

## Anex

Corsair AX1600i

Lab ID#: 250

Receipt Date: -

Test Date: -

Report: 20PS250A

Report Date: Dec 19, 2000

DUT INFORMATION	
Brand	Corsair
Manufacturer (OEM)	Flextronics
Series	AXi
Model Number	AX1600i
Serial Number	17429560000049040035
DUT Notes	Balanced Profile

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	18-9
Rated Frequency (Hz)	50-60
Rated Power (W)	1600
Type	ATX12V
Cooling	140mm Fluid Dynamic Bearing Fan (NR140P)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

POWER SPECIFICATIONS						
Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	30	30	133.3	3.5	0.8
	Watts	180		1600	17.5	9.6
Total Max. Power (W)		1600				

CABLES AND CONNECTORS				
Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	16-22AWG	Yes
4+4 pin EPS12V (650mm)	2	2	16AWG	Yes
6+2 pin PCIe (650mm)	6	6	16-18AWG	Yes
6+2 pin PCIe (680mm+100mm)	2	4	16-18AWG	Yes
SATA (450mm+110mm+110mm+110mm)	3	12	18AWG	No
SATA (550mm+110mm)	2	4	18AWG	No
4 pin Molex (450mm+100mm+100mm)	3	9	18AWG	No
FDD Adapter (+105mm)	2	2	20AWG	No
USB Mini to Motherboard Header Cable (+800mm)	1	1	24-28AWG	No
AC Power Cord (1400mm) - C19 coupler	1	1	14AWG	No

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Primary Side	
Transient Filter	6x Y caps, 2x X caps, 3x CM chokes, 1x DM choke, 1x MOV, 1x CAP200DG
Inrush Protection	2x NTC Thermistor & 1x Relay
Rectifier Diodes (standby mode)	4x S8KC (800V, 8A @ 75°C)
Totem-pole PFC MODFETS (HEMTS)	4x Transphorm TPH3205WSB (650V, 22A @ 100°C, 60mOhm)
Totem-pole PFC Driver	1x STMicroelectronics PM8834 , 2x Silicon Labs Si8233AB
Totem-pole PFC MOSFETS	2x Toshiba TK62J60W (600V, 61.8A @ 150°C, 33mOhm)
Totem-pole PFC MOSFET Driver	1x Fairchild FAN73933
Hold-up Cap(s)	1x Rubycon (450V, 680uF, 3000h @ 105 °C, MXK ) 2x Nippon Chemi-Con (450V, 470uF, 2000h @ 105 °C, KMW )
Main Switchers	4x 60F2094
Driver ICs	2x Silicon Labs Si8233BD
Topology	Primary side: Totem-Pole Bridgeless PFC, Full-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Digital Control Board	
Primary DSC	Texas Instruments UCD3138064A
Secondary DSC	NXP Freescale MC56F8236
MCU	Silicon Lab C8051F380 (USB 2.0 controller)
Quadruple Op. Amps	5x Texas Instruments L2902KA
Quad Dif. Comparator	2x Texas Instruments LM239A
Secondary Side	
+12V FETs	16x Infineon BSC028N06NS (60V, 83A @ 100°C, 2.8mOhm) FETs, 2x STMicroelectronics PM8834 drivers
+12V Driver ICs	2x STMicroelectronics PM8834 drivers
5V & 3.3V	DC-DC Converters: 8x On Semiconductor NTMFS4C06N (30V, 14.9A @ 80°C, 6mOhm) PWM Controller: NCP1034DG
Filtering Capacitors	Electrolytics: United Chemi-Con (1-5,000h @ 105°C, KZE ), United Chemi-Con (4-10,000h @ 105°C, KY ), United Chemi-Con (2-8,000h @ 105°C, LXZ ), United Chemi-Con (1-2,000h @ 105°C, KMQ ), United Chemi-Con (5-6,000h @ 105°C, KZH ) Polymers: United Chemi-Con, FPCAP
Fan Model	NR140P (140mm, 12V, 0.22A, Fluid Dynamic Bearing)
5VSB Circuit	
Rectifier	1x 9R1K2C (900V, 3.2A @ 100°C, 1.2Ohm)
Standby PWM Controller	Infineon ICE3BS03LJG
Modular PCB	
Rectifiers	1x SK34A SBRs (40V, 3A), 2x NTMFS4C03N (30V, 136A @ 25°C, 2.8mOhm)
Filtering Capacitors	Electrolytics: 8x United Chemi-Con (6-10,000h @ 105°C, KZM ), 2x United Chemi-Con (1-2,000h @ 105°C, KMQ ) Polymers: 13x United Chemi-Con

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### RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	92.478
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	82.158
Standby Power Consumption (W) -115V	0.0467618
Standby Power Consumption (W) -230V	0.0709341
Average PF	0.992
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	23.29
Efficiency Rating (ETA)	TITANIUM
Noise Rating (LAMBDA)	A

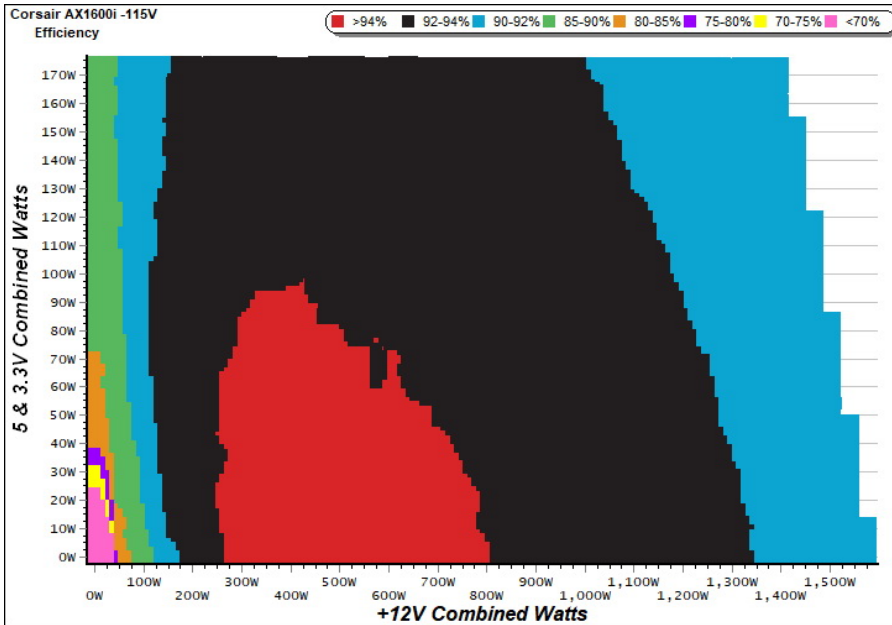
### TEST EQUIPMENT

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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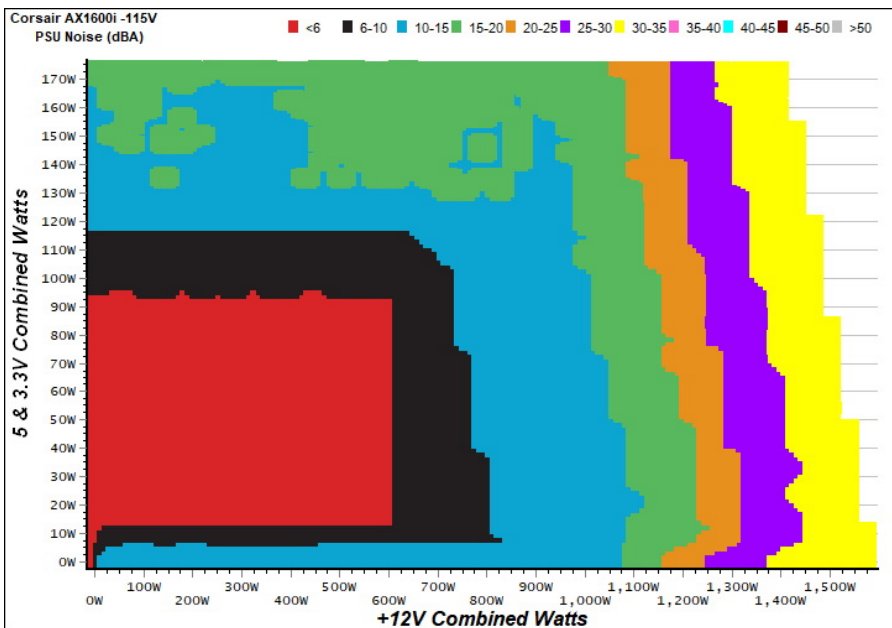
### EFFICIENCY GRAPH



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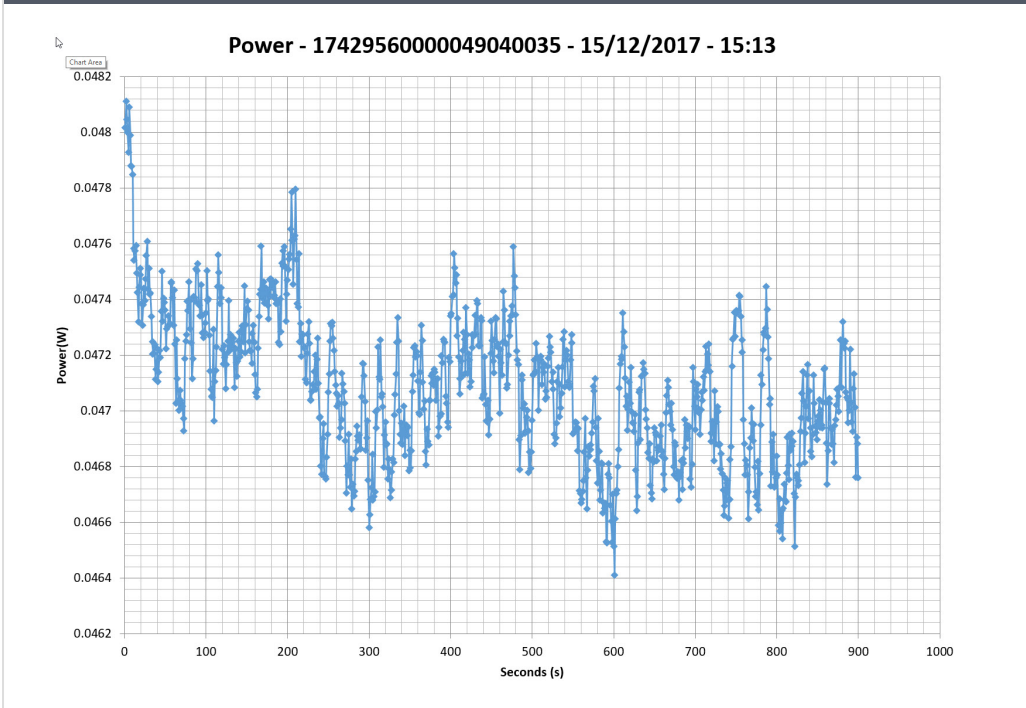
### 5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.210	70.000%	0.018
	5.038V	0.300		115.12V
2	0.087A	0.440	76.789%	0.034
	5.038V	0.573		115.12V
3	0.542A	2.729	80.123%	0.185
	5.032V	3.406		115.16V
4	1.002A	5.036	83.075%	0.290
	5.025V	6.062		115.11V
5	1.502A	7.535	83.444%	0.371
	5.018V	9.030		115.14V
6	3.502A	17.476	81.897%	0.516
	4.991V	21.339		115.16V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.211	63.939%	0.006
	5.038V	0.330		230.09V
2	0.087A	0.440	73.211%	0.011
	5.037V	0.601		230.09V
3	0.542A	2.729	75.014%	0.065
	5.030V	3.638		230.09V
4	1.002A	5.036	80.191%	0.109
	5.024V	6.280		230.09V
5	1.502A	7.536	81.780%	0.155
	5.018V	9.215		230.10V
6	3.502A	17.475	82.765%	0.298
	4.990V	21.114		230.10V

### 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

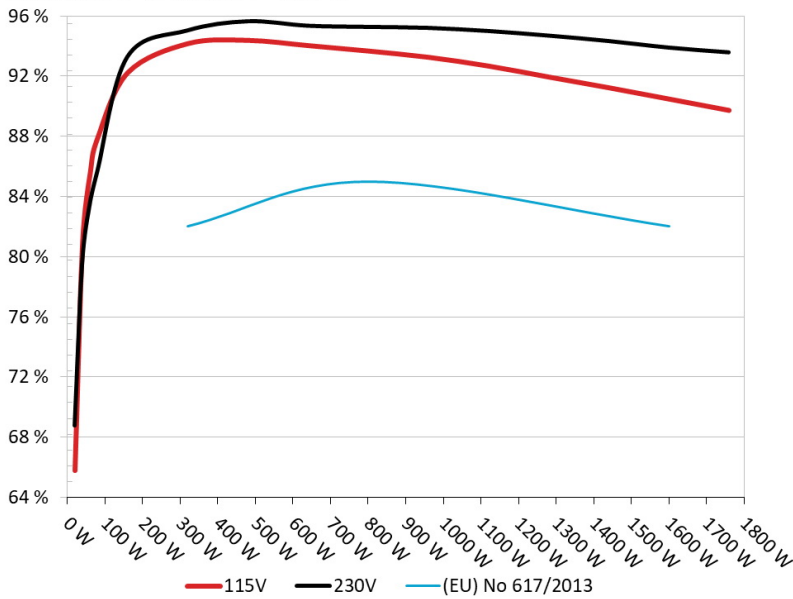
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### EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

**Efficiency: Corsair AX1600i**

Ambient: 38°C - 48°C (100.4°F - 118.4°F)



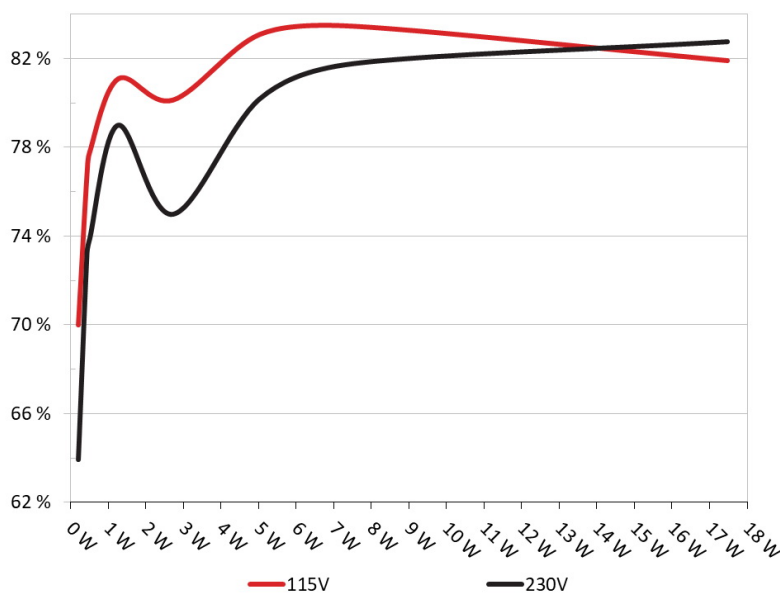
**INFO**

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 AX1600i**

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	11.495A	2.003A	1.994A	1.001A	159.813	92.213%	0	<6.0	42.57°C	0.957
	12.026V	4.992V	3.305V	4.980V	173.309				38.28°C	115.10V
2	24.021A	3.001A	2.994A	1.206A	319.745	94.148%	0	<6.0	42.93°C	0.988
	12.026V	4.990V	3.304V	4.975V	339.619				38.50°C	115.11V
3	36.896A	3.509A	3.509A	1.406A	479.758	94.364%	0	<6.0	43.37°C	0.995
	12.025V	4.989V	3.302V	4.972V	508.412				38.80°C	115.11V
4	49.765A	4.012A	3.996A	1.610A	639.571	94.017%	0	<6.0	44.79°C	0.997
	12.024V	4.988V	3.299V	4.970V	680.275				39.97°C	115.10V
5	62.290A	5.011A	5.002A	1.811A	799.388	93.656%	561	8.5	40.17°C	0.998
	12.023V	4.986V	3.298V	4.966V	853.534				45.47°C	115.09V
6	74.826A	6.019A	6.004A	2.015A	959.343	93.242%	653	13.3	41.00°C	0.999
	12.022V	4.984V	3.296V	4.962V	1028.873				46.47°C	115.58V
7	87.360A	7.021A	7.012A	2.215A	1119.213	92.660%	739	17.0	42.56°C	0.998
	12.021V	4.983V	3.293V	4.958V	1207.876				48.34°C	115.38V
8	99.902A	8.035A	8.016A	2.421A	1279.235	91.933%	861	21.5	44.32°C	0.998
	12.020V	4.981V	3.293V	4.954V	1391.489				50.41°C	115.34V
9	112.869A	8.538A	8.540A	2.421A	1439.267	91.217%	1490	37.8	45.22°C	0.999
	12.020V	4.978V	3.289V	4.953V	1577.850				51.93°C	115.11V
10	125.387A	9.054A	9.037A	3.545A	1599.139	90.471%	1796	42.5	46.86°C	0.999
	12.018V	4.975V	3.286V	4.936V	1767.580				53.85°C	115.15V
11	138.709A	9.056A	9.043A	3.545A	1759.090	89.717%	1956	45.4	48.25°C	0.996
	12.017V	4.973V	3.284V	4.934V	1960.715				55.66°C	115.15V
CL1	0.098A	22.032A	19.997A	0.005A	177.929	88.526%	819	19.2	44.53°C	0.969
	12.023V	5.007V	3.321V	5.030V	200.991				48.75°C	115.18V
CL2	133.259A	1.003A	1.003A	1.002A	1615.164	90.736%	1784	42.5	47.11°C	0.999
	12.021V	4.977V	3.281V	4.964V	1780.064				52.48°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	1.212A	0.502A	0.482A	0.201A	19.679	65.803%	0	<6.0	0.887
	12.027V	4.991V	3.305V	4.988V	29.906				115.10V
2	2.455A	0.999A	0.995A	0.401A	39.802	80.976%	0	<6.0	0.944
	12.027V	4.991V	3.307V	4.986V	49.153				115.10V
3	3.696A	1.497A	1.508A	0.601A	59.910	85.527%	0	<6.0	0.920
	12.027V	4.993V	3.307V	4.985V	70.048				115.10V
4	4.926A	2.005A	1.995A	0.801A	79.843	87.882%	0	<6.0	0.917
	12.026V	4.994V	3.307V	4.983V	90.853				115.10V

### RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	5.7 mV	3.1 mV	5.1 mV	2.6 mV	Pass
20% Load	7.3 mV	3.3 mV	5.3 mV	2.9 mV	Pass
30% Load	8.3 mV	3.5 mV	5.5 mV	3.0 mV	Pass
40% Load	8.8 mV	3.7 mV	5.6 mV	2.9 mV	Pass
50% Load	8.2 mV	3.6 mV	5.4 mV	2.8 mV	Pass
60% Load	8.7 mV	3.9 mV	6.0 mV	2.9 mV	Pass
70% Load	8.4 mV	4.0 mV	5.9 mV	3.0 mV	Pass
80% Load	8.5 mV	4.6 mV	6.4 mV	3.3 mV	Pass
90% Load	8.8 mV	4.6 mV	7.1 mV	3.7 mV	Pass
100% Load	9.8 mV	5.5 mV	6.9 mV	3.8 mV	Pass
110% Load	11.1 mV	4.7 mV	6.4 mV	3.2 mV	Pass
Crossload 1	6.5 mV	5.2 mV	4.7 mV	2.6 mV	Pass
Crossload 2	10.2 mV	4.2 mV	6.4 mV	3.3 mV	Pass

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HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	26.70
AC Loss to PWR_OK Hold Up Time (ms)	24.50
PWR_OK Inactive to DC Loss Delay (ms)	2.20



## CERTIFICATIONS



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