

be quiet! Pure Power 11 FM 1000W

Anex

Lab ID#: BQ10001987 Receipt Date: Feb 10, 2022 Test Date: Mar 9, 2022

Report: 22PS1987A

Report Date: Mar 9, 2022

DUT INFORMATION	
Brand	be quiet!
Manufacturer (OEM)	HEC
Series	Pure Power 11 FM
Model Number	L11-FM-1000W
Serial Number	325H1480009912
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	50-60
Rated Frequency (Hz)	12-6
Rated Power (W)	1000
Туре	ATX12V
Cooling	120mm Rifle Bearing Fan (BQ QF2-12025-HS)
Semi-Passive Operation	×
Cable Design	Fully Modular

TEST EQUIPMENT Chroma 63601-5 x4 Chroma 63600-2 x2 **Electronic Loads** 63640-80-80 x20 63610-80-20 x2 AC Sources Chroma 6530, Keysight AC6804B N4L PPA1530 x2, R&S HMC8015 **Power Analyzers** Sound Analyzer Bruel & Kjaer 2270 G4 Bruel & Kjaer Type 4955-A Microphone Data Loggers Picoscope TC-08 x2, Labjack U3-HV x2 UNI-T UT372 x2 Tachometer **Digital Multimeter** Keysight U1273AX, Fluke 289, Keithley 2015 - THD UPS CyberPower OLS3000E 3kVA x2 3kVA x2 Transformer

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EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	1
(EU) No 617/2013 Compliance	1

115V		230V			
Average Efficiency	88.846%	Average Efficiency	91.050%		
Efficiency With 10W (≤500W) or 2% (>500W)	74.828	Average Efficiency 5VSB	79.958%		
Average Efficiency 5VSB	81.001%	Standby Power Consumption (W)	0.1171000		
Standby Power Consumption (W)	0.0633000	Average PF	0.940		
Average PF	0.977	Avg Noise Output	30.90 dB(A)		
Avg Noise Output	30.99 dB(A)	Efficiency Rating (ETA)	PLATINUM		
Efficiency Rating (ETA)	GOLD	Noise Rating (LAMBDA)	Standard++		
Noise Rating (LAMBDA)	Standard++				

POWER SPECIFICATIONS

Rail		3.3V	5V	12V(1)	12V(2)	5VSB	-12V
Max. Power	Amps	22	22	46	42	3	0.3
	Watts	120		999.6		15	3.6
Total Max. Power (W)		1000					

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

Hold-Up Time (ms)	18.9
AC Loss to PWR_OK Hold Up Time (ms)	15.9
PWR_OK Inactive to DC Loss Delay (ms)	3

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CABLES AND CONNECTORS

Modular Cables

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Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (550mm)	1	1	16-22AWG	No
4+4 pin EPS12V (600mm)	1	1	18AWG	No
8 pin EPS12V (600mm)	1	1	18AWG	No
6+2 pin PCIe (500mm+150mm)	2	4	16-18AWG	No
2x 6+2 pin PCIe (500mm)	1	2	16AWG	No
SATA (500mm+150mm+150mm+150mm)	2	8	18AWG	No
SATA (500mm+150mm) / 4-pin Molex (+150mm+150mm) / FDD (+150mm)	1	2/2/1	18-20AWG	No
AC Power Cord (1360mm) - C13 coupler	1	1	18AWG	-

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General Data Manufacturer (OEM) HEC PCB Type Double Sided **Primary Side Transient Filter** 4x Y caps, 3x X caps, 2x CM chokes, 1x MOV, 1x Power Integrations CAP200G (Discharge IC) Inrush Protection NTC Thermistor SCK-056 (5 Ohm) & Relay 2x GBU15JL (600V, 15A @ 115°C) Bridge Rectifier(s) **APFC MOSFETs** 3x Infineon IPA60R120P7 (600V, 16A @ 100°C, Rds(on): 0.120hm) 1x CREE C6D10065A (650V, 10A @ 155°C) APFC Boost Diode 2x Teapo (400V, 470uF each or 940uF, 2,000h @ 105°C, LG) Bulk Cap(s) Main Switchers 2x On Semiconductor NTPF110N65S3HF (650V, 19.5A @ 100°C, Rds(on): 0.11Ohm) Champion CM6500UNX & CM03AX **APFC Controller Resonant Controller** Champion CM6901T6X Primary side: APFC, Half-Bridge & LLC converter Topology Secondary side: Synchronous Rectification & DC-DC converters Secondary Side +12V MOSFETs 6x Nexperia PSMN1R0-40YLD (40V, 198A @ 100°C, Rds(on): 1.1mOhm) 5V & 3.3V **DC-DC Converters** Electrolytic: 14x Teapo (1-3,000 @ 105°C, SC), 1x Elite (105°C, EM) **Filtering Capacitors** Polymer: 6x Teapo, 6x Elite, 16x no info Supervisor IC Weltrend WT7527RT (OCP, OVP, UVP, SCP, PG) Fan Model be guiet! BQ QF2-12025-HS (120mm, 12V, 0.30A, Rifle Bearing Fan) **5VSB** Circuit Rectifier 1x SECOS SMPD1060L SBR (60V, 10A) Standby PWM Controller Excelliance MOS EM8569D

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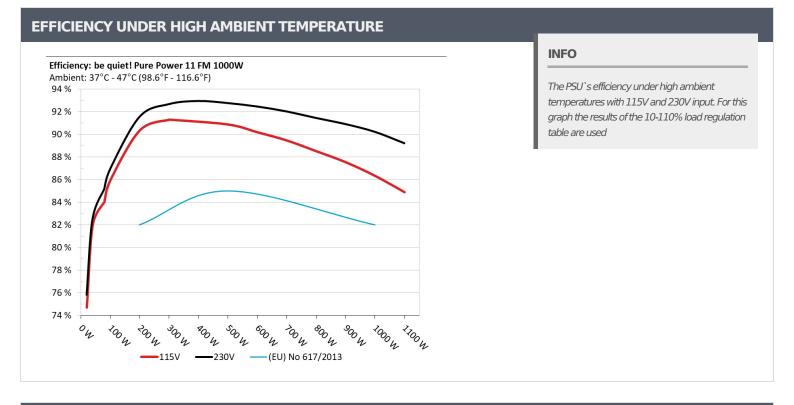
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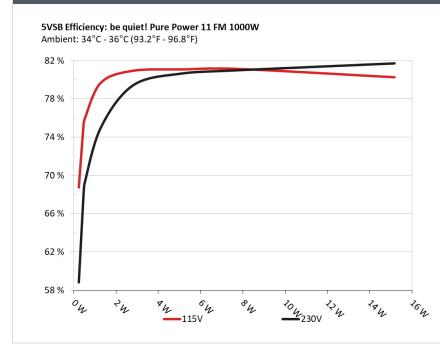


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5VSB EFFICIENCY



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	- 60 700/	0.027			
I	5.112V	0.335W	68.72%	115.14V			
2	0.09A	0.46W	75 41-00/	0.05			
2	5.11V	0.61W	75.412%	115.14V			
2	0.55A	2.806W		0.233			
3	5.101V	3.464W	80.954%	115.13V			
4	1A	5.093W	01.000/	0.335			
4	5.092V	6.28W	81.09%	115.12V			
-	1.5A	7.625W	01 1520/	0.391			
5	5.083V	9.397W	81.153%	115.12V			
6	ЗА	15.163W	00.0700/	0.465			
6	5.054V	18.889W	80.273%	115.12V			

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	50.0049/	0.01
1	5.111V	0.392W	58.824%	230.37V
2	0.09A	0.46W	CO 2 449 /	0.017
	5.11V	0.675W	68.244%	230.37V
3	0.55A	2.806W	70.40%	0.084
	5.101V	3.533W	79.42%	230.36V
	1A	5.093W	00.04%	0.143
4	5.092V	6.314W	80.64%	230.36V
-	1.5A	7.625W	00.0000/	0.197
5	5.082V	9.417W	80.968%	230.36V
6	ЗА	15.162W	01 (000)	0.301
6	5.053V	18.556W	81.698%	230.36V

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EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

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115V

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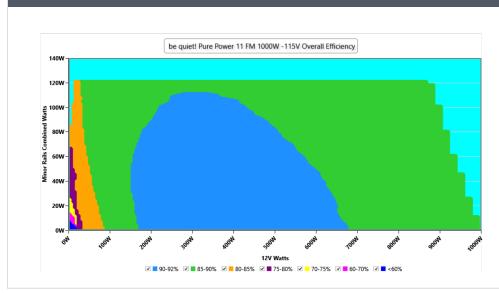
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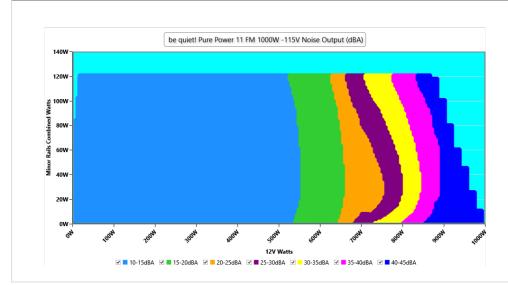
EFFICIENCY GRAPH 115V



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	Мах	Limit Max	Result		
Mains Voltage RMS:	115.14 V	115.14 V	113.85 V	115.17 V	116.15 V	PASS		
Mains Frequency:	60.00 Hz	60.00 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS		
Mains Voltage CF:	1.415	1.415	1.340	1.416	1.490	PASS		
Mains Voltage THD:	0.13 %	0.11 %	N/A	0.15 %	2.00 %	PASS		
Real Power:	0.063 W	0.057 W	N/A	0.068 W	N/A	N/A		
Apparent Power:	12.150 W	12.148 W	N/A	12.154 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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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
100/	6.488A	2A	2.008A	0.982A	100.01	05 0220/	707	11.1	40.75°C	0.952
10%	12.084V	5V	3.287V	5.095V	116.38	85.933%	707	11.1	44.77°C	115.11V
20%	14.032A	3.003A	3.014A	1.181A	199.965	90.34%	706	11.1	40.85°C	0.969
2076	12.048V	4.997V	3.285V	5.082V	221.353	90.3470	700	11.1	45.24°C	115.09V
30%	21.932A	3.505A	3.517A	1.381A	300.018	91.291%	707	11.1	41.68°C	0.97
5078	12.036V	4.994V	3.284V	5.07V	328.639	91.29170	101	11.1	46.47°C	115.06V
40%	29.819A	4.008A	4.022A	1.582A	399.719	91.298%	708	11.2	42.13°C	0.975
4076	12.023V	4.991V	3.282V	5.059V	437.815	91.29070	700	11.2	47.14°C	115.03V
50%	37.379A	5.014A	5.031A	1.784A	499.381	90.87%	708	11.2	42.26°C	0.98
5070	12.009V	4.987V	3.28V	5.047V	549.557	90.0770	700	11.2	47.82°C	115V
60%	45.025A	6.021A	6.041A	1.986A	599.921	90.182%	% 763	13.6	43.31°C	0.984
0070	11.996V	4.984V	3.278V	5.036V	665.233	50.10270		15.0	49.65°C	114.97V
70%	52.622A	7.029A	7.051A	2.19A	699.66	89.459% 951	951	21.1	43.71°C	0.988
	11.983V	4.981V	3.276V	5.024V	782.099			50.81°C	114.94V	
80%	60.307A	8.002A	8.061A	2.294A	799.527	88.511%	1589	36.1	43.94°C	0.99
	11.968V	4.978V	3.275V	5.014V	903.313	00101170	1303	5011	51.98°C	114.92V
90%	68.349A	8.544A	8.555A	2.398A	899.519	87.542%	1854	40.4	44.81°C	0.992
	11.954V	4.974V	3.273V	5.004V	1027.525	0/10/12/0	1001		54.11°C	114.89V
100%	76.209A	9.052A	9.078A	3.01A	999.533	86.337%	1847	40.3	45.25°C	0.993
	11.939V	4.972V	3.271V	4.985V	1157.718				55.53°C	114.86V
110%	84.039A	10.063A	10.183A	3.015A	1100.151	84.887%	1845	40.3	46.73°C	0.994
	11.921V	4.968V	3.27V	4.976V	1296.045				58.1°C	114.82V
CL1	0.116A	14.459A	14.539A	0A	121.29	83.001%	794	14.9	41.11°C	0.962
	12.082V	4.993V	3.28V	5.094V	146.132				46.35°C	115.1V
CL2	0.115A	22.005A	0A	0A	111.391	81.608%	724	11.7	40.92°C	0.955
	12.086V	4.999V	3.284V	5.105V	136.496				47.94°C	115.1V
CL3	0.115A	0A	22.084A	0A	73.985	75.621%	713	11.4	41.25°C	0.959
	12.083V	5.001V	3.287V	5.094V	97.838				50.39°C	115.12V
CL4	83.715A	0A	0A	0A	1000.175	86.993%	1860	40.6	45.67°C	0.993
	11.947V	4.984V	3.281V	5.059V	1149.72		1000	40.0	57.05°C	114.86V

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20-80W LOAD TESTS 115V									
12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1.230A	0.499A	0.501A	0.196A	20.003	74 (050/	705	11.0	37.25°C	0.851
12.077V	5.007V	3.291V	5.11V	26.777	74.095%	705	11.0	39.53°C	115.14V
2.708A	0.699A	0.702A	0.294A	40.002	01 00 40/	704	11.0	37.53°C	0.913
12.073V	5.004V	3.29V	5.108V	48.784	81.994%			40.24°C	115.13V
4.186A	0.9A	0.903A	0.392A	60	04.0010/		11.0	38.51°C	0.933
12.072V	5.003V	3.288V	5.106V	71.415	84.021%	704		41.61°C	115.13V
5.655A	1.1A	1.104A	0.49A	79.959	04 2200/	700		39.2°C	0.957
12.083V		/08	11.2	42.65°C	115.12V				
	1.2V 1.230A 12.077V 2.708A 12.073V 4.186A 12.072V 5.655A	12V 5V 1.230A 0.499A 12.077V 5.007V 2.708A 0.699A 12.073V 5.004V 4.186A 0.9A 12.072V 5.003V 5.655A 1.1A	12V 5V 3.3V 1.230A 0.499A 0.501A 12.077V 5.007V 3.291V 2.708A 0.699A 0.702A 12.073V 5.004V 3.29V 4.186A 0.9A 0.903A 12.072V 5.003V 3.288V 5.655A 1.1A 1.104A	12V 5V 3.3V 5VSB 1.230A 0.499A 0.501A 0.196A 12.077V 5.007V 3.291V 5.11V 2.708A 0.699A 0.702A 0.294A 12.073V 5.004V 3.29V 5.108V 4.186A 0.9A 0.903A 0.392A 12.072V 5.003V 3.288V 5.106V 5.655A 1.1A 1.104A 0.49A	12V5V3.3V5VSBDC/AC (Watts)1.230A0.499A0.501A0.196A20.00312.077V5.007V3.291V5.11V26.7772.708A0.699A0.702A0.294A40.00212.073V5.004V3.29V5.108V48.7844.186A0.9A0.903A0.392A6012.072V5.003V3.288V5.106V71.4155.655A1.1A1.104A0.49A79.959	12V 5V 3.3V 5VSB DC/AC (Watts) Efficiency 1.230A 0.499A 0.501A 0.196A 20.003 $\mathcal{A}.695\%$ 12.077V 5.007V 3.291V 5.11V 26.777 $\mathcal{A}.695\%$ 2.708A 0.699A 0.702A 0.294A 40.002 $\mathcal{A}.994\%$ 12.073V 5.004V 3.29V 5.108V 48.784 $\mathcal{A}.994\%$ 12.073V 5.004V 3.29V 5.108V 48.784 $\mathcal{A}.994\%$ 12.072V 5.003V 3.288V 5.106V 71.415 $\mathcal{A}.021\%$ 5.655A 1.1A 1.104A 0.49A 79.959 $\mathcal{A}.239\%$	12V5V3.3V5VSB DC/AC (Watts)EfficiencyFan Speed (RPM)1.230A0.499A0.501A0.196A20.003 -14.695% -705 12.077V5.007V3.291V5.11V26.777 -74.695% -705 2.708A0.699A0.702A0.294A40.002 -81.994% -704 12.073V5.004V3.29V5.108V48.784 -704 12.073V5.004V3.29V5.108V48.784 -704 12.072V5.003V3.288V5.106V71.415 -704 5.655A1.1A1.104A0.49A79.959 -84.239% -708	12V5V3.3V5VSB DC/AC (Watts)EfficiencyFan Speed (RPM)PSU Noise (dB[A])1.230A0.499A0.501A0.196A20.003 -26.777	12V 5V 3.3V 5VSB DC/AC (Watts) Efficiency Fan Speed (RPM) PSU Noise (dB[A]) Temps (in/Out) 1.230A 0.499A 0.501A 0.196A 20.003 $A_{A955\%}$ $A_{055\%}$

RIPPLE MEASUREMENTS 115V

12V	5V	3.3V	5VSB	Pass/Fail
8.27mV	5.11mV	3.89mV	8.11mV	Pass
15.49mV	5.37mV	4.10mV	8.31mV	Pass
12.00mV	4.61mV	3.89mV	8.51mV	Pass
12.26mV	4.96mV	4.15mV	8.92mV	Pass
13.89mV	4.91mV	4.45mV	8.51mV	Pass
14.25mV	5.42mV	5.01mV	8.87mV	Pass
16.29mV	5.93mV	5.01mV	10.86mV	Pass
17.77mV	6.65mV	9.11mV	11.22mV	Pass
20.28mV	7.67mV	9.52mV	9.84mV	Pass
24.19mV	10.05mV	11.12mV	13.04mV	Pass
35.40mV	18.09mV	16.95mV	23.64mV	Pass
12.38mV	7.19mV	11.20mV	9.48mV	Pass
11.49mV	7.31mV	6.14mV	7.19mV	Pass
26.30mV	7.36mV	11.41mV	7.85mV	Pass
23.39mV	18.72mV	6.48mV	18.94mV	Pass
	8.27mV 15.49mV 12.00mV 12.26mV 13.89mV 14.25mV 16.29mV 16.29mV 20.28mV 24.19mV 24.19mV 35.40mV 12.38mV 11.49mV 26.30mV	8.27mV 5.11mV 15.49mV 5.37mV 12.00mV 4.61mV 12.26mV 4.96mV 13.89mV 4.91mV 14.25mV 5.42mV 16.29mV 5.93mV 17.77mV 6.65mV 20.28mV 7.67mV 35.40mV 18.09mV 12.38mV 7.19mV 11.49mV 7.31mV	8.27mV 5.11mV 3.89mV 15.49mV 5.37mV 4.10mV 12.00mV 4.61mV 3.89mV 12.26mV 4.96mV 4.15mV 13.89mV 4.91mV 4.45mV 13.89mV 5.42mV 5.01mV 16.29mV 5.93mV 5.01mV 17.77mV 6.65mV 9.11mV 20.28mV 7.67mV 9.52mV 35.40mV 18.09mV 11.12mV 12.38mV 7.19mV 16.95mV 11.49mV 7.31mV 6.14mV	8.27mV 5.11mV 3.89mV 8.11mV 15.49mV 5.37mV 4.10mV 8.31mV 12.00mV 4.61mV 3.89mV 8.51mV 12.26mV 4.96mV 4.15mV 8.92mV 13.89mV 4.91mV 4.45mV 8.92mV 13.89mV 5.42mV 5.01mV 8.87mV 16.29mV 5.93mV 5.01mV 10.86mV 17.77mV 6.65mV 9.11mV 11.22mV 20.28mV 7.67mV 9.52mV 9.84mV 35.40mV 18.09mV 16.95mV 23.64mV 12.38mV 7.19mV 11.20mV 9.48mV 11.49mV 7.31mV 6.14mV 7.19mV

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EFFICIENCY AND NOISE LEVEL CERTIFICATIONS

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230V

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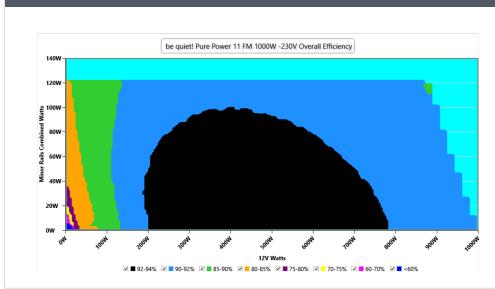
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Anex

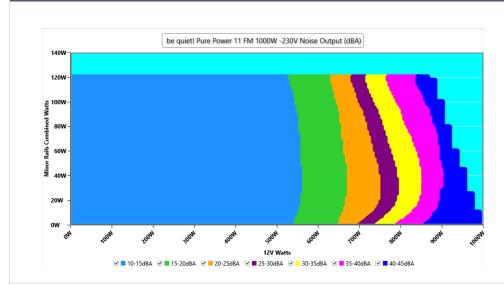
EFFICIENCY GRAPH 230V



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 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

All data and graphs included in this test report can be used by any individual on the following conditions:

> The link to the original test results document should be provided in any case

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Cybenetics offers the ETA and Lambda voluntary certification programs, through which the efficient and silent power supplies are promoted



be quiet! Pure Power 11 FM 1000W

Anex

VAMPIRE POWER -230V

Detailed Results									
	Average	Min	Limit Min	Max	Limit Max	Result			
Mains Voltage RMS:	230.37 V	230.35 V	227.70 V	230.38 V	232.30 V	PASS			
Mains Frequency:	50.00 Hz	50.00 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS			
Mains Voltage CF:	1.415	1.415	1.340	1.416	1.490	PASS			
Mains Voltage THD:	0.15 %	0.13 %	N/A	0.16 %	2.00 %	PASS			
Real Power:	0.117 W	0.102 W	N/A	0.131 W	N/A	N/A			
Apparent Power:	40.602 W	40.596 W	N/A	40.612 W	N/A	N/A			
Power Factor:	0.003	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

All data and graphs included in this test report can be used by any individual on the following conditions:

> It should be mentioned that the test results are provided by Cybenetics

> The link to the original test results document should be provided in any case

Cybenetics offers the ETA and Lambda voluntary certification programs, through which the efficient and silent power supplies are promoted



Anex

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10% 12.081V12.081V4.999V3.286V5.094V115.02286.948%70711.1145.22°C230.35V20% 12.032V4.996V3.284V5.081V218.38891.66%70411.045.94°C230.3V30% 12.032V4.996V3.284V5.081V218.38892.679%70310.942.6°C0.93530% 12.032V4.991V3.282V5.086V333.70992.679%70310.947.32°C230.3V40% 12.020V4.991V3.281V5.058V430.02292.953%70911.242.6°C0.94812.020V4.994V3.281V5.058V430.02292.77%76013.443.3°C0.95612.020V4.984V3.28V5.046V538.38492.77%76013.443.8°C0.96320.07V4.984V3.28V5.046V538.38492.77%76013.443.8°C0.96311.94V4.984V3.279V5.034V689.3792.029%88118.143.8°C0.96311.94V4.984V3.279V5.034V689.8792.029%110.92.543.95°C230.27V70%11.960V4.991V3.274V5.02V760.3411.644.34.9°C0.96611.96V4.991V3.274V5.02V760.349.44.99%3.27V5.03V9.956411.96V4.971V3.274V5.012V87.3119.21%16.44.54.7C230.2V	Test	12V	5V	3.3V	5VSB		Efficiency	Speed		-	
12 081V12 081V3286V5084V115 02245.22°C230.35V20%14.036A3.03A3.015A1.181A199.96391.562%7041.041.53°C0.91412.045V4996V3.284V5.081V21.838A300.00492.679%7031.045.94°C23.034V30%12.032V4.991V3.282V5.069V32.370992.679%7031.042.66°C0.94812.020V4.991V3.281V5.058V430.02292.953%7091.142.66°C0.94812.020V4.992V3.281V5.058V430.02292.953%7091.3446.97°C23.03V50%12.007V4.984V3.278V5.048V5.83.849.77%7601.3448.97°C20.33V60%11.994V4.944V3.279V5.034V64.803992.465%8811.8148.97°C20.32V6031A6.02A6.04A1.997A69.02776.3476.91.8143.81°C0.96311.96V4.961V3.276V5.02776.3492.029%1.1643.610.96659.770%19.65X4.991V3.276V5.02776.349.643.7450.97C23.027V70%19.65X4.991V3.276V5.02776.349.01453.744.32°C0.96611.96V4.991V3.274V5.02776.349.01453.643.01A9.01563.743.65%	1.00/	6.490A	2.001A	2.008A	0.982A	100.009	96 0/100/	707	11 1	41.01°C	0.837
26% 112.045V4.96V3.284V5.061V216.38891.562%70411.045.94°C2.30.34V30% 12.032V4.991V3.267V5.069V323.709 2.679% 7.3 1.9 4.26° C0.93540% 12.020V4.991V3.282V5.069V323.709 2.679% 7.03 1.9 4.26° C0.93540% 12.020V4.99V3.281V5.058V430.022 2.953% 709 1.2 4.26° C0.94850% 12.020V4.99V3.281V5.058V430.022 2.953% 709 1.3 43.9° C0.93550% 12.020V4.968V3.28V5.046V5.38449.9461 2.97% 760 1.34 43.9° C0.95645.033A6.02A6.04A1.987A600.008 2.465% 881 81.1 43.81° C0.96611.94V4.964V3.279V5.034V648.893 2.029% 1109 2.465% 891 11.9 43.95° C0.96611.96V4.97V3.274V5.012V760.34 2.029% 1109 2.465% 50.97° C230.27V $60.331A$ 8.03A8.063A2.295A799.585 11.45% $4.97V^{\circ}$ C230.24V $11.96V$ 4.97V3.274V5.012V874.311 90.23% 1642 1642 5.66° C230.24V $11.95V$ 4.97V3.274V5.03V4.995 9.23% 1652 6.43 4.32° C <td>1070</td> <td>12.081V</td> <td>4.999V</td> <td>3.286V</td> <td>5.094V</td> <td>115.022</td> <td>00.940%</td> <td>11.1</td> <td>45.22°C</td> <td>230.35V</td>	1070	12.081V	4.999V	3.286V	5.094V	115.022	00.940%		11.1	45.22°C	230.35V
12.045V4.996V3.284V5.081V218.38845.94°C54.94°C29.334V30%1.203ZV4.991V3.282V5.069V3.23.797031.947.3°C2.30.33V40%2.203ZV4.009A4.023A1.582A399.722.953%7091.242.66°C0.94812.027V4.99V3.281V5.058V43.00222.953%7091.243.3°C2.30.3V50%12.007V4.98V3.28V5.064V5.38.3842.77%7601.449.94°C2.30.3V60%1.194A1.987A600.0082.76%8811.8149.84°C2.30.3V60%1.194V4.984V3.279V5.034V648.8932.46%%8811.8149.84°C2.30.2V70%1.194V4.984V3.276V5.022V760.489.2.02%11.092.65.06°C2.30.2V70%6.031A8.03A2.295A799.5659.4.5%%1.09%3.0149.94°C2.30.2V70%6.031A8.03A2.276V5.03V9.9.25%9.2.03%1.6427.0.444.3°C0.96971.90%4.917V3.274V5.012V763.319.1.45%1.6427.0.45.2.6°C2.30.2V70%6.331A8.05A2.374V5.03V9.99.5639.2.1%1.6424.4.7°C0.97C70%1.95V4.97V3.274V5.03V9.99.5639.2.1%1.6536.4.47.5.6°C <td>200/</td> <td>14.036A</td> <td>3.003A</td> <td>3.015A</td> <td>1.181A</td> <td>199.963</td> <td>01 5620/</td> <td>704</td> <td>11.0</td> <td>41.53°C</td> <td>0.914</td>	200/	14.036A	3.003A	3.015A	1.181A	199.963	01 5620/	704	11.0	41.53°C	0.914
30% 110.93V4.991V3.282V5.069V323.70992.679%70310.947.32°C230.33V40% 12.020V4.99V3.281V5.058V430.02292.953%7091.24.266°C0.94837.389A5.014A5.03A1.784A499.46192.77%7601.3443.3°C0.95612.007V4.988V3.28V5.046V58.38492.77%7601.3443.9°C23.3V60%40.306.02A6.04A1.967A600.00892.465%88.11.8143.8°C0.9636074.984V3.279V5.034V648.89392.029%11092.5.443.9°C230.29V70%11.960V4.991V3.276V50.32V760.3492.029%11092.5.450.97°C230.27V70%11.960V4.991V3.276V50.22V760.349.454%16423.7.46.097C230.27V70%11.960V4.997V3.276V50.12V87.4131191.454%16423.7.44.3.9°C0.96170%66.374A8.557A2.399A899.5649.0.14%3.1.690.14%1.8525.66°C230.24V70%1.950V4.957V3.27V5.03V989.4689.0.21%1.8534.045.56°C230.24V70%1.955X9.054A9.01A3.01A9.01A9.01A1.00.819.22%1.8534.0.45.56°C230.24V70% <td< td=""><td>2070</td><td>12.045V</td><td>4.996V</td><td>3.284V</td><td>5.081V</td><td>218.388</td><td>91.30270</td><td>704</td><td>11.0</td><td>45.94°C</td><td>230.34V</td></td<>	2070	12.045V	4.996V	3.284V	5.081V	218.388	91.30270	704	11.0	45.94°C	230.34V
12.032V4.991V3.282V5.069V323.70947.27°C23.033V40%29827A4.003A4.023A1.582A399.722.953%7.091.242.66°C0.94812.02V4.99V3.281V5.058V430.222.953%7.091.243.3°C2.9032V50%12.007V4.988V5.03A1.784A499.4192.77%7.601.3.443.3°C0.95660%45039A6.02A6.04A1.987A600.002.465%8811.8.14.984C2.30.29V60%45039A6.02A7.051A2.191A699.7279.029%1.092.44.93.5°C0.9667.0%11.960V4.981V3.270V5.02V760.349.209%1.0423.7.44.33.5°C0.9667.0%11.960V4.91V3.274V5.012V87.43119.4.54%1.6420.9675.0.67C2.30.27V80%6.031A8.05A2.295A7.99559.1.454%1.6423.7.44.3.2°C0.96790%6.031A8.05A3.01A9.995649.1.454%1.6420.9755.6.6°C2.30.24V11.95V4.967V3.27V5.03V9.95649.2.21%1.6534.5.7°C2.30.24V11.95V4.967V3.27V4.983V1.10.7939.2.23%1.6514.5.7°C2.30.24V11.95V4.967V3.27V4.983V1.10.7939.2.23%1.6514.5.7°C2.30.24V <td>200/</td> <td>21.938A</td> <td>3.507A</td> <td>3.52A</td> <td>1.381A</td> <td>300.004</td> <td>02 670%</td> <td>702</td> <td>10.0</td> <td>42.6°C</td> <td>0.935</td>	200/	21.938A	3.507A	3.52A	1.381A	300.004	02 670%	702	10.0	42.6°C	0.935
40% 112.020V4.99V3.281V5.058V430.02292.953%70911.247.7°C230.32V50% 15.034A5.03A1.784A499.4619.77%76013.448.9°C230.3V50% 112.007V4.988V3.28V5.046V538.3849.77%76013.448.9°C230.3V60% 11.994V3.279V5.034V648.8939.465%88118.143.8°C0.96311.994V4.964V3.279V5.034V648.89392.029%11.0925.443.95°C0.96670% 152.640A7.029A7.051A2.191A699.72792.029%11.0925.443.95°C0.96670% 160.31A8.03A8.063A2.295A799.58591.454%164237.443.2°C0.969806.031A8.03A8.063A2.295A799.58591.454%164237.444.32°C0.96970% 6.031A8.03A8.063A2.295A799.58591.454%164237.444.32°C0.96970% 90%6.837A8.57A2.399A899.56490.914%185240.444.79°C230.24V70% 11.950V4.973V3.274V5.03V899.56490.914%185240.455.66°C230.23V70% 11.950V4.973V3.274V5.03V899.56490.914%185240.455.66°C230.23V70% 11.950V4.967V <td>50%</td> <td>12.032V</td> <td>4.991V</td> <td>3.282V</td> <td>5.069V</td> <td>323.709</td> <td>92.079%</td> <td>705</td> <td>10.9</td> <td>47.32°C</td> <td>230.33V</td>	50%	12.032V	4.991V	3.282V	5.069V	323.709	92.079%	705	10.9	47.32°C	230.33V
12.020v 4.99v 3.281v 5.058v 430.022 47.7°C 230.32v 50% 7.389A 5.014A 5.03A 1.784A 499.461 $P2.77\%$ 760 1.34 43.3°C 203.3V 60% 45.039A 6.02A 6.04A 1.987A 600008 $P2.47\%$ 760 1.34 48.97°C 230.3V 60% 11.994v 4.984v 3.279v 5.034v 648.893 $P2.465\%$ 881 1.81. 43.81°C 0.963 70% 52.640A 7.029A 7.051A 2.191A 699.727 $P2.029\%$ 1109 2.54 50.97°C 230.27V 8001 1.980v 4.981v 3.276V 5.022V 760.34 $P1.45\%$ 1.642 $P1.43\%$ 6.057C 230.27V 8003 8.03A 8.03A 2.29A 799.585 $P1.45\%$ $P1.45\%$ $P1.44$ $P1.25$ $P2.25\%$ 2.45°C 2.024V 11.950V 4.974V 3.274V 5.013V 999.563 $P1.45\%$ $P1.25\%$ $P1.44.79°C$ 2.022V 11.950V 4.957V<	40%	29.827A	4.009A	4.023A	1.582A	399.72	02 0520/	700	11.2	42.66°C	0.948
50% 12.007V 4.988V 3.28V 5.046V 538.384 92.77% 760 13.4 48.97°C 20.03V 60% 45.039A 6.02A 6.04A 1.987A 600.008 92.465% 881 18.1 43.81°C 0.963 60% 11.994V 4.984V 3.279V 5.034V 648.893 92.465% 881 18.1 43.81°C 0.963 70% 52.640A 7.029A 7.051A 2.191A 699.727 92.029% 1109 2.54 39.95°C 0.966 11.960V 4.981V 3.276V 5.022V 760.34 91.454% 1642 37.4 43.95°C 0.969 80% 60.331A 8.003A 8.063A 2.295A 799.585 91.454% 1642 37.4 43.2°C 0.969 80% 6.031A 8.013A 8.053A 2.399A 899.564 90.914% 1852 40.4 44.79°C 0.972 90% 119.50V 4.973V 3.27V 5.03V 989.468 90.214% 1852 40.4 45.21°C 0.975 <tr< td=""><td>40 /0</td><td>12.020V</td><td>4.99V</td><td>3.281V</td><td>5.058V</td><td>430.022</td><td>92.95570</td><td>709</td><td>11.2</td><td>47.7°C</td><td>230.32V</td></tr<>	40 /0	12.020V	4.99V	3.281V	5.058V	430.022	92.95570	709	11.2	47.7°C	230.32V
12 007V 4.988V 3.28V 5.046V 538.384	50%	37.389A	5.014A	5.03A	1.784A	499.461	02 770/	760	12 /	43.3°C	0.956
60% 11.94V 4.984V 3.279V 50.34V 648.893 92.465% 881 18.1 49.84°C 23.029V 70% 52.640A 7.029A 7.051A 2.191A 699.727 $9_{2.029\%}$ 1109 2.54 50.97° C $230.27V$ 80% $60.31A$ 8.003A 8.063A 2.295A 799.585 $9_{1.454\%}$ 10.96 37.4 43.95° C 0.969 80% $11.960V$ 4.977V $3.274V$ $50.12V$ 874.311 91.454% 1642 37.4 43.2° C 0.969 90% $68.374A$ $8.547A$ $8.557A$ $2.39A$ 899.564 90.914% 1852 40.4 4.79° C 0.972 90% $11.95V$ $4.973V$ $3.272V$ $50.3V$ 989.564 90.914% 1852 40.4 4.79° C 0.972 100% $4.973V$ $3.272V$ $50.3V$ 989.564 90.914% 1853 40.4 4.97° C 0.972 1100% $4.975V$ $3.27V$ $4.983V$ 1107.733 90.231% </td <td>J070</td> <td>12.007V</td> <td>4.988V</td> <td>3.28V</td> <td>5.046V</td> <td>538.384</td> <td>92.7770</td> <td>700</td> <td>13.4</td> <td>48.97°C</td> <td>230.3V</td>	J070	12.007V	4.988V	3.28V	5.046V	538.384	92.7770	700	13.4	48.97°C	230.3V
$ \begin{array}{ c c c c c } \hline \begin{tabular}{ c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	60%	45.039A	6.02A	6.04A	1.987A	600.008	02/65%	991	1 101	43.81°C	0.963
70% 11.980V 4.981V 3.276V 5.022V 760.34 92.029% 1109 25.4 50.97°C 230.27V 80% 60.331A 8.003A 8.063A 2.295A 799.585 91.454% 1642 37.4 44.32°C 0.969 11.965V 4.977V 3.274V 5.012V 874.311 1642 37.4 44.79°C 0.230.27V 90% 68.374A 8.557A 2.399A 899.564 90.914% 1852 40.4 44.79°C 0.972 90% 10.95V 4.973V 3.272V 5.003V 989.468 90.914% 1852 40.4 44.79°C 0.972 100% 10.95V 4.973V 3.272V 5.03V 989.468 90.21% 1852 40.4 44.79°C 0.972 1109% 4.969V 3.27V 4.983V 1107.793 90.21% 1853 40.4 45.21°C 0.975 1109% 84.058A 10.065A 10.184A 3016A 1100.0	0078	11.994V	4.984V	3.279V	5.034V	648.893	92.40070	001	10.1	49.84°C	230.29V
11980v 4981v 3.276v 5.022v 760.34 50.97°C 230.27v 80% 60.331A 8.003A 8.063A 2.295A 799.585 $_{1.454\%}$ $_{1642}$ $_{37.4}$ $_{44.32°C}$ 0.969 90% 68.374A 8.547A 8.557A 2.399A 899.564 $_{9.014\%}$ $_{1622}$ $_{40.4}$ $_{44.79°C}$ 0.972 90% $11.950v$ 4.973v 3.272v 5.03v 989.664 $_{9.014\%}$ $_{1852}$ $_{40.4}$ $_{44.79°C}$ 0.972 $11.95v$ 4.973v 3.272v 5.03v 989.664 $_{9.014\%}$ $_{1852}$ $_{40.4}$ $_{45.21°C}$ 0.975 11.09% 4.969v 3.27v 4.983v 1107.793 $_{90.231\%}$ $_{1853}$ $_{40.4}$ $_{45.21°C}$ 0.975 11.09% 4.969v 3.27v 4.983v 1100.081 $_{9.222\%}$ $_{1851}$ $_{40.3}$ $_{71.8°C}$ 0.977 $11.094v$ 4.967v 3.269v 4.974v 1232.976 $_{8.227\%}$ $_{8.65\%}$ $_{7.96\%}$ $_{7.96\%}$ $_{8.26°C}$ <	70%	52.640A	7.029A	7.051A	2.191A	699.727	- 02.020%	1100	25.4	43.95°C	0.966
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	7070	11.980V	4.981V	3.276V	5.022V	760.34	92.02970	1105	23.4	50.97°C	230.27V
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	80%	60.331A	8.003A	8.063A	2.295A	799.585	01 //5/1%	16/12	37 /	44.32°C	0.969
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	0070	11.965V	4.977V	3.274V	5.012V	874.311	91.49470	1042	57.4	52.45°C	230.26V
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	00%	68.374A	8.547A	8.557A	2.399A	899.564	00.01/1%	1952	40.4	44.79°C	0.972
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	9070	11.950V	4.973V	3.272V	5.003V	989.468	90.91470	1052	40.4	54.07°C	230.24V
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	100%	76.237A	9.056A	9.081A	3.011A	999.563	00.231%	1853	40.4	45.21°C	0.975
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	10070	11.935V	4.969V	3.27V	4.983V	1107.793	90.23170	1055	+0.4	55.66°C	230.23V
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	110%	84.058A	10.065A	10.184A	3.016A	1100.081	80 222%	1851	/0.3	47.18°C	0.977
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	11070	11.918V	4.967V	3.269V	4.974V	1232.976	09.22270	1001	-0.5	57.96°C	230.22V
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	01	0.116A	14.464A	14.544A	0A	121.297	02 6500/	845	17.0	42.86°C	0.872
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		12.080V	4.992V	3.279V	5.093V	144.994	05.05070			48.95°C	230.35V
12.087V 4.998V 3.283V 5.108V 135.247 50.21°C 230.34V CL3 0.115A 0A 22.084A 0A 73.987 76.386% 715 11.5 44.57°C 0.807 12.083V 5.001V 3.287V 5.094V 96.852 76.386% 715 11.5 52.63°C 230.35V 83.714A 0A 0A 0A 1000.04 90.717% 1860 40.6 45.69°C 0.975	CI 2	0.115A	22.01A	0A	0A	111.394	82 364%	750	13.0	43.16°C	0.862
CL3 12.083V 5.001V 3.287V 5.094V 96.852 76.386% 715 11.5 52.63°C 230.35V 83.714A 0A 0A 0A 1000.04 90.717% 1860 40.6 45.69°C 0.975		12.087V	4.998V	3.283V	5.108V	135.247	02.304%			50.21°C	230.34V
12.083V 5.001V 3.287V 5.094V 96.852 52.63°C 230.35V 83.714A 0A 0A 1000.04 90.717% 1860 40.6 45.69°C 0.975	CI 3	0.115A	0A	22.084A	0A	73.987	76 2060/	715	11.5	44.57°C	0.807
CL4 90.717% 1860 40.6		12.083V	5.001V	3.287V	5.094V	96.852	/0.00/0			52.63°C	230.35V
11.946V 4.986V 3.283V 5.059V 1102.377 55.84°C 230.23V	CI 4	83.714A	0A	0A	0A	1000.04	90 717%	1060	40.6	45.69°C	0.975
		11.946V	4.986V	3.283V	5.059V	1102.377	50.71770	1000	40.0	55.84°C	230.23V

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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])	Temps (In/Out)	PF/AC Volts
2014	1.230A	0.5A	0.501A	0.196A	20	75.0000/	(0)		37.41°C	0.45
20W	12.073V	5.005V	3.29V	5.11V	75.832% 693 5.11V 26.372	693	10.5	39.6°C	230.36V	
40147	2.708A	0.7A	0.702A	0.294A	39.999	02 E 420/	542% 699	10.8	38.12°C	0.636
4077	40W 12.069V 5.003	5.003V	3.289V	5.107V	48.46	82.542%			40.87°C	230.35V
C014/	4.186A	0.9A	0.903A	0.392A	59.997	05 1750/		10.7	38.84°C	0.738
60W	12.069V 5.001V 3.288V 5.105V 70.447	85.175%	697	10.7	41.96°C	230.35V				
00147	5.655A	1.1A	1.104A	0.49A	79.955	05.0300/	705	11.0	40.07°C	0.801
80W	12.082V	5.001V	3.287V	5.106V	93.755	85.279%			43.93°C	230.35V

RIPPLE MEASUREMENTS 230V

12V	5V	3.3V	5VSB	Pass/Fail
9.20mV	5.17mV	4.14mV	7.85mV	Pass
15.95mV	5.27mV	4.20mV	8.56mV	Pass
12.05mV	5.06mV	4.15mV	8.87mV	Pass
12.31mV	4.81mV	4.30mV	8.62mV	Pass
13.89mV	5.11mV	4.50mV	8.66mV	Pass
15.17mV	5.47mV	4.40mV	8.21mV	Pass
16.80mV	5.98mV	5.12mV	11.16mV	Pass
17.26mV	6.44mV	8.44mV	10.25mV	Pass
19.26mV	6.70mV	8.91mV	9.49mV	Pass
25.98mV	7.19mV	9.59mV	10.78mV	Pass
27.87mV	7.48mV	10.16mV	12.28mV	Pass
12.06mV	7.75mV	10.73mV	10.39mV	Pass
11.24mV	7.21mV	6.19mV	7.44mV	Pass
63.13mV	8.18mV	11.46mV	12.69mV	Pass
26.26mV	7.07mV	5.13mV	11.40mV	Pass
	 9.20mV 15.95mV 12.05mV 12.31mV 12.31mV 13.89mV 13.89mV 15.17mV 16.80mV 16.80mV 17.26mV 19.26mV 25.98mV 25.98mV 27.87mV 12.06mV 11.24mV 63.13mV 	9.20mV 5.17mV 15.95mV 5.27mV 12.05mV 5.06mV 12.31mV 4.81mV 13.89mV 5.11mV 15.17mV 5.47mV 15.17mV 6.44mV 17.26mV 6.70mV 19.26mV 7.19mV 25.98mV 7.19mV 12.06mV 7.75mV 11.24mV 7.21mV	9.20mV 5.17mV 4.14mV 15.95mV 5.27mV 4.20mV 12.05mV 5.06mV 4.15mV 12.05mV 5.06mV 4.15mV 12.31mV 4.81mV 4.30mV 13.89mV 5.11mV 4.50mV 15.17mV 5.47mV 4.40mV 16.80mV 5.98mV 5.12mV 16.80mV 6.44mV 8.44mV 19.26mV 6.70mV 8.91mV 19.26mV 7.19mV 9.59mV 27.87mV 7.48mV 10.16mV 12.06mV 7.75mV 10.73mV 11.24mV 7.21mV 6.19mV	9.20mV 5.17mV 4.14mV 7.85mV 15.95mV 5.27mV 4.20mV 8.56mV 12.05mV 5.06mV 4.15mV 8.87mV 12.01mV 5.06mV 4.15mV 8.62mV 12.31mV 4.81mV 4.30mV 8.62mV 13.89mV 5.11mV 4.50mV 8.66mV 13.89mV 5.11mV 4.40mV 8.21mV 15.17mV 5.47mV 4.40mV 8.21mV 16.80mV 5.98mV 5.12mV 11.16mV 17.26mV 6.44mV 8.44mV 10.25mV 19.26mV 7.19mV 9.59mV 10.78mV 25.98mV 7.19mV 9.59mV 10.78mV 12.06mV 7.48mV 10.16mV 12.28mV 12.06mV 7.75mV 10.73mV 10.39mV 11.24mV 7.21mV 6.19mV 7.44mV 6.13mV 8.18mV 11.46mV 12.69mV

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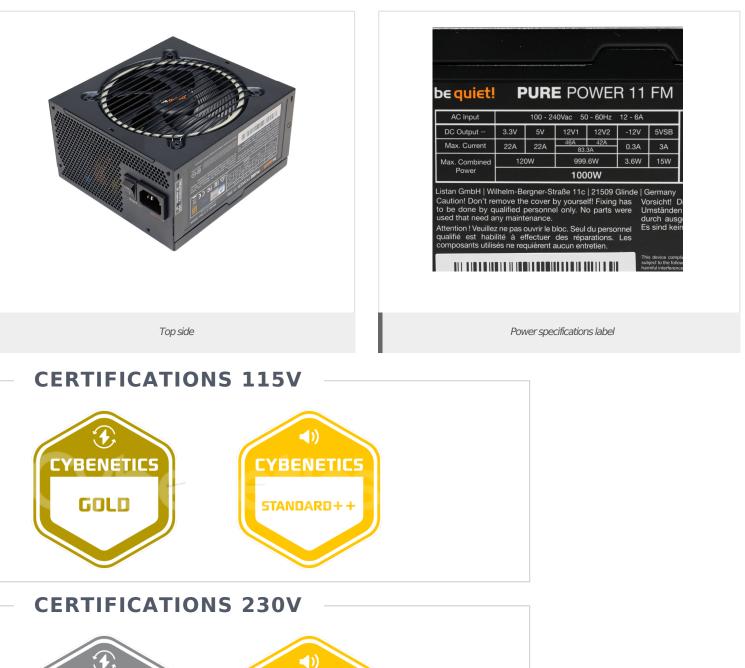
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