

Anex

Montech Century 650W

Lab ID#: MT65001694
Receipt Date: Jul 22, 2020
Test Date: Jul 30, 2020

Report: 20PS1694A

Report Date: Aug 3, 2020

DUT INFORMATION

Brand	Montech
Manufacturer (OEM)	Channel Well Technology
Series	Century
Model Number	GPX650S
Serial Number	CENTURY650200600060
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	47-63
Rated Power (W)	650
Type	ATX12V
Cooling	120mm Fluid Dynamic Bearing Fan (D12BM-12)
Semi-Passive Operation	X
Cable Design	Fully Modular

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA x2

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	88.260%
Efficiency With 10W (≤500W) or 2% (>500W)	62.678
Average Efficiency 5VSB	79.282%
Standby Power Consumption (W)	0.0453737
Average PF	0.977
Avg Noise Output	32.89 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	Standard++

230V

Average Efficiency	90.533%
Average Efficiency 5VSB	77.891%
Standby Power Consumption (W)	0.0852637
Average PF	0.923
Avg Noise Output	32.60 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	Standard++

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	54	2.5	0.3
	Watts	100		648	12.5	3.6
Total Max. Power (W)		650				

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

Hold-Up Time (ms)	14
AC Loss to PWR_OK Hold Up Time (ms)	11.2
PWR_OK Inactive to DC Loss Delay (ms)	2.8

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (500mm)	1	1	18AWG	No
8 pin EPS12V (600mm) / 4+4 pin EPS12V (+150mm)	1	1 / 1	18AWG	No
6+2 pin PCIe (500mm+150mm)	2	4	18AWG	No
SATA (500mm+150mm+150mm+150mm)	2	8	18AWG	No
4-pin Molex (500mm+150mm+150mm)	1	3	18AWG	No
FDD Adapter (150mm)	1	1	20AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	16AWG	-

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General Data	-
Manufacturer (OEM)	CWT
Platform	GPX
PCB Type	Double Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x CAP200DG (Discharge IC)
Inrush Protection	NTC Thermistor SCK-055 & Relay
Bridge Rectifier(s)	1x GBU1006 (600V, 10A @ 100°C)
APFC MOSFETs	2x Great Power GP18S50G (500V, 18A @ 150°C, Rds(on): 0.19Ohm)
APFC Boost Diode	1x STMicroelectronics STTH8S06D (600V, 8A)
Bulk Cap(s)	1x Nichicon (400V, 390uF, 2,000h @ 105°C, GG)
Main Switchers	4x Silan Microelectronics SVF13N50F (500V, 8.2A @ 100°C, Rds(on): 0.52Ohm)
APFC Controller	Champion CM6500UNX & Champion CM03X Phantom Power Remover
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	4x IPS (InPower Semiconductor) 014N04SA
5V & 3.3V	DC-DC Converters: 4x Sync Power SPN3006 (30V, 57A @ 100°C, Rds(on): 5.5mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 9x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 3x Nippon Chemi-Con (1-5,000h @ 105°C, KZE), 1x Nichicon (1,000h @ 105°C, 16V, VZ) Polymer: 21x FPCAP, 2x United Chemi-Con
Supervisor IC	Sitronix ST9S429-PG14 (OVP, UVP, OCP, SCP, PG)
Fan Model	Yate Loon D12BM-12 (120mm, 12V, 0.30A, Fluid Dynamic Bearing Fan)
5VSB Circuit	-
Standby PWM Controller	Power Integrations TNY287PG

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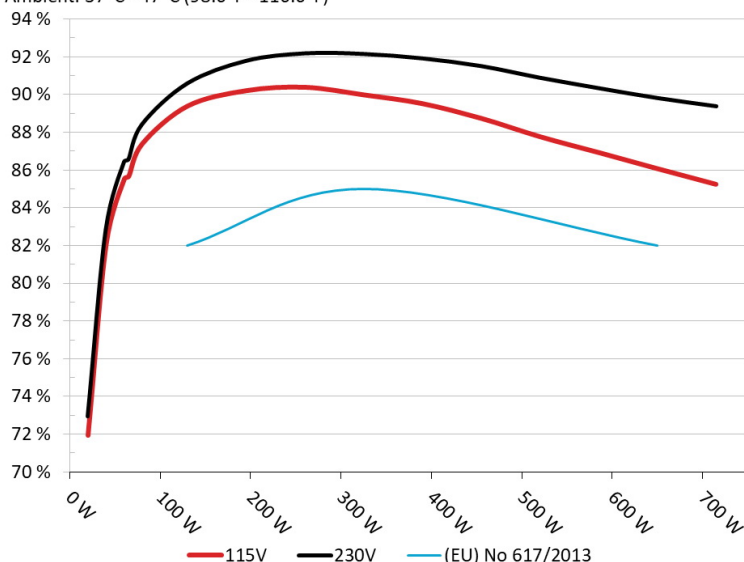
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Montech GPX650S

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



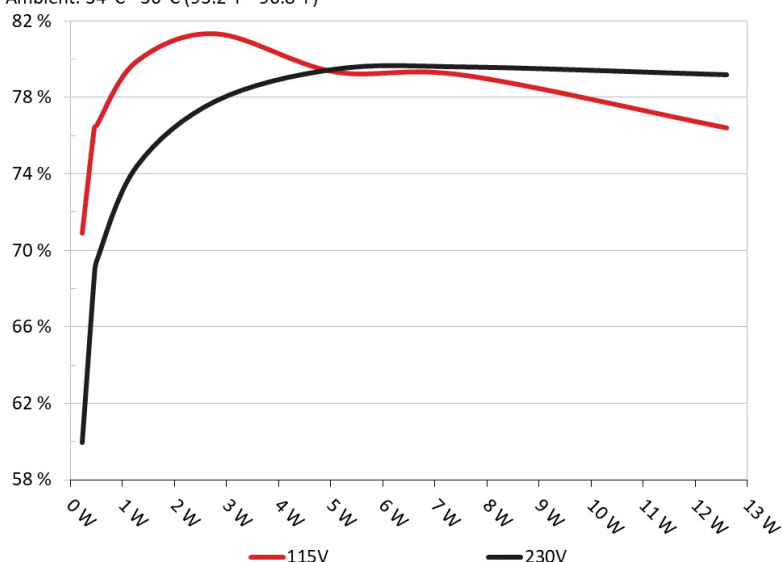
INFO

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: Montech GPX650S

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	0.229	70.898%	0.033
	5.095V	0.323		115.15V
2	0.090A	0.459	76.373%	0.060
	5.094V	0.601		115.15V
3	0.550A	2.796	81.303%	0.261
	5.083V	3.439		115.15V
4	1.000A	5.074	79.318%	0.360
	5.074V	6.397		115.15V
5	1.500A	7.594	79.129%	0.414
	5.062V	9.597		115.14V
6	2.500A	12.599	76.395%	0.470
	5.039V	16.492		115.14V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229	59.948%	0.012
	5.094V	0.382		230.32V
2	0.090A	0.459	68.610%	0.020
	5.094V	0.669		230.32V
3	0.550A	2.797	77.824%	0.102
	5.084V	3.594		230.32V
4	1.000A	5.075	79.483%	0.169
	5.074V	6.385		230.32V
5	1.500A	7.594	79.602%	0.227
	5.062V	9.540		230.32V
6	2.500A	12.600	79.195%	0.306
	5.039V	15.910		230.32V

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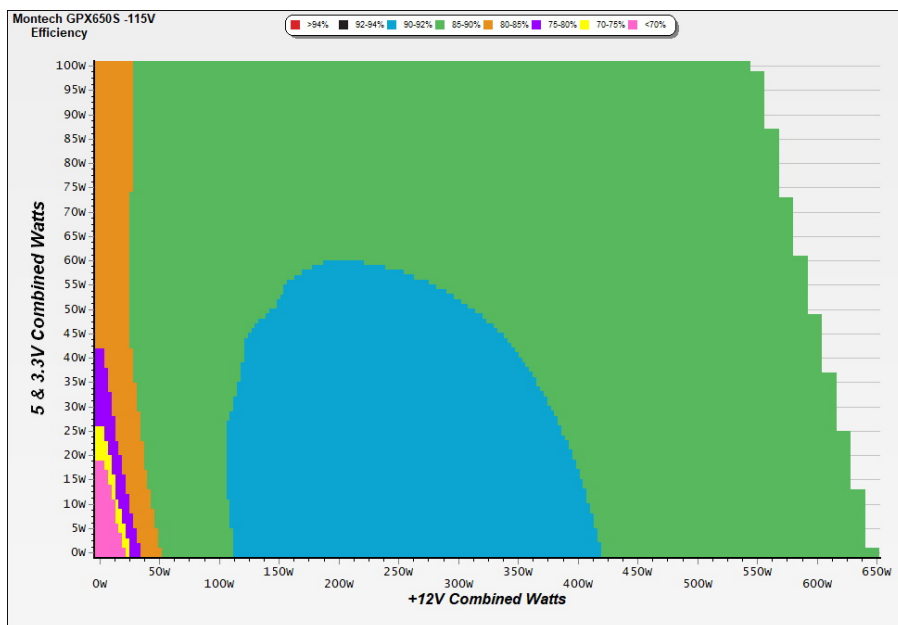
115V

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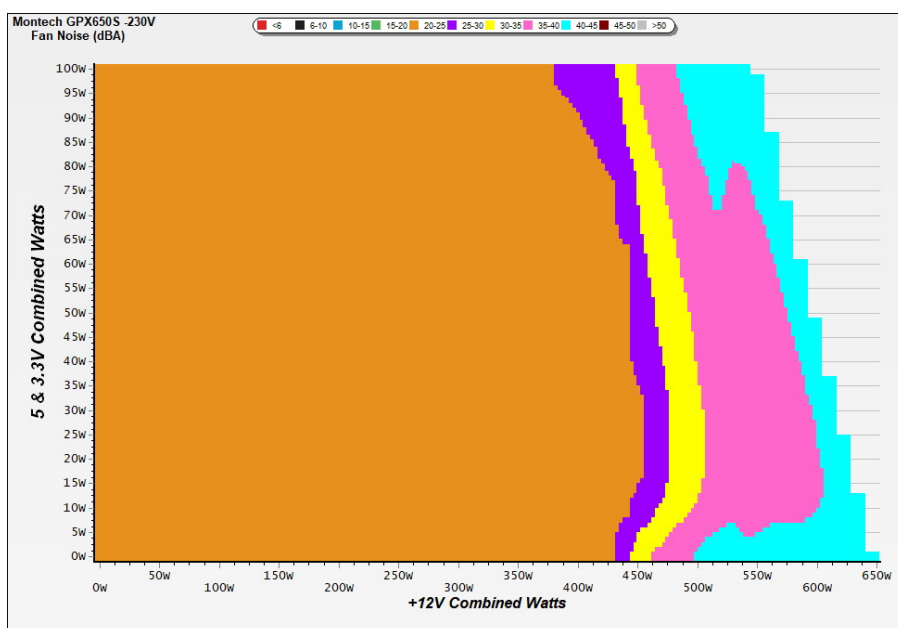
EFFICIENCY GRAPH 115V



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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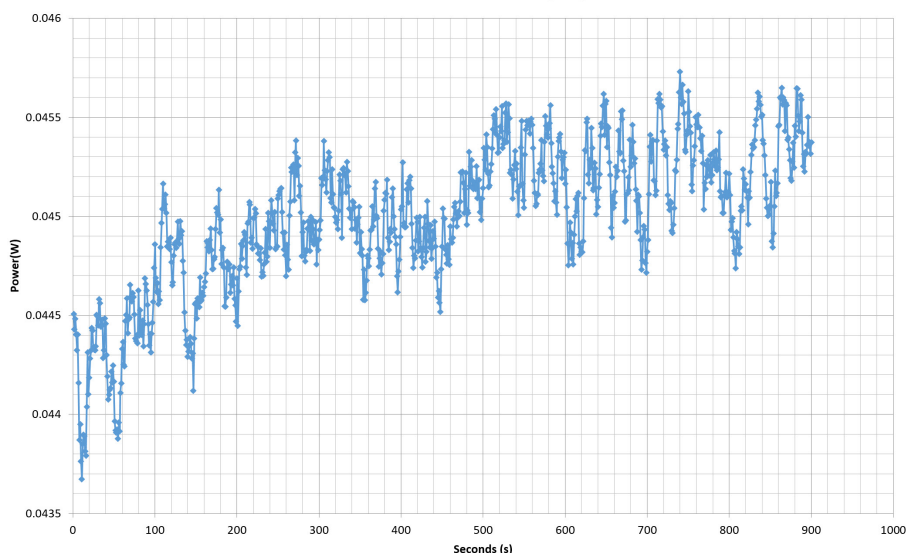
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Anex

Montech Century 650W

VAMPIRE POWER -115V

Power - CENTURY650200600060 - 23/07/2020 - 14:46



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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Montech Century 650W

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
1	3.630A	1.986A	2.023A	0.989A	64.972	85.666%	886	24.7	39.36°C	0.953
	11.948V	5.034V	3.262V	5.060V	75.843				44.17°C	115.09V
2	8.298A	2.982A	3.038A	1.189A	130.051	89.395%	891	25.1	40.91°C	0.972
	11.948V	5.031V	3.260V	5.046V	145.479				46.22°C	115.11V
3	13.309A	3.479A	3.545A	1.391A	195.053	90.213%	895	25.2	41.51°C	0.979
	11.947V	5.029V	3.259V	5.033V	216.214				47.46°C	115.15V
4	18.321A	3.980A	4.052A	1.594A	260.055	90.391%	896	25.3	42.06°C	0.980
	11.945V	5.027V	3.258V	5.020V	287.699				48.65°C	115.12V
5	22.991A	4.976A	5.068A	1.798A	325.089	89.991%	899	25.4	42.39°C	0.981
	11.943V	5.025V	3.256V	5.006V	361.246				49.25°C	115.14V
6	27.616A	5.974A	6.084A	2.001A	389.596	89.528%	902	25.5	43.32°C	0.982
	11.942V	5.024V	3.255V	4.992V	435.167				50.82°C	115.13V
7	32.313A	6.973A	7.103A	2.211A	454.946	88.746%	954	27.1	43.57°C	0.981
	11.940V	5.022V	3.253V	4.977V	512.639				51.80°C	115.11V
8	37.011A	7.972A	8.121A	2.418A	520.250	87.769%	1449	39.1	43.77°C	0.983
	11.938V	5.019V	3.251V	4.963V	592.746				52.80°C	115.10V
9	42.117A	8.474A	8.616A	2.423A	585.178	86.932%	1931	47.0	44.93°C	0.984
	11.935V	5.017V	3.249V	4.954V	673.142				54.77°C	115.10V
10	47.149A	8.977A	9.145A	2.530A	649.902	86.080%	2065	48.1	45.19°C	0.985
	11.934V	5.015V	3.248V	4.942V	754.996				55.49°C	115.09V
11	52.586A	8.980A	9.147A	2.534A	714.729	85.251%	2067	48.2	46.50°C	0.986
	11.933V	5.013V	3.247V	4.934V	838.382				57.44°C	115.09V
CL1	0.116A	12.001A	12.001A	0.000A	100.815	83.249%	909	25.6	42.25°C	0.972
	11.952V	5.030V	3.255V	5.058V	121.101				49.69°C	115.12V
CL2	54.013A	1.000A	1.001A	1.000A	658.024	87.183%	2061	48.0	45.20°C	0.985
	11.937V	5.020V	3.256V	4.992V	754.762				55.59°C	115.09V

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Montech Century 650W

20-80W LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.244A	0.497A	0.504A	0.197A	19.999	71.944%	870	24.2	0.857
	11.936V	5.036V	3.264V	5.087V	27.798				115.15V
2	2.486A	0.993A	1.012A	0.394A	39.989	82.072%	877	24.6	0.925
	11.941V	5.035V	3.264V	5.079V	48.724				115.09V
3	3.730A	1.490A	1.517A	0.592A	60.019	85.520%	882	24.7	0.944
	11.948V	5.034V	3.263V	5.071V	70.181				115.09V
4	4.969A	1.987A	2.024A	0.790A	79.968	87.396%	883	24.7	0.963
	11.947V	5.033V	3.262V	5.064V	91.501				115.10V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	23.50mV	5.40mV	3.80mV	6.50mV	Pass
20% Load	23.70mV	6.80mV	4.40mV	6.00mV	Pass
30% Load	24.60mV	7.20mV	4.20mV	12.60mV	Pass
40% Load	27.50mV	12.60mV	4.50mV	13.80mV	Pass
50% Load	20.60mV	15.90mV	4.70mV	13.40mV	Pass
60% Load	15.10mV	10.60mV	5.10mV	15.80mV	Pass
70% Load	14.70mV	9.90mV	5.60mV	13.20mV	Pass
80% Load	14.00mV	11.60mV	10.30mV	12.10mV	Pass
90% Load	14.60mV	12.10mV	11.00mV	13.80mV	Pass
100% Load	23.20mV	13.50mV	12.20mV	17.30mV	Pass
110% Load	25.20mV	14.10mV	12.40mV	19.50mV	Pass
Crossload1	27.20mV	10.80mV	12.10mV	4.30mV	Pass
Crossload2	23.90mV	13.60mV	6.40mV	16.60mV	Pass

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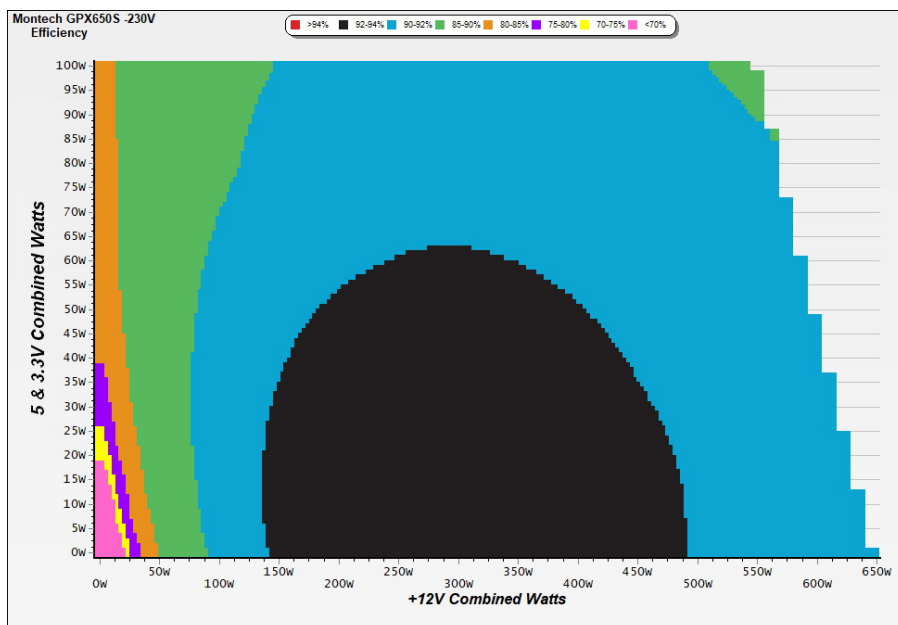
230V

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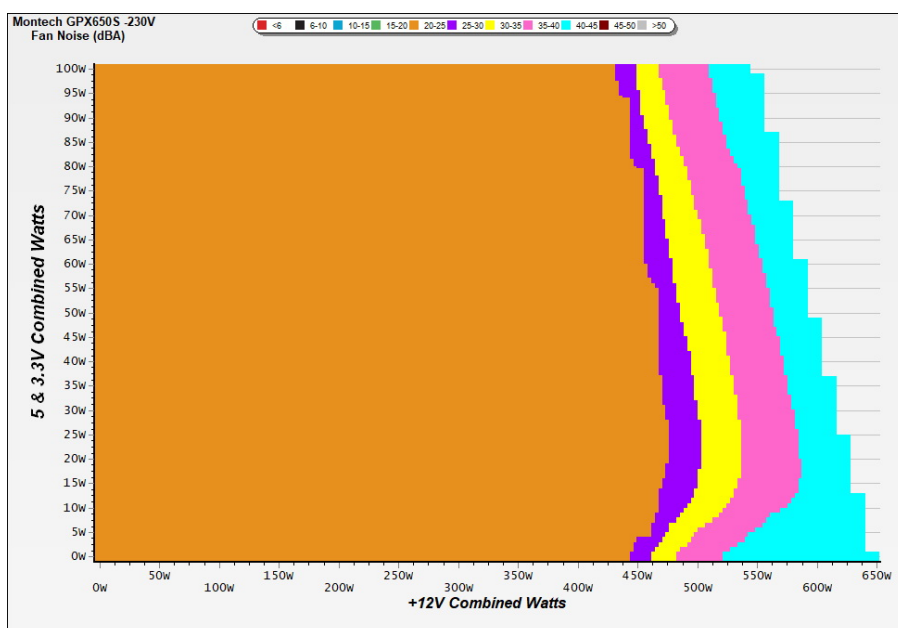
EFFICIENCY GRAPH 230V



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NOISE GRAPH 230V



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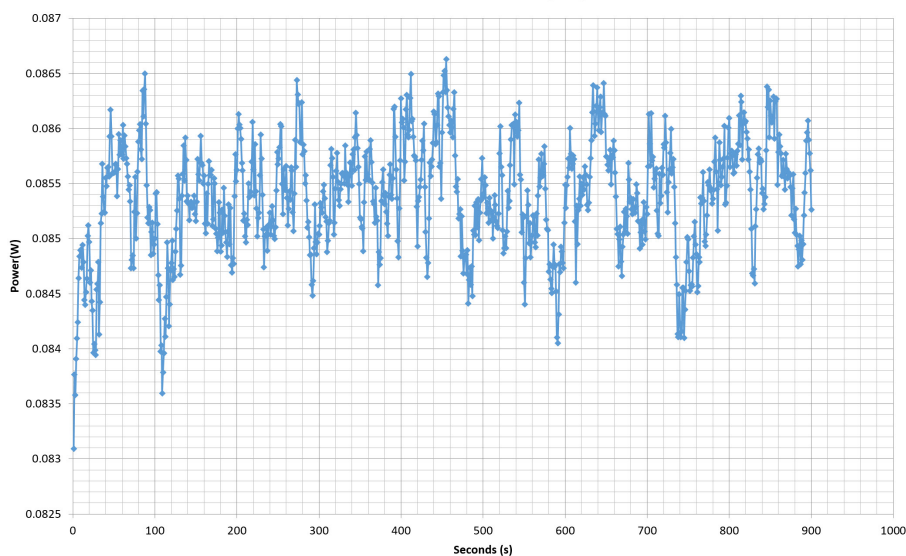
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10-110% LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	3.631A	1.988A	2.023A	0.988A	64.968	86.565%	872	24.3	40.20°C	0.786
	11.944V	5.032V	3.261V	5.060V	75.051				44.48°C	230.38V
2	8.302A	2.983A	3.038A	1.189A	130.045	90.600%	876	24.5	40.65°C	0.883
	11.942V	5.029V	3.259V	5.047V	143.538				45.60°C	230.38V
3	13.315A	3.481A	3.548A	1.391A	195.051	91.795%	879	24.6	41.18°C	0.918
	11.941V	5.027V	3.257V	5.034V	212.485				46.76°C	230.38V
4	18.329A	3.981A	4.055A	1.594A	260.059	92.191%	882	24.7	41.85°C	0.935
	11.940V	5.025V	3.256V	5.021V	282.087				48.16°C	230.38V
5	23.001A	4.979A	5.070A	1.798A	325.103	92.160%	885	24.7	42.24°C	0.943
	11.938V	5.024V	3.255V	5.006V	352.758				49.23°C	230.38V
6	27.634A	5.976A	6.088A	2.001A	389.645	91.925%	888	24.8	42.73°C	0.947
	11.936V	5.022V	3.253V	4.992V	423.874				50.28°C	230.39V
7	32.334A	6.974A	7.108A	2.211A	455.003	91.515%	892	25.1	43.08°C	0.952
	11.934V	5.020V	3.252V	4.977V	497.191				51.65°C	230.39V
8	37.031A	7.973A	8.124A	2.419A	520.306	90.895%	1275	36.1	43.55°C	0.956
	11.933V	5.018V	3.250V	4.962V	572.428				52.95°C	230.39V
9	42.135A	8.477A	8.624A	2.424A	585.250	90.344%	1780	44.9	44.34°C	0.959
	11.931V	5.016V	3.248V	4.953V	647.802				54.33°C	230.38V
10	47.172A	8.979A	9.148A	2.530A	649.978	89.823%	2058	48.0	44.94°C	0.962
	11.930V	5.013V	3.247V	4.941V	723.624				55.67°C	230.38V
11	52.620A	8.981A	9.153A	2.535A	714.809	89.390%	2062	48.1	46.56°C	0.964
	11.927V	5.011V	3.245V	4.933V	799.652				57.49°C	230.36V
CL1	0.118A	12.003A	12.001A	0.000A	100.825	83.922%	903	25.5	42.43°C	0.859
	11.951V	5.029V	3.254V	5.057V	120.142				49.80°C	230.40V
CL2	54.022A	1.001A	0.999A	1.000A	657.801	90.682%	2059	48.0	44.96°C	0.963
	11.931V	5.018V	3.254V	4.991V	725.397				55.94°C	230.36V

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20-80W LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.245A	0.494A	0.506A	0.197A	20.001	72.962%	869	24.2	0.510
	11.936V	5.035V	3.264V	5.086V	27.413				230.39V
2	2.487A	0.994A	1.010A	0.394A	39.990	82.862%	869	24.2	0.670
	11.938V	5.034V	3.262V	5.079V	48.261				230.38V
3	3.731A	1.491A	1.518A	0.592A	60.018	86.429%	869	24.2	0.770
	11.944V	5.032V	3.261V	5.072V	69.442				230.38V
4	4.970A	1.989A	2.024A	0.790A	79.966	88.427%	871	24.2	0.816
	11.943V	5.032V	3.261V	5.064V	90.432				230.38V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	24.50mV	5.10mV	3.80mV	6.30mV	Pass
20% Load	24.60mV	6.60mV	4.20mV	6.80mV	Pass
30% Load	26.90mV	8.00mV	4.40mV	12.10mV	Pass
40% Load	27.80mV	12.40mV	4.50mV	12.60mV	Pass
50% Load	23.40mV	16.40mV	5.10mV	13.60mV	Pass
60% Load	18.40mV	10.30mV	5.00mV	14.80mV	Pass
70% Load	14.80mV	10.20mV	5.50mV	12.10mV	Pass
80% Load	15.10mV	11.60mV	10.60mV	12.70mV	Pass
90% Load	16.80mV	13.20mV	10.90mV	14.20mV	Pass
100% Load	23.80mV	13.80mV	11.90mV	16.80mV	Pass
110% Load	26.60mV	15.40mV	11.70mV	19.70mV	Pass
Crossload1	27.40mV	10.20mV	12.00mV	4.10mV	Pass
Crossload2	23.40mV	13.30mV	6.00mV	17.20mV	Pass

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Anex

Montech Century 650W



Top side

CENTURY 650					
Switching Power Supply/スイッチモード電源/電源供應器/电源供应器 Model/モデル/型號/型号: GPX650S					
AC INPUT/ AC入力/交流輸入/交流輸入	100-240Vac 10.0A 47-63Hz				
DC OUTPUT/ DC出力/直流輸出/直流輸出	+5V	+3.3V	+12V	-12V	+5Vsb
	20.0A	20.0A	54.0A	0.3A	2.5A
Max.POWER 最大電源容量/最大總功率/ 最大总功率	100.0W		648W	3.6W	12.5W
	650W				

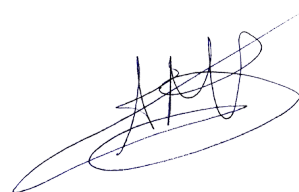
CAUTION! 警告
IF THE SEALED STICKER WAS REMOVED, DAMAGED OR LOST,
IT WOULD LOSE THE WARRANTY VALIDITY!
如果封條貼紙被移動、破壞、或遺失，此電源保固將失效
如果封條貼紙被移動、破壞、或遺失，此電源保固將失效
Made in China/中國製造/中國製造
Trade mark: CWT/製造商: 廣威科技股份有限公司/
製造商: 廣威科技股份有限公司

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired operation.
ROHS資訊: http://www.cwt.com.tw/QuaryROHS.aspx

CB CE

Power specifications label

CERTIFICATIONS 115V

Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



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