

Lab ID#: MS85002336
Receipt Date: Jan 8, 2024
Test Date: Jan 25, 2024

Report: 24PS2336A
Report Date: Jan 26, 2024

DUT INFORMATION

Brand	MSI
Manufacturer (OEM)	CWT
Series	MAG AGL PCIE5
Model Number	MAG A850GL PCIE5
Serial Number	
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12
Rated Frequency (Hz)	47-63
Rated Power (W)	850
Type	ATX12V
Cooling	120mm Fluid Dynamic Bearing Fan (DF1202512FDHN)
Semi-Passive Operation	X
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	Brüel & Kjær 2270 G4
Microphone	Brüel & Kjær 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 (+-2°C / +- 3.6°F)
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.1 PSU Power Excursion	✓

115V

Average Efficiency	89.044%
Efficiency With 10W (≤500W) or 2% (>500W)	68.015
Average Efficiency 5VSB	78.828%
Standby Power Consumption (W)	0.0549000
Average PF	0.982
Avg Noise Output	38.49 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

230V

Average Efficiency	91.304%
Average Efficiency 5VSB	77.920%
Standby Power Consumption (W)	0.1190000
Average PF	0.941
Avg Noise Output	38.02 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard+

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.5	2.5	0.3
	Watts	110		846	12.5	3.6
Total Max. Power (W)		850				

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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	18AWG	No
4+4 pin EPS12V (750mm)	2	2	18AWG	No
6+2 pin PCIe (600mm+150mm)	2	4	18AWG	No
12+4 pin PCIe (600mm) (450W)	1	1	16-26AWG	No
SATA (500mm+150mm+150mm+150mm)	2	8	18AWG	No
4-pin Molex (500mm+150mm+150mm+150mm) / FDD (+150mm)	1	4 / 1	18-20AWG	No

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General Data	-
Manufacturer (OEM)	CWT
Platform	GPX
PCB Type	Double Sided
Primary Side	-
Transient Filter	2x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x Power Integrations CAP200DG (discharge IC)
Inrush Protection	NTC Thermistor SCK-056 50hm & Relay
Bridge Rectifier(s)	1x Diodes GBU1506 (800V, 15A @ 125°C)
APFC MOSFETs	2x Great Power GP28S50 (500 V, 28 A @ 150 °C, Rds (on): 0.125 ohm) & 1x SPN5003 FET (for reduced no-load consumption)
APFC Boost Diode	1x CRMICRO CRX106D065G2 (600V, 6A @ 167°C)
Bulk Cap(s)	1x CapXon (420V, 560uF, 2000h @ 105°C, HP)
Main Switchers	4x Silan Microelectronics SVF20N50F (500 V, 12.6 A @ 100 °C, Rds (on): 0.27 ohm)
MCU	1x Texas Instruments LM393
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	6x Infineon 014N04LS (40V, 107A @ 100°C, Rds(on): 1.4mOhm)
5V & 3.3V	DC-DC Converters: 4x UBIQ QM3054M6 (30V, 61A @ 100°C, Rds(on): 4.8mOhm) PWM Controller: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 10x Elite (2,000h @ 105°C, PF), 5x CapXon (2-5,000 @ 105°C, KF), Polymer: 27x CapXon
Supervisor IC	IN1S429I - DCG
Fan Model	Martech DF1202512FDHN (120mm, 12V, 0.42A, Fluid Dynamic Bearing Fan)
Standby PWM Controller	Power Integrations TNY287PG

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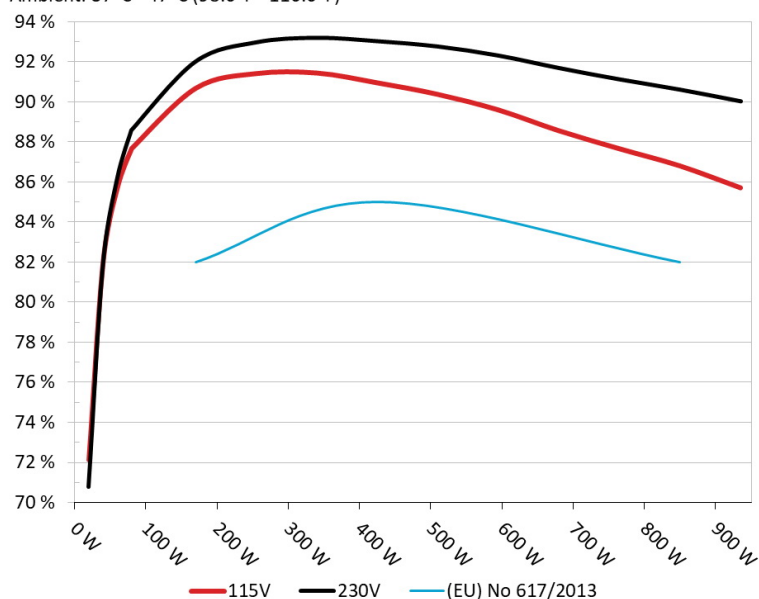
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: MSI MAG A850GL PCIE5

Ambient: 37°C - 47°C (98.6°F - 116.6°F)



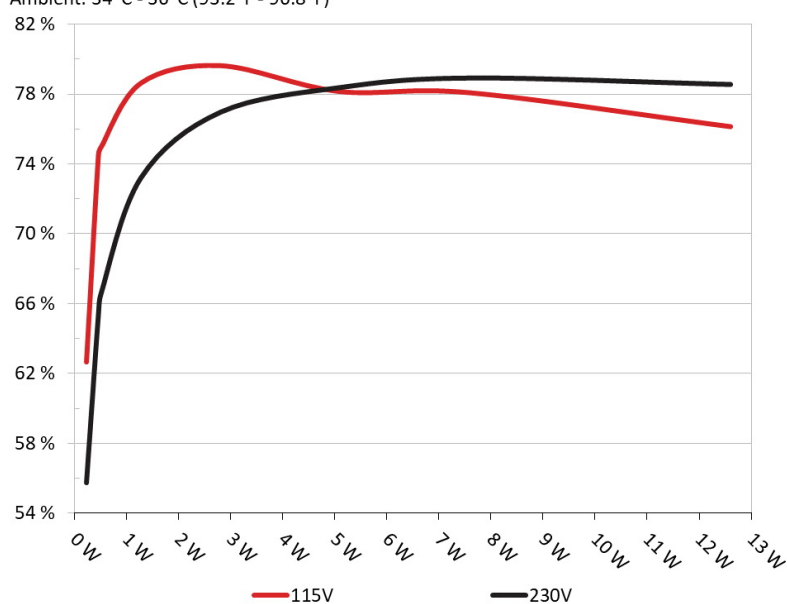
INFO

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: MSI MAG A850GL PCIE5

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	0.23W	63.128%	0.028
	5.105V	0.289W		114.91V
2	0.09A	0.46W	75.033%	0.059
	5.105V	0.613W		114.9V
3	0.55A	2.801W	80.127%	0.261
	5.094V	3.496W		114.91V
4	1A	5.082W	78.649%	0.35
	5.082V	6.461W		114.9V
5	1.5A	7.601W	78.572%	0.406
	5.067V	9.674W		114.91V
6	2.5A	12.599W	76.629%	0.461
	5.04V	16.441W		114.9V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	56.243%	0.012
	5.109V	0.409W		229.93V
2	0.09A	0.46W	65.897%	0.02
	5.108V	0.699W		229.93V
3	0.55A	2.801W	77.445%	0.1
	5.094V	3.618W		229.89V
4	1A	5.082W	78.852%	0.166
	5.082V	6.446W		229.89V
5	1.5A	7.602W	79.403%	0.212
	5.068V	9.574W		229.89V
6	2.5A	12.601W	79.035%	0.294
	5.041V	15.943W		229.89V

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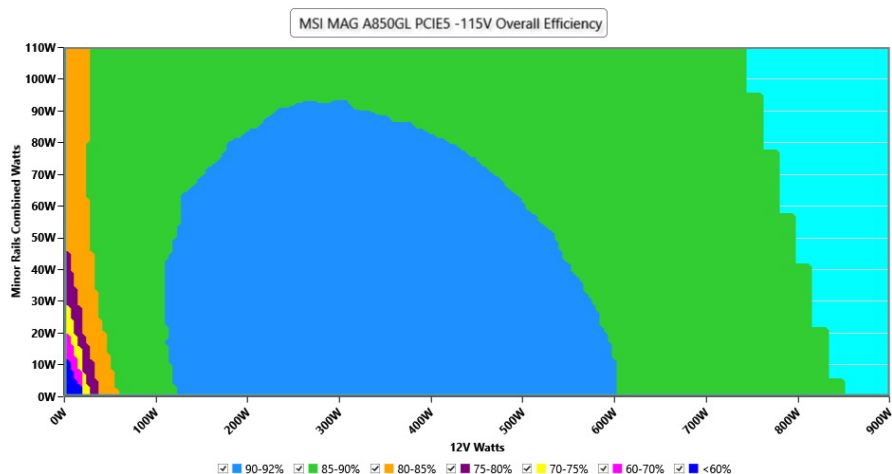
115V

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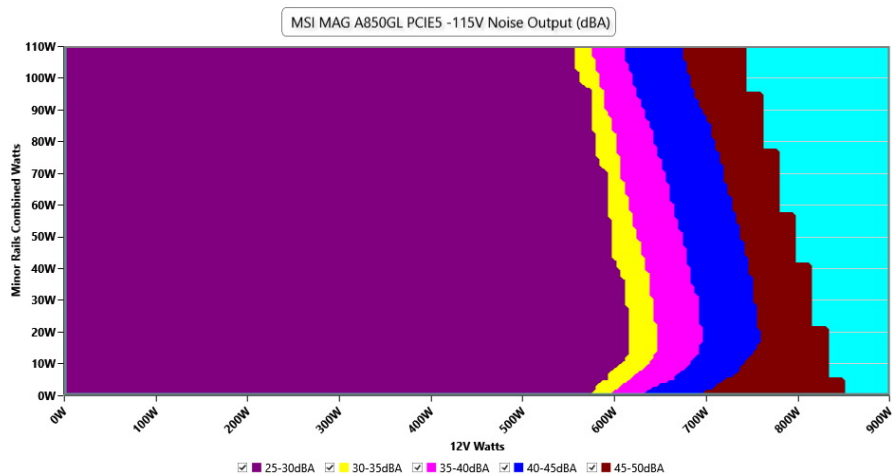
EFFICIENCY GRAPH 115V



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 (+2 °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:	114.91 V	114.87 V	113.85 V	114.95 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.98 Hz	59.40 Hz	60.02 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.15 %	0.12 %	N/A	0.21 %	2.00 %	PASS
Real Power:	0.055 W	0.048 W	N/A	0.063 W	N/A	N/A
Apparent Power:	10.288 W	10.270 W	N/A	10.313 W	N/A	N/A
Power Factor:	0.005	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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COMMISSION REGULATION (EU) NO 617/2013 TESTING 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%	5.248A	1.992A	1.971A	0.986A	85.001	87.678%	1145	29.7	40.27°C	0.965
	12.082V	5.02V	3.348V	5.069V	96.944				44.32°C	114.88V
20%	11.515A	2.989A	2.959A	1.187A	169.939	90.69%	1148	29.8	40.83°C	0.98
	12.075V	5.018V	3.346V	5.055V	187.386				45.38°C	114.85V
50%	31.054A	4.987A	4.939A	1.795A	424.854	90.962%	1158	29.9	42.36°C	0.983
	12.055V	5.013V	3.341V	5.015V	467.064				48.37°C	114.77V
100%	63.449A	8.994A	8.917A	2.523A	849.669	86.814%	2384	48.2	45.91°C	0.989
	12.017V	5.003V	3.331V	4.954V	978.723				55.98°C	114.6V

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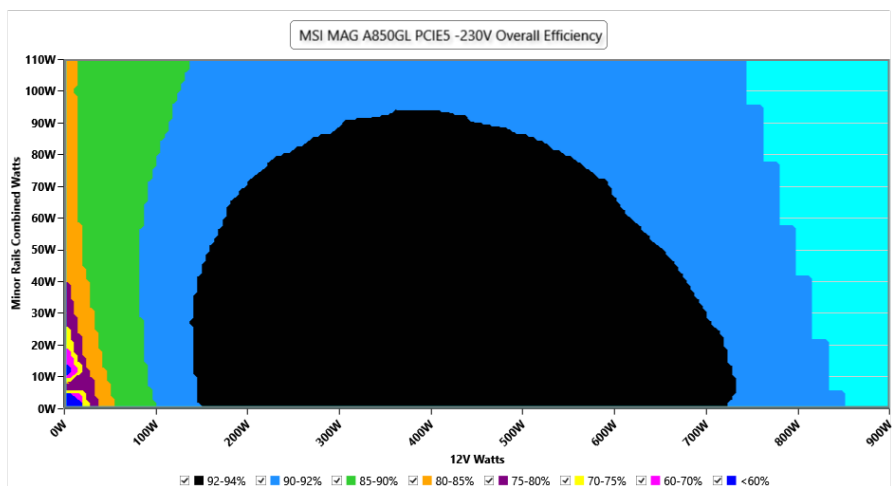
230V

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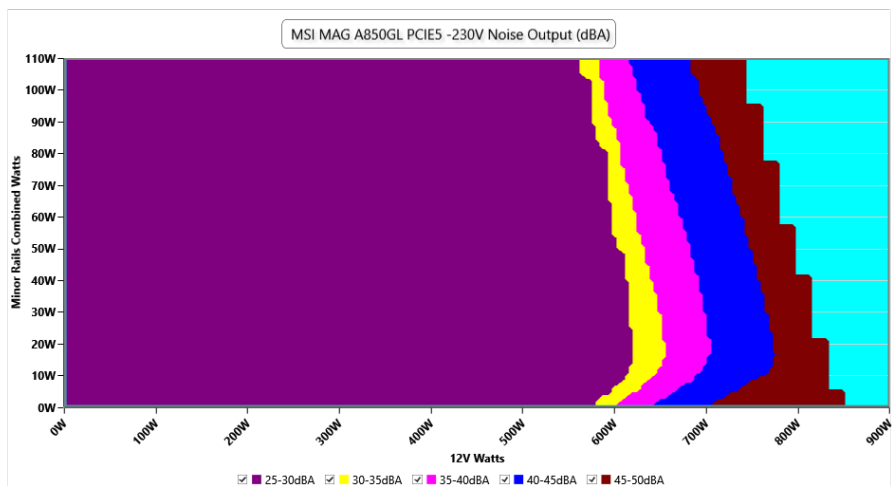
EFFICIENCY GRAPH 230V



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 230V



INFO

The PSU's noise in its entire operational range and under 30-32 °C (+2 °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:	229.88 V	229.83 V	227.70 V	229.95 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	1.415	1.340	1.417	1.490	PASS
Mains Voltage THD:	0.17 %	0.15 %	N/A	0.21 %	2.00 %	PASS
Real Power:	0.119 W	0.091 W	N/A	0.161 W	N/A	N/A
Apparent Power:	34.688 W	34.656 W	N/A	34.717 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

INFO

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COMMISSION REGULATION (EU) NO 617/2013 TESTING 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%	5.248A	1.992A	1.971A	0.987A	85.004	88.584%	1144	29.6	40.15°C	0.819
	12.079V	5.02V	3.348V	5.068V	95.957				44.39°C	229.88V
20%	11.517A	2.99A	2.959A	1.187A	169.946	92.012%	1146	29.7	40.74°C	0.916
	12.073V	5.017V	3.345V	5.055V	184.698				45.27°C	229.87V
50%	31.059A	4.988A	4.939A	1.795A	424.839	93.033%	1158	29.9	42.04°C	0.959
	12.052V	5.012V	3.341V	5.015V	456.658				48.05°C	229.82V
100%	63.450A	8.994A	8.916A	2.523A	849.649	90.615%	2385	48.2	45.03°C	0.973
	12.017V	5.003V	3.331V	4.955V	937.646				55.06°C	229.74V

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Top side

msi MAG A850GL PC					
AC INPUT / 電壓輸入 交流輸入 / 交流輸入		100-240V~12A, 47-63Hz 不適用中國 200-240V~6.0A, 47-63Hz 僅適用中國 Only for China/Korea			
DC OUTPUT / 電壓輸出 直流輸出 / 直流輸出	+5V	+3.3V	+12V	-12V	+5Vsb
	20.0A	20.0A	70.5A	0.3A	2.5A
TOTAL POWER 最大功率 / 最大功率	110W		846W	3.6W	12.5W
			850W		
<div><div><div>⚠ CAUTION: 警告</div><div><div>● Do not open the power supply / 請勿打開電源供應器 / 請勿打開電源供應器 / Ne ouvrez pas l'alimentation électrique</div><div>● Potential lethal voltages inside / 內部隱藏致命電壓 / 內部電壓可能致命 / Des tensions potentiellement mortelles sont</div></div></div><div><div>● Select the right input voltage / 選擇正確的輸入電壓 / 選擇正確的輸入電壓 / Sélectionnez la bonne tension d'entrée</div><div>● Warranty void if security seal is damaged, removed or lost / 如果封條紙被移動、遺失或損毀，本開關電源保固將失效 / 如果封條紙被移動、遺失或損毀，本開關電源保固將失效</div></div></div>					

Power specifications label

CERTIFICATIONS 115V




Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



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