be quiet! System Power 10 750W

Serial Number 329H2289000009

Lab ID BQ75002082

Certification ID 252082

Test Result Report ID: 22PS2082A

Certificate Issue Date: Oct 20, 2022

115V 230V

Scheme: ETA-EMI PSU

115V 230V

Scheme: LAMBDA PSU

Aristeidis Bitziopoulos, Certification Body General Manager

General Information

Test Equipment

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 Chroma 63640-80-80 x10 Chroma 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P, GW Instek ASR-3500
Power Analyzers	Rohde & Schwarz HMC8015 & NPA701
Oscilloscopes	Picoscope 4444, Siglent SDS2104X PLUS
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Temperature Logger	Picoscope TC-08
Tachometer	UNI-T UT372
Multimeters	Keysight 34465A
EMI Analyzer	TekBox TBMR-110M-EU
Isolation Transformer	4kVA
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Testing Methodology	Cybenetics PSU Test Protocol

DUT Information(Non-accredited measurements)

Product Identification Details	
Brand	be quiet!
Model	System Power 10 750W
OEM/ODM	HEC
Serial Number	329H2289000009
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	200-240
Rated Current (Arms)	5
Rated Frequency (Hz)	50

Rated Power (W)	750
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fixed cables
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Sleeve Bearing Fan (D12SH-12)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	BQ75002082
Date of receipt	Sep 26, 2022
Testing Date	Oct 20, 2022
Report Issued Date	Oct 20, 2022
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Captive Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (540mm)	1	1	18-20AWG	No
4+4 pin EPS12V (590mm)	1	1	18AWG	No
8 pin EPS12V (600mm)	1	1	18AWG	No
6+2 pin PCIe (550mm+150mm)	2	4	18AWG	No
SATA (570mm+120mm+120mm)	1	3	18AWG	No
SATA (460mm+120mm+120mm+120mm)	1	4	18AWG	No
Modular Cables				
AC Power Cord (1390mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	62.5	3	0.3
	Watts	130		750	15	3.6
Total Max. Power (W)		750				

Parts Description

General Data	-
Manufacturer (OEM)	HEC
PCB Type	Single Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x Power Integrations CAP200DG (Disharge IC)
Inrush Protection	1x NTC Thermistor SCK-2R58 (2.5Ohm)
Bridge Rectifier(s)	1x MCC GBU8K (800V, w/o heatsink)
APFC MOSFETs	2x Great Power GPT18N50D (500V, 18A, Rds(on): 0.27Ohm)
APFC Boost Diode	1x STMicroelectronics STTH8R06FP (600V, 8A @ 85°C)
Bulk Cap(s)	1x Teapo (400V, 470uF, 2,000h @ 85°C, LH)
Main Switchers	2x GPT22N50SYX
PFC / PWM Combo Controller	Champion CM6800TX
Topology	Primary side:APFC, Double Forward Secondary side: Passive Rectification & DC-DC converters
Secondary Side	-
+12V SBRs	2x CHONGQING PS30U60CT (60V, 30A @ 90°C) & 4x PFC PFR40V60CT (60V, 40A @ 100°C)
5V & 3.3V	DC-DC Converters: 7x Excelliance MOS EMB07N03V (25V, 97A @ 100°C, Rds(on): 1.4mOhm) PWM Controllers: 2x ANPEC APW7164
Filtering Capacitors	Electrolytic: 10x Teapo (1-3,000h @ 105°C, SC), 2x Nichicon (4-10,000h @ 105°C, HE), 1x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 1x Teapo (1,000h @ 105°C, SEK) Polymer: 3x Teapo
Supervisor IC	Weltrent WT7527RT (OCP, OVP, UVP, SCP, PG)
Fan Model	Yate Loon D12SH-12 (120mm, 12V, 0.30A, Sleeve Bearing Fan)
5VSB Circuit	-
Rectifier	1x MOSPEC S10M60C SBR (60V, 10A)

Standby PWM Controller	Power Integrations TNY289PG

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓

Performance Summary 230V

Accredited		
Average Efficiency (>1450 load combinations)		86.906%
Average Noise Output (>1450 Load Combinations)		34.60dBA
Average PF (>1450 Load Combinations)		0.955
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
Standby Power Consumption		0.1486W
Non-Accredited		
12V Ripple (Full Load)		105.40mV
5V Ripple (Full Load)		39.57mV
3.3V Ripple (Full Load)		36.17mV
5VSB Ripple (Full Load)		49.69mV
12V Load Regulation		2.23%
5V Load Regulation		3.12%
3.3V Load Regulation		3.84%
5VSB Load Regulation		3.44%
Inrush Current		58.030A
Hold-Up Time & PWR_OK Signal		19.90ms
AC Loss to PWR_OK Hold Up Time		16.60ms
PWR_OK Inactive to DC Loss Delay		3.30ms
PSU Timings: T1 (20% / 100%)	48.0ms	48.0ms

PSU Timings: T3 (20% / 100%)	121.0ms	123.0ms
OPP (26.80°C / 42.37°C)	121.62%	119.22%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	19.9
AC Loss to PWR_OK Hold Up Time (ms)	16.6
PWR_OK Inactive to DC Loss Delay (ms)	3.3

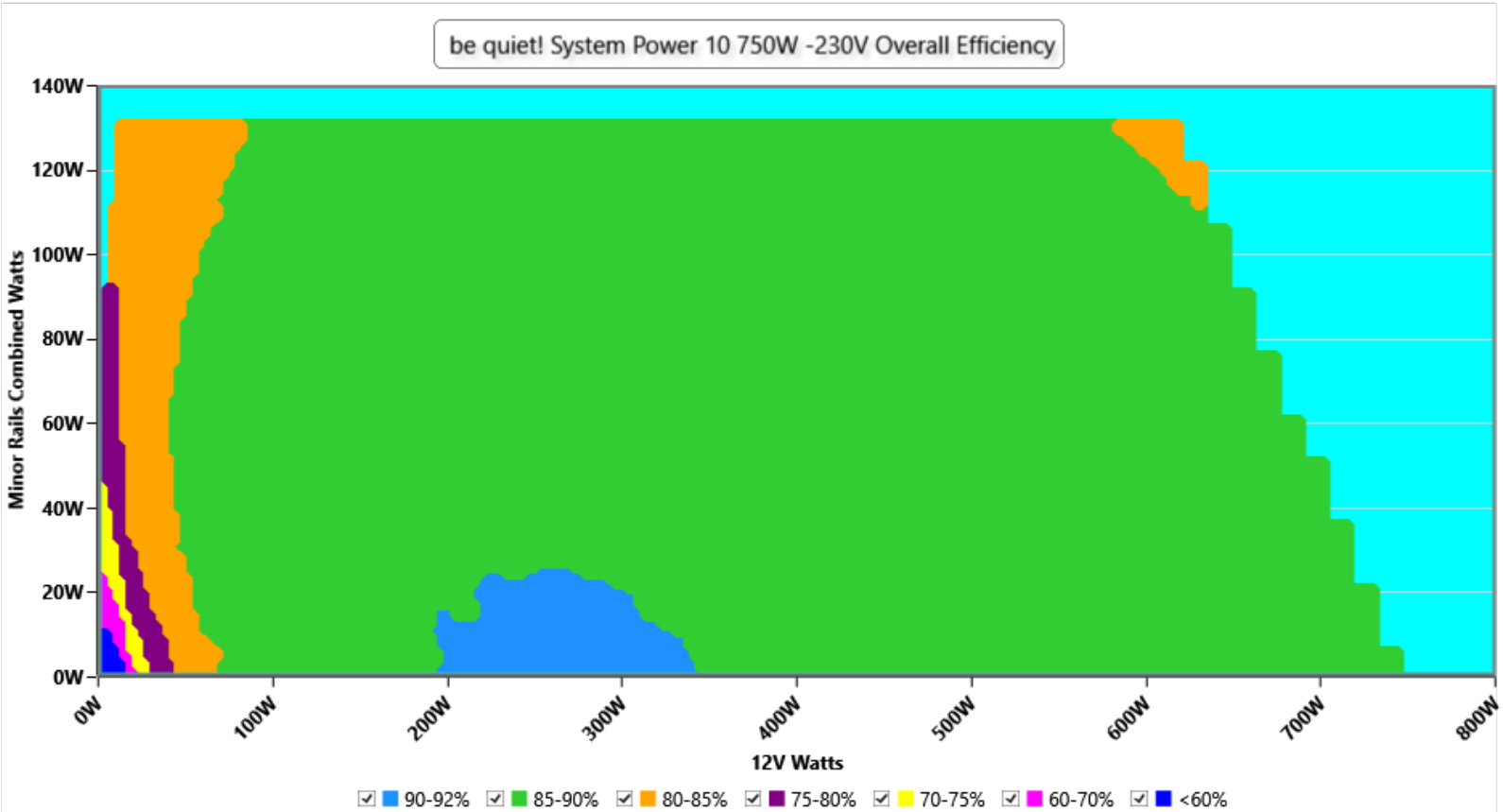
Stromverbrauch im Ruhezustand

Tables 230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.88 V	229.84 V	227.70 V	229.94 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:	0.15 %	0.13 %	N/A	0.17 %	2.00 %	PASS
Real Power:	0.149 W	0.121 W	N/A	0.183 W	N/A	N/A
Apparent Power:	30.272 W	30.249 W	N/A	30.301 W	N/A	N/A
Power Factor:	0.005	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

230V

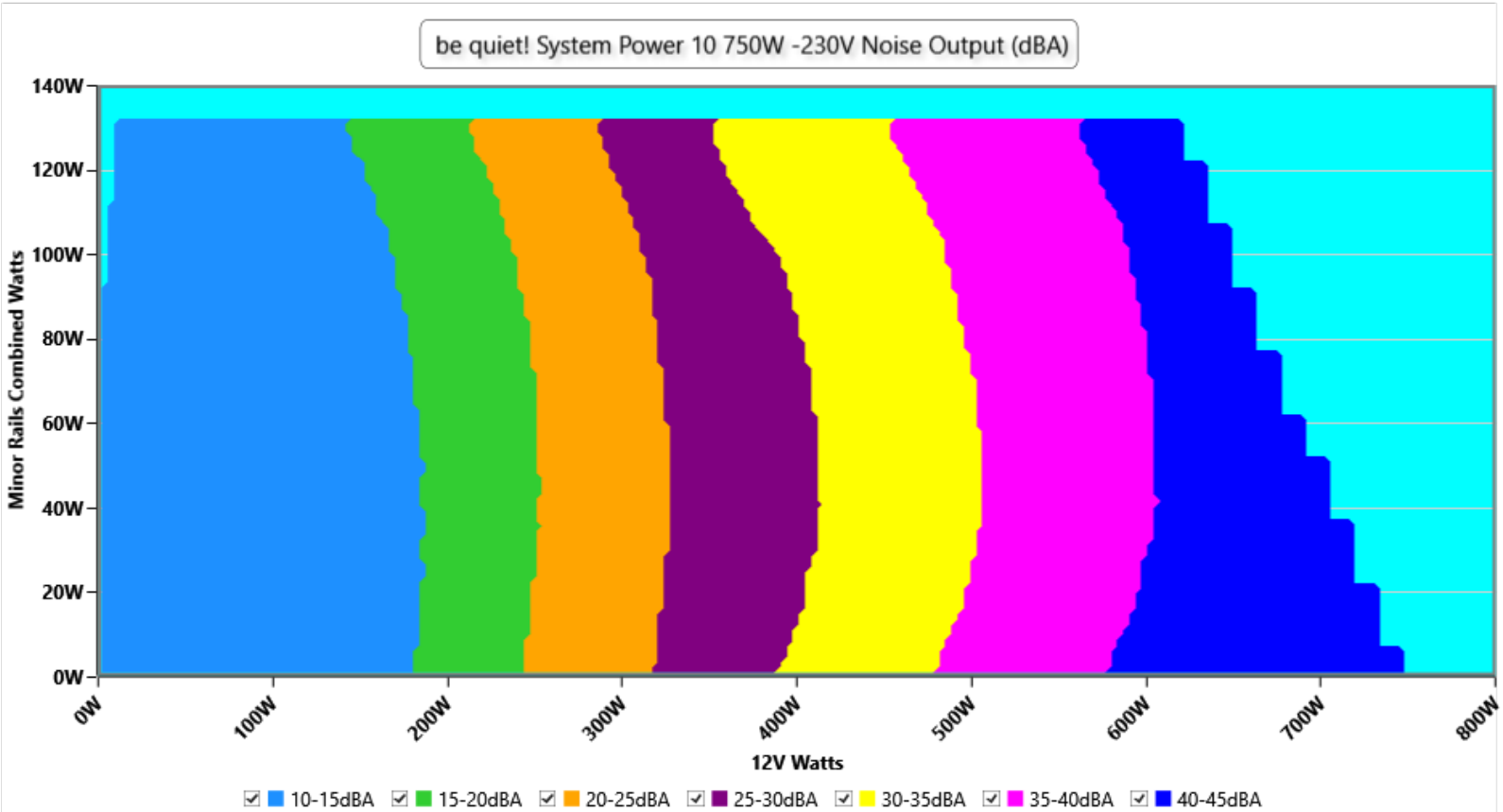


INFO

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

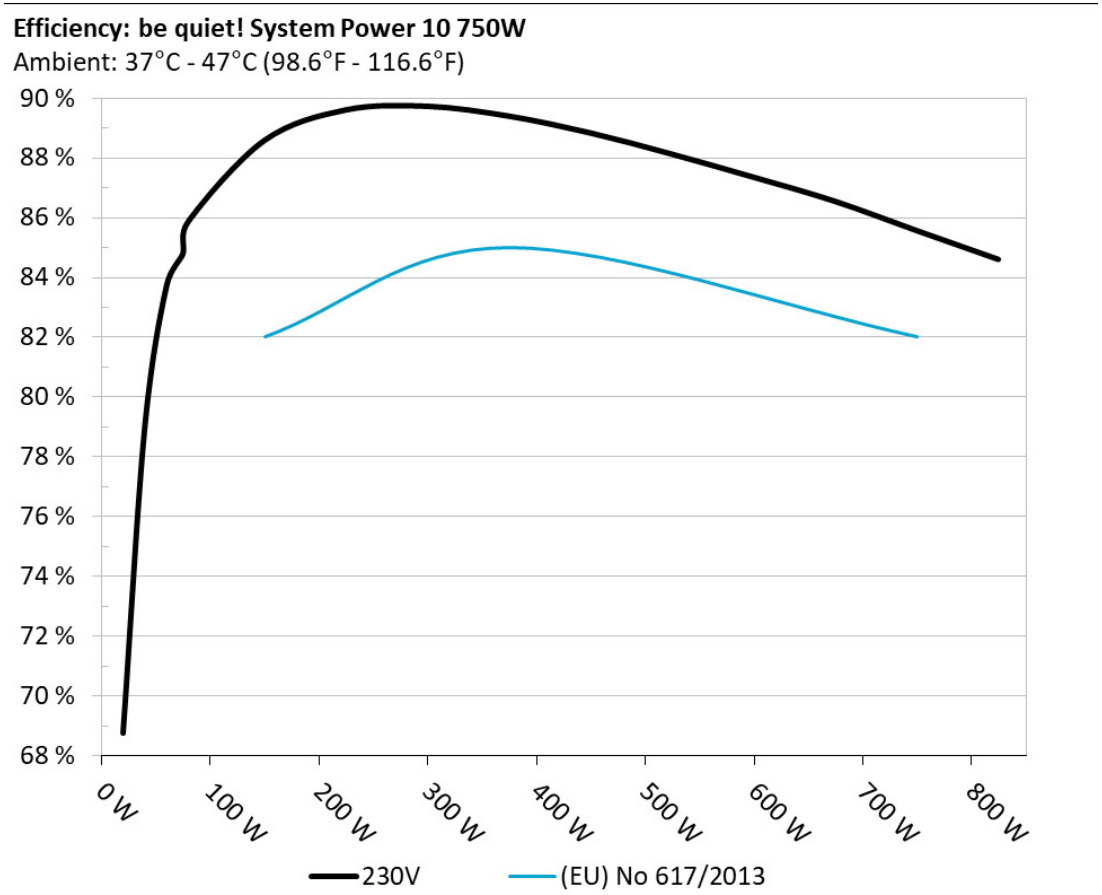


INFO

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

Indicative Performance

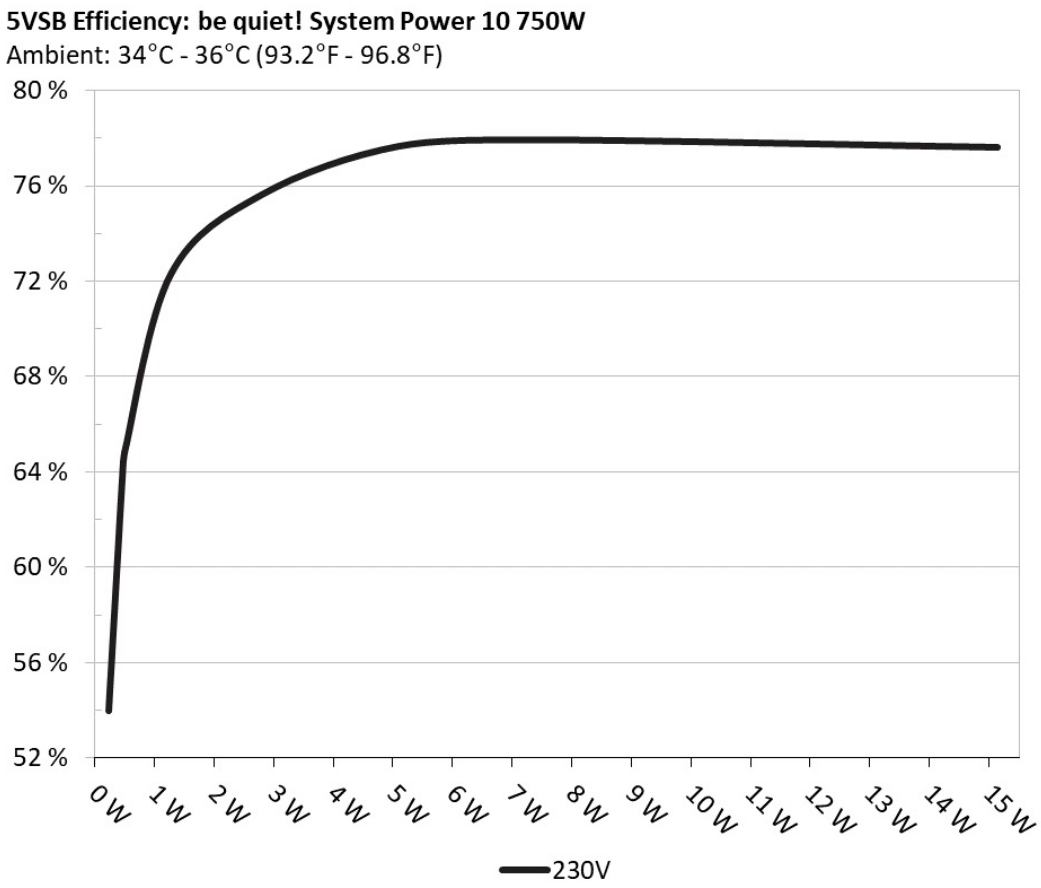
Efficiency under high ambient temperature



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



INFO

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	53.996%	0.014
	5.104V	0.427W		229.92V

2	0.09A	0.459W	63.821%	0.024
	5.103V	0.72W		229.91V
3	0.55A	2.802W	75.648%	0.115
	5.094V	3.704W		229.9V
4	1A	5.086W	77.67%	0.185
	5.086V	6.548W		229.89V
5	1.5A	7.615W	77.941%	0.223
	5.076V	9.77W		229.89V
6	3A	15.146W	77.631%	0.326
	5.048V	19.51W		229.9V

Supplementary Tests (For Reference)

Typical 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
10%	4.376A	1.961A	1.96A	0.984A	75.012	84.786%	549	11.3	34.45°C	0.852
	12.207V	5.098V	3.368V	5.08V	88.459				38.71°C	229.88V
20%	9.772A	2.951A	2.95A	1.185A	149.968	88.571%	563	11.8	34.87°C	0.925
	12.185V	5.083V	3.355V	5.066V	169.307				39.52°C	229.87V
30%	15.536A	3.451A	3.453A	1.386A	224.979	89.593%	599	12.9	35.08°C	0.947
	12.160V	5.071V	3.345V	5.051V	251.116				40.24°C	229.87V
40%	21.336A	3.954A	3.96A	1.588A	300.072	89.713%	694	18.8	35.56°C	0.962
	12.133V	5.059V	3.333V	5.037V	334.481				41.29°C	229.85V
50%	26.796A	4.959A	4.969A	1.793A	374.661	89.385%	848	24.5	36.07°C	0.968
	12.097V	5.042V	3.32V	5.021V	419.152				42.28°C	229.85V
60%	32.268A	5.972A	5.987A	1.998A	449.584	88.824%	1087	31.2	36.92°C	0.974
	12.079V	5.025V	3.307V	5.005V	506.153				43.86°C	229.84V
70%	37.774A	6.992A	7.014A	2.206A	524.502	88.117%	1280	35.1	37.15°C	0.978
	12.055V	5.007V	3.294V	4.989V	595.234				44.51°C	229.83V
80%	43.367A	8.003A	8.048A	2.313A	599.632	87.346%	1537	39.1	38.02°C	0.98
	12.032V	4.99V	3.28V	4.974V	686.502				46.09°C	229.82V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
90%	49.344A	8.545A	8.567A	2.42A	674.731	86.538%	1765	42.2	38.62°C	0.982
	12.002V	4.975V	3.268V	4.96V	779.694				47.63°C	229.81V
100%	55.215A	9.074A	9.123A	3.04A	749.954	85.556%	1899	44.0	39.63°C	0.985
	11.957V	4.961V	3.255V	4.935V	876.559				49.65°C	229.8V
110%	60.902A	10.117A	10.272A	3.048A	824.946	84.596%	1899	44.0	41.39°C	0.988
	11.931V	4.943V	3.242V	4.922V	975.153				52.32°C	229.79V
CL1	0.115A	15.714A	15.525A	0A	131.314	80.523%	1004	29.0	36.07°C	0.925
	12.196V	4.984V	3.323V	5.069V	163.08				42.54°C	229.87V
CL2	0.115A	20.093A	0A	0A	101.425	79.254%	773	21.8	37.68°C	0.898
	12.211V	4.978V	3.356V	5.089V	127.972				44.91°C	229.88V
CL3	0.114A	0A	19.765A	0A	67.386	75.051%	683	18.3	38.44°C	0.856
	12.206V	5.095V	3.339V	5.083V	89.784				46.52°C	229.88V
CL4	62.722A	0.001A	0.001A	0A	749.689	86.598%	1873	43.6	40.55°C	0.984
	11.952V	5.039V	3.288V	5.016V	865.732				50.46°C	229.8V

The results above are not used in the certification process

Light 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
20W	1.216A	0.489A	0.488A	0.196A	20.015	68.758%	580	12.3	31.33°C	0.586
	12.224V	5.116V	3.38V	5.105V	29.115				34.41°C	229.89V
40W	2.676A	0.685A	0.684A	0.294A	40.013	79.011%	553	11.5	31.61°C	0.747
	12.217V	5.112V	3.376V	5.1V	50.635				34.91°C	229.89V
60W	4.138A	0.881A	0.881A	0.393A	60.011	83.71%	547	11.2	32.51°C	0.818
	12.211V	5.109V	3.373V	5.095V	71.686				36.01°C	229.88V
80W	5.599A	1.077A	1.077A	0.491A	79.974	85.862%	550	11.4	33.37°C	0.86
	12.206V	5.105V	3.37V	5.091V	93.151				37.13°C	229.88V

The results above are not used in the certification process

Ripple Measurements 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	37.71mV	21.65mV	14.06mV	27.99mV	Pass
20% Load	36.43mV	20.94mV	15.03mV	23.95mV	Pass
30% Load	38.74mV	24.52mV	16.36mV	21.29mV	Pass
40% Load	44.77mV	21.35mV	16.72mV	20.42mV	Pass
50% Load	50.71mV	23.55mV	18.36mV	22.57mV	Pass
60% Load	56.19mV	26.87mV	19.13mV	24.97mV	Pass
70% Load	60.69mV	29.83mV	20.71mV	32.70mV	Pass
80% Load	60.95mV	32.53mV	23.88mV	35.87mV	Pass
90% Load	71.74mV	33.25mV	26.34mV	33.47mV	Pass
100% Load	105.40mV	39.57mV	36.17mV	49.69mV	Pass
110% Load	124.00mV	43.42mV	37.90mV	52.39mV	Fail
Crossload1	45.07mV	32.61mV	28.27mV	23.56mV	Pass
Crossload2	40.99mV	25.95mV	15.29mV	22.82mV	Pass
Crossload3	40.73mV	26.71mV	20.66mV	26.36mV	Pass
Crossload4	106.10mV	33.85mV	32.47mV	31.71mV	Pass

The results above are not used in the certification process

be quiet! System Power 10 750W

Top side

Power specifications label

Cybenetics bietet freiwillige Zertifizierungsprogramme für Netzteile – ETA für Effizienz, LAMBDA für Lautstärke und SAFE für Sicherheit und korrekten Betrieb – sowie für Kühlprodukte mit DELTA für die Schalldämmung von Gehäusen und PHI für Luftstrom und statischen Druck von Lüftern

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