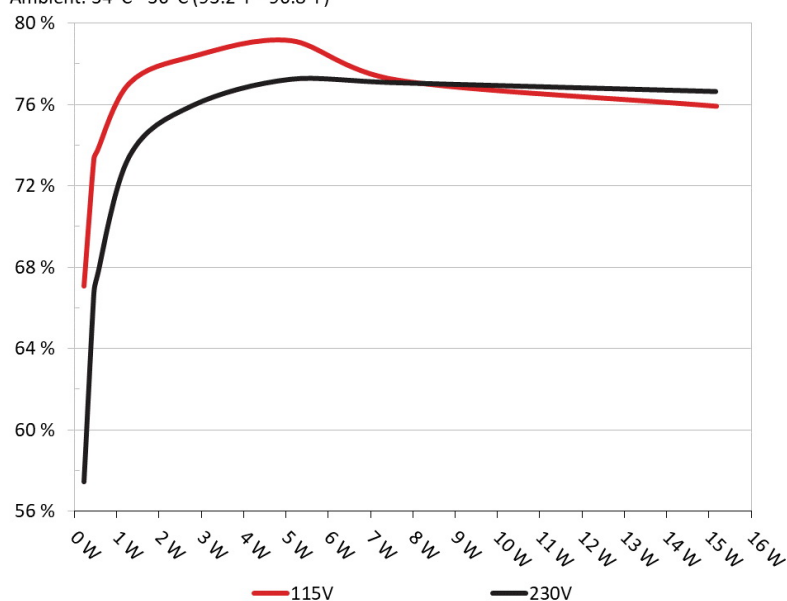
INFO

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: Cougar GX-F750

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	4.393A	2.004A	1.980A	0.981A	74.787	84.018%	810	23.3	31.80°C	0.974
	12.111V	4.984V	3.333V	5.092V	89.013				36.73°C	115.07V
2	9.840A	3.011A	2.975A	1.181A	149.806	88.902%	830	24.4	32.46°C	0.979
	12.087V	4.976V	3.324V	5.080V	168.507				37.54°C	115.07V
3	15.637A	3.517A	3.495A	1.380A	224.871	90.191%	885	26.3	33.19°C	0.979
	12.074V	4.969V	3.318V	5.071V	249.328				39.52°C	115.06V
4	21.436A	4.030A	3.984A	1.580A	299.773	90.485%	970	29.4	33.78°C	0.984
	12.063V	4.963V	3.312V	5.060V	331.297				41.87°C	115.04V
5	26.907A	5.041A	4.991A	1.781A	374.744	90.305%	1070	31.5	34.79°C	0.988
	12.052V	4.955V	3.304V	5.049V	414.976				43.55°C	115.06V
6	32.384A	6.068A	6.006A	1.982A	449.741	89.851%	1170	33.9	35.49°C	0.991
	12.041V	4.948V	3.296V	5.038V	500.543				45.17°C	115.07V
7	37.840A	7.083A	7.021A	2.186A	524.667	88.818%	1265	36.9	36.04°C	0.992
	12.040V	4.940V	3.289V	5.028V	590.720				46.69°C	115.08V
8	43.326A	8.114A	8.043A	2.391A	599.654	88.095%	1390	38.5	36.94°C	0.994
	12.031V	4.931V	3.282V	5.015V	680.691				49.54°C	115.07V
9	49.246A	8.632A	8.580A	2.396A	674.698	87.371%	1490	40.5	38.49°C	0.995
	12.023V	4.925V	3.275V	5.009V	772.222				52.29°C	115.09V
10	54.918A	9.154A	9.086A	3.006A	749.546	86.443%	1545	42.2	39.35°C	0.995
	12.015V	4.918V	3.268V	4.988V	867.098				53.62°C	115.08V
11	61.205A	9.166A	9.102A	3.009A	824.474	85.723%	1550	42.7	40.42°C	0.996
	12.005V	4.911V	3.263V	4.983V	961.786				55.32°C	115.06V
CL1	0.100A	18.030A	18.002A	0.004A	149.901	84.143%	1190	34.7	38.30°C	0.978
	12.078V	4.948V	3.303V	5.097V	178.151				47.96°C	115.04V
CL2	61.948A	1.002A	1.005A	1.002A	758.165	86.878%	1535	41.8	39.92°C	0.995
	12.024V	4.936V	3.284V	5.045V	872.677				53.54°C	115.06V

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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	1.195A	0.501A	0.477A	0.196A	19.723	57.321%	735	20.7	0.918
	12.242V	4.989V	3.339V	5.114V	34.408				115.07V
2	2.432A	0.999A	0.986A	0.391A	39.768	77.358%	725	20.2	0.957
	12.129V	4.988V	3.336V	5.108V	51.408				115.07V
3	3.667A	1.496A	1.497A	0.585A	59.868	82.640%	750	21.3	0.975
	12.117V	4.986V	3.335V	5.100V	72.444				115.07V
4	4.891A	2.003A	1.981A	0.784A	79.799	84.902%	795	22.8	0.975
	12.108V	4.984V	3.332V	5.095V	93.989				115.07V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.4 mV	7.9 mV	9.1 mV	7.7 mV	Pass
20% Load	7.5 mV	8.4 mV	10.1 mV	9.7 mV	Pass
30% Load	7.9 mV	8.6 mV	11.0 mV	10.8 mV	Pass
40% Load	8.3 mV	8.8 mV	12.3 mV	12.3 mV	Pass
50% Load	8.6 mV	9.2 mV	14.9 mV	13.8 mV	Pass
60% Load	9.0 mV	10.6 mV	14.8 mV	15.4 mV	Pass
70% Load	9.3 mV	10.8 mV	16.1 mV	17.3 mV	Pass
80% Load	9.3 mV	11.4 mV	17.3 mV	19.9 mV	Pass
90% Load	10.0 mV	11.8 mV	18.5 mV	21.1 mV	Pass
100% Load	10.7 mV	14.4 mV	22.7 mV	24.6 mV	Pass
110% Load	11.9 mV	17.1 mV	22.7 mV	26.5 mV	Pass
Crossload 1	8.2 mV	10.2 mV	16.0 mV	6.1 mV	Pass
Crossload 2	10.9 mV	13.9 mV	20.4 mV	20.2 mV	Pass

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Cougar GX-F750

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

Hold-Up Time (ms)	17.60
AC Loss to PWR_OK Hold Up Time (ms)	14.50
PWR_OK Inactive to DC Loss Delay (ms)	3.10



Top side



Power specifications label

CERTIFICATIONS



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