Duex Pulse 800W

Serial Number

Lab ID DX80002503

Certification ID 252503

Test Result Report ID: 24PS2503A

Certificate Issue Date: Jul 12, 2024

115V

Scheme: ETA-EMI PSU



115V



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	Duex
Model	Pulse 800W
OEM/ODM	Kinpower
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	16

Rated Frequency (Hz)	50-60
Rated Power (W)	800
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Rifle Bearing Fan (EFS-12E12H)
Semi-Passive Operation	✓
Cybenetics Testing Information	
Lab ID	DX80002503
Date of receipt	Jul 1, 2024
Testing Date	Jul 9, 2024
Report Issued Date	Jul 12, 2024
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors
(Non-accredited measurements)

Modular Cables				
Description	**Cable Count**	**Connector Count (Total)**	**Gauge**	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	18-22AWG	No
4+4 pin EPS12V (700mm)	2	2	18AWG	No
6+2 pin PCIe (600mm+150mm)	2	4	18AWG	No
SATA (450mm+150mm+150mm)	2	6	18AWG	No
4-pin Molex (450mm+150mm+150mm)	1	3	18AWG	No

Protection Features

Over Power Protection	✓
Over Current (+12V) Protection	✓
Over Temperature Protection	✓
Short Circuit Protection	✓
Surge Protection	✓
Inrush Current Protection	✓
Fan Failure Protection	✗

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	66	3	0.3
	Watts	103		792	15	3.6
Total Max. Power (W)		800				

Parts Description

General Data	
Manufacturer (OEM)	Kinpower
PCB Type	Double-Sided
Primary Side	
Transient Filter	2x Y caps, 1x X caps, 2x CM chokes, 1x MOV
Inrush Protection	1x NTC Thermistor M72 5D-15 (5 Ohm @25°C) & Relay
Bridge Rectifier(s)	2x HY Electronic GBU2506L (600V, 25A @ 150°C)
APFC MOSFETs	2x Sanrise Tech SRC60R140B (600V, 11.2A @ 125°C, Rds(on): 140mOhm)
APFC Boost Diode	1x Global Power Technology G3S06510A (650V, 10A @ 153.5°C)
Bulk Cap(s)	1x Nippon Chemi-Con (400V, 680uF, 2000h @ 105°C, KMW)

Main Switchers	2x Sanrise Tech SRC60R140B (600V, 11.2A @ 125°C, Rds(on): 140mOhm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	6x Alkaidsemi Technologies AKG40N025G (40V, 74A @ 100°C, Rds(on): 2.5mOhm)
5V & 3.3V	DC-DC Converters: 4x Excelliance EMB06N03R (20V, 45A @ 100°C, Rds(on): 6mOhm PWM Controller(s): 2x Aplustek AT8853ZSPC
Filtering Capacitors	Electrolytic: 3x TK (105°C, SZ) Polymer: 34x Chengx (PC), 2x TK (SZ)
Supervisor IC	IN1S4291-SCG
Fan Model	DWPH EFS-12E12H (120mm, 12V, 0.50A, Rifle Bearing Fan)
5VSB Circuit	
Low Side Rectifier	Dongke DK5V45R15S (45V, Rds(on): 15mOhm)
Standby PWM Controller	FuXin Semiconductor FXI8252S

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 115V

Accredited	
Average Efficiency (>1450 load combinations)	89.364%
Average Noise Output (>1450 Load Combinations)	29.61dBA

Average PF (>1450 Load Combinations)	0.981
Efficiency With 10W (≤500W) or 2% (>500W) Load	50.783%
Standby Power Consumption	0.0355W
Non-Accredited	
12V Ripple (Full Load)	41.79mV
5V Ripple (Full Load)	37.13mV
3.3V Ripple (Full Load)	26.67mV
5VSB Ripple (Full Load)	29.60mV
12V Load Regulation	0.99%
5V Load Regulation	3.02%
3.3V Load Regulation	4.45%
5VSB Load Regulation	3.09%
Inrush Current	33.990A

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	20.6
AC Loss to PWR_OK Hold Up Time (ms)	17.3
PWR_OK Inactive to DC Loss Delay (ms)	3.3



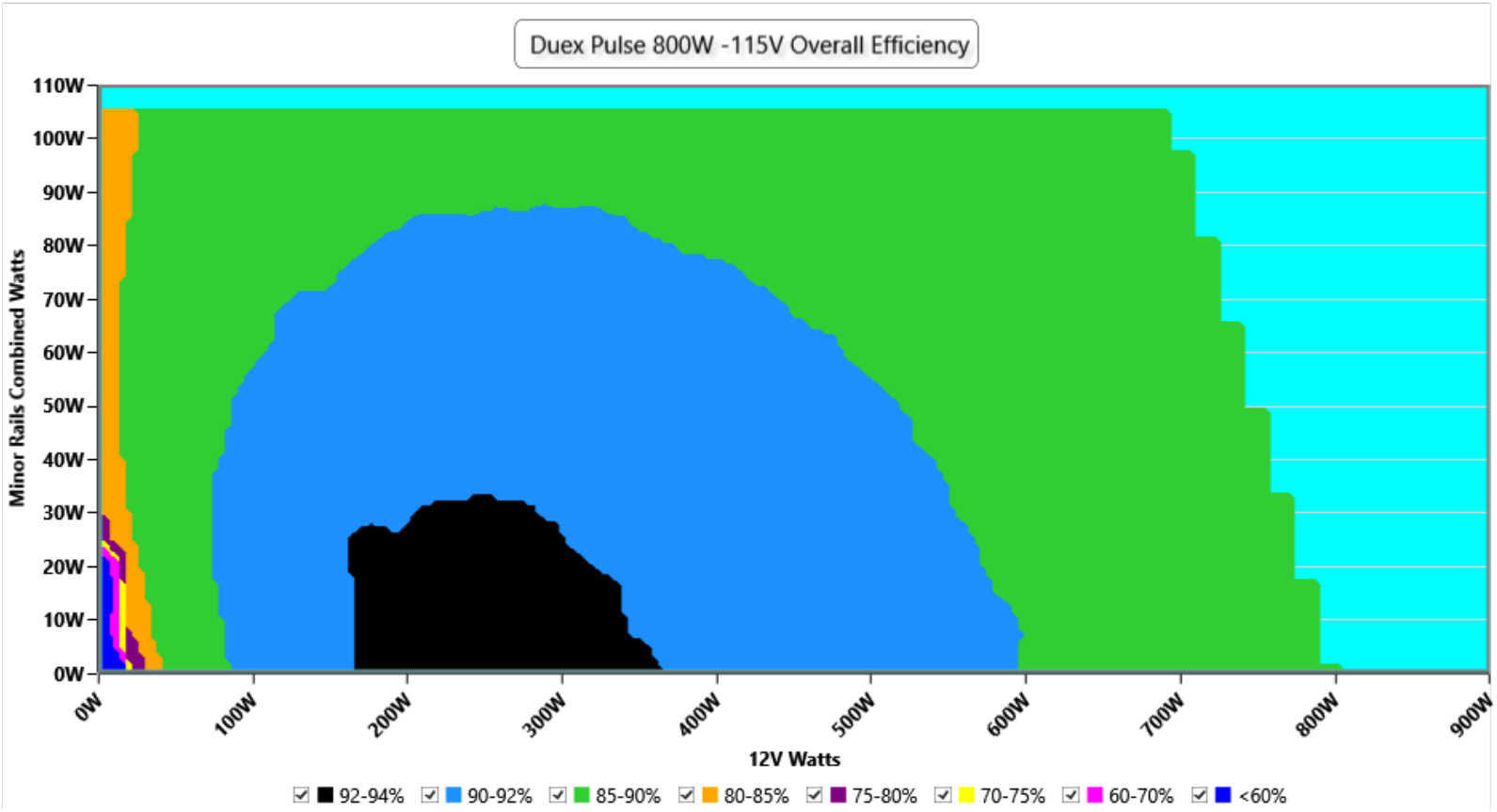
Tables 115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.08 V	115.04 V	113.85 V	115.12 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.13 %	0.09 %	N/A	0.18 %	2.00 %	PASS
Real Power:	0.036 W	-0.000 W	N/A	0.063 W	N/A	N/A
Apparent Power:	2.388 W	2.317 W	N/A	2.465 W	N/A	N/A

Power Factor:	0.021	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

115V

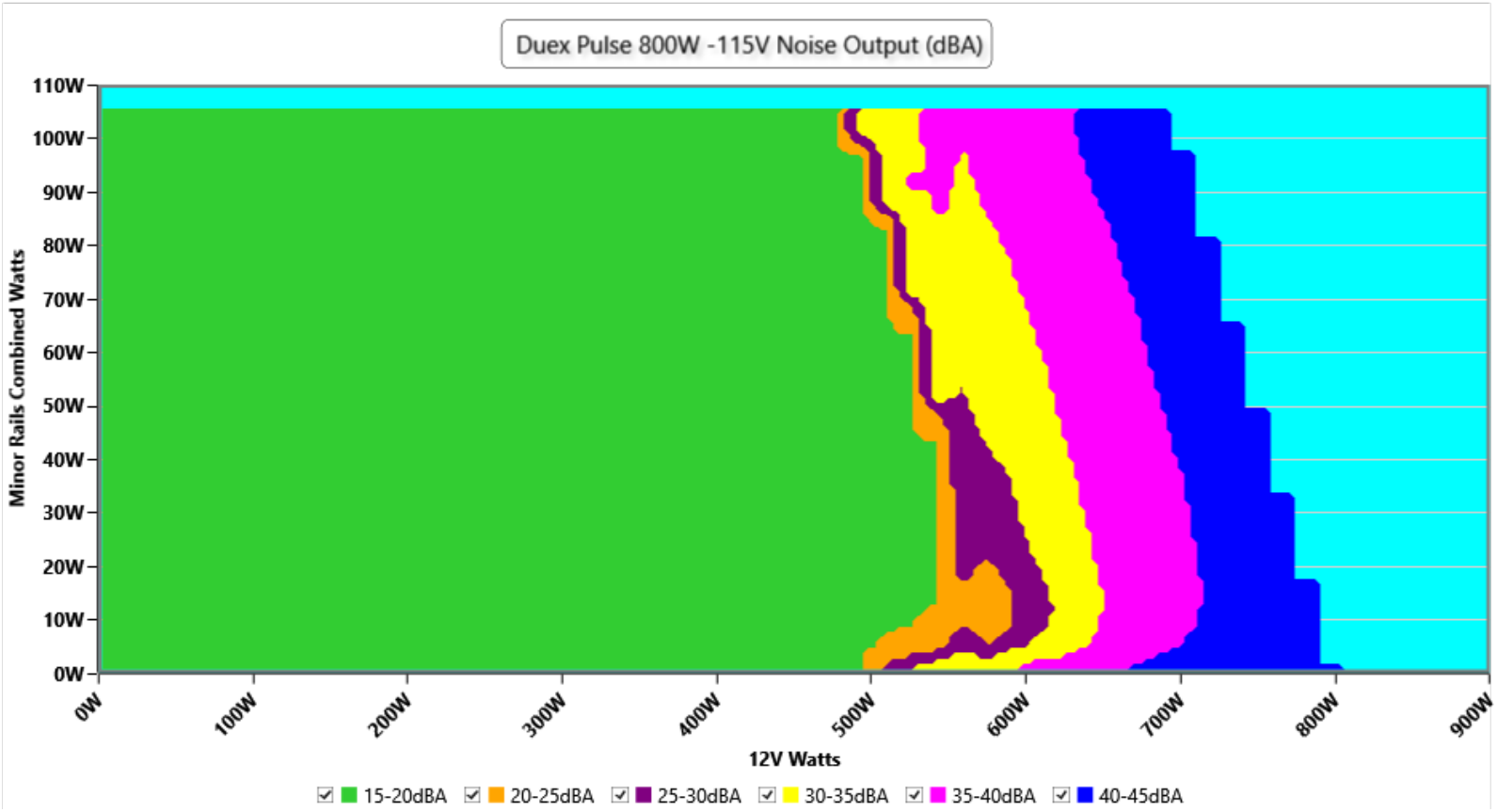


INFO

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

Noise under high ambient temperature (indicative)

115V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	851 RPM · 19.5 dB(A) · 31.0 °C	869 RPM · 20.4 dB(A) · 40.3 °C	**+0.9 dB(A)**
20%	856 RPM · 19.6 dB(A) · 30.5 °C	870 RPM · 20.4 dB(A) · 40.5 °C	**+0.8 dB(A)**
50%	857 RPM · 19.6 dB(A) · 30.3 °C	873 RPM · 20.5 dB(A) · 42.1 °C	**+0.9 dB(A)**
100%	1867 RPM · 44.2 dB(A) · 30.2 °C	1872 RPM · 44.3 dB(A) · 45.1 °C	**+0.1 dB(A)**

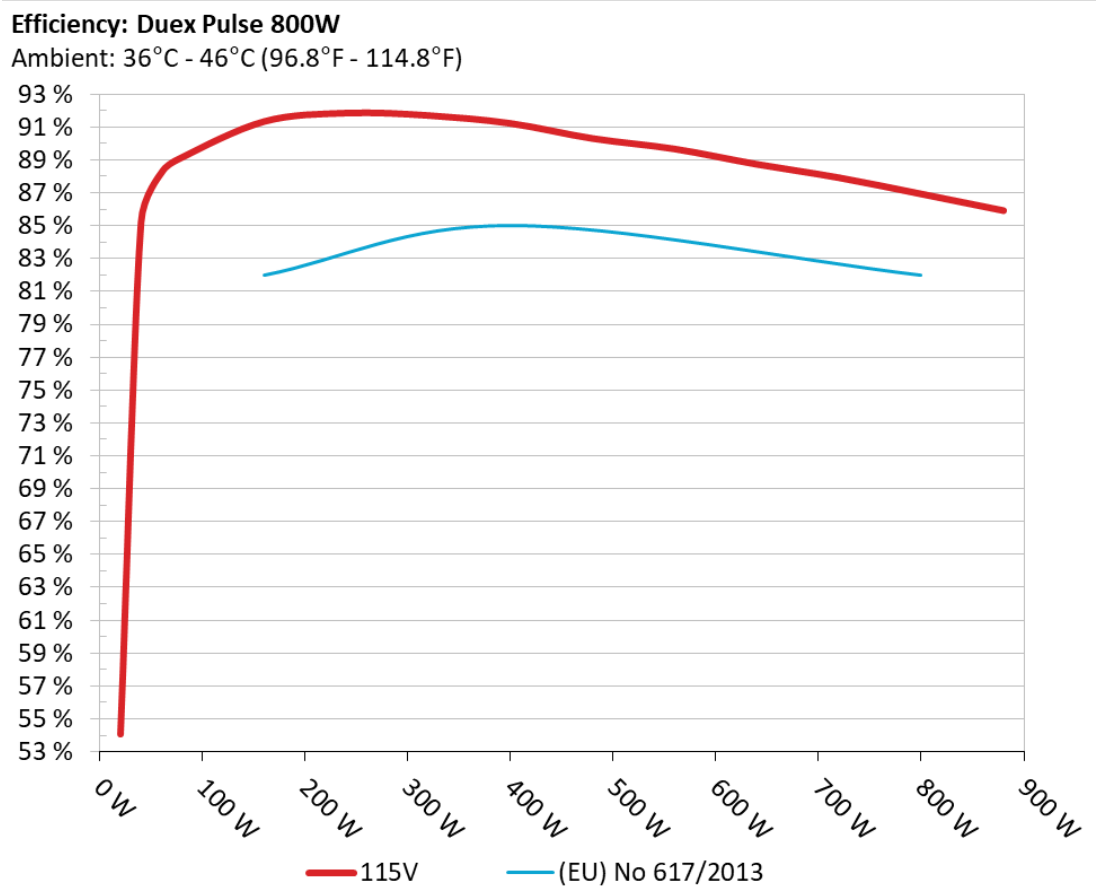
INFO

Fan speed, noise and the measured intake temperature at 10, 20, 50 and 100 % load, from the two load regulation tests: at normal ambient (about 30-32 °C) and at high ambient (about 40-47 °C). These are stabilized readings at fixed loads, not averages over the certification sweep, so they are indicative of how the fan behaves when it is hot. "<6.0" is the floor of our sound meter: the fan is stopped or too quiet to measure (the fan speed column says which); with the fan stopped, the intake sensor can read higher than the chamber air.

Informational. Not part of the ETA or LAMBDA rating.

Indicative Performance

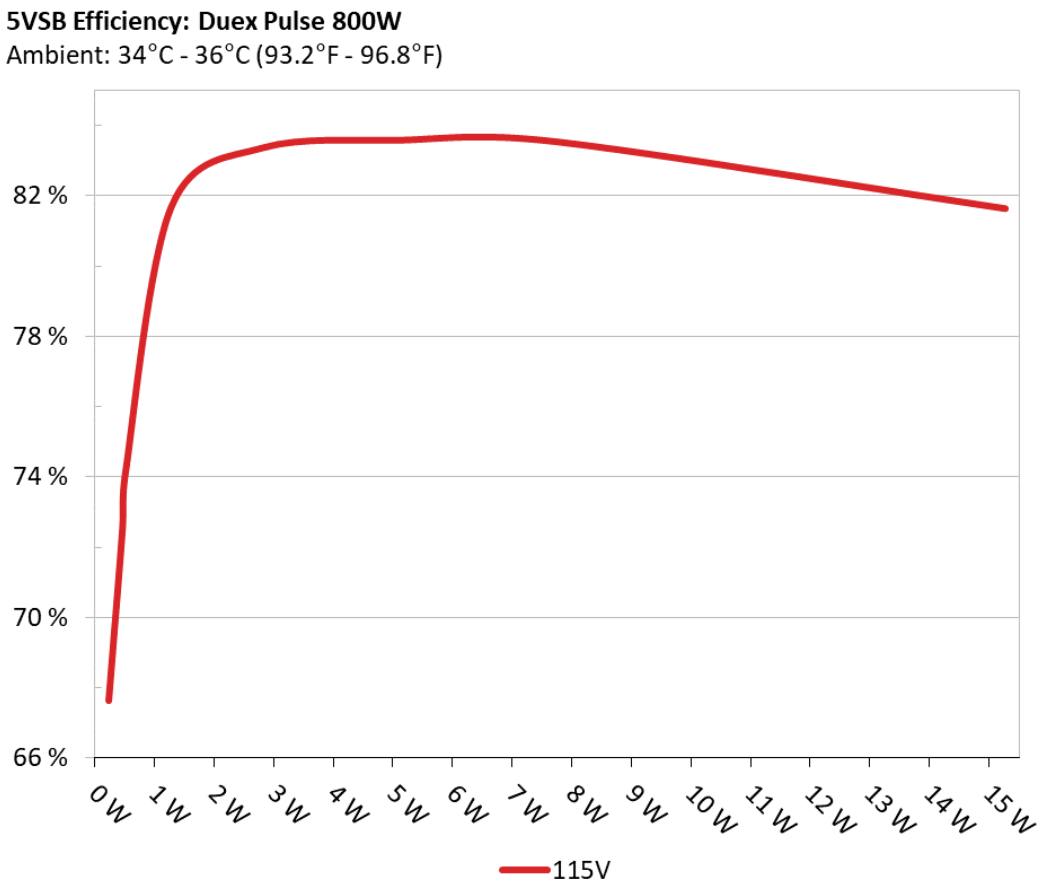
Efficiency under high ambient temperature



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) 115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	**0.045A**	0.232W	67.626%	0.12
	5.149V	0.343W		114.86V

2	**0.09A**	0.463W	72.536%	0.195
	5.148V	0.639W		114.86V
3	**0.55A**	2.827W	83.365%	0.384
	5.139V	3.391W		114.85V
4	**1A**	5.13W	83.578%	0.429
	5.13V	6.138W		114.84V
5	**1.5A**	7.681W	83.546%	0.446
	5.12V	9.194W		114.85V
6	**3A**	15.274W	81.632%	0.479
	5.091V	18.71W		114.85V

Protection Features

OCP (Cold @ 25.4°C)	12V: NaNA (NaN%), NaNV 5V: 29.1A (145.5%), 4.878V 3.3V: 30.7A (153.5%), 3.138V 5VSB: 4.1A (136.67%), 5.063V
OCP (Hot) @ -°C)	12V: - 5V: - 3.3V: - 5VSB: -
OPP (Cold @ 27.8°C)	987.52W (123.44%)
OPP (Hot @ -°C)	-
OTP	✓ (139°C @ Heat Sink)
SCP	12V to Earth: ✓ 5V to Earth: ✓ 3.3V to Earth: ✓ 5VSB to Earth: ✓ -12V to Earth: ✓
PWR_OK	Proper Operation
NLO	✓
Fan Failure Protection	✗
SIP	Surge: MOV Inrush: NTC & Bypass Relay

Supplementary Tests (For Reference)

Typical 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
10%	**4.802A**	**1.989A**	**1.99A**	**0.976A**	79.999	89.161%	869	20.4	40.31°C	0.942
	12.162V	5.026V	3.317V	5.121V	89.724				42.48°C	114.82V
20%	**10.620A**	**2.993A**	**2.998A**	**1.175A**	159.925	91.344%	870	20.4	40.53°C	0.965
	12.150V	5.011V	3.302V	5.107V	175.084				43.7°C	114.79V
30%	**16.800A**	**3.5A**	**3.51A**	**1.374A**	239.963	91.856%	872	20.5	41.49°C	0.975
	12.138V	4.999V	3.29V	5.093V	261.237				45.92°C	114.77V
40%	**22.992A**	**4.01A**	**4.025A**	**1.575A**	320.009	91.707%	872	20.5	41.75°C	0.983
	12.126V	4.988V	3.279V	5.08V	348.945				47.67°C	114.75V
50%	**28.784A**	**5.028A**	**5.055A**	**1.777A**	399.192	91.231%	873	20.5	42.07°C	0.988
	12.114V	4.972V	3.264V	5.065V	437.562				50.03°C	114.71V
60%	**34.699A**	**6.052A**	**6.095A**	**1.98A**	479.724	90.308%	1348	34.4	42.91°C	0.989
	12.102V	4.957V	3.248V	5.05V	531.209				51.16°C	114.69V
70%	**40.559A**	**7.081A**	**7.143A**	**2.185A**	559.401	89.672%	1626	39.3	43.23°C	0.991
	12.089V	4.943V	3.234V	5.035V	623.83				50.91°C	114.66V
80%	**46.505A**	**8.117A**	**8.201A**	**2.29A**	639.446	88.742%	1865	44.2	43.84°C	0.992
	12.075V	4.927V	3.219V	5.021V	720.567				52.56°C	114.62V
90%	**52.788A**	**8.647A**	**8.732A**	**2.396A**	719.271	87.924%	1869	44.2	44.26°C	0.994
	12.063V	4.914V	3.206V	5.009V	818.065				55.2°C	114.6V
100%	**58.887A**	**9.182A**	**9.301A**	**3.009A**	799.305	86.938%	1872	44.3	45.12°C	0.995
	12.050V	4.9V	3.193V	4.986V	919.393				59.45°C	114.56V
110%	**64.932A**	**10.239A**	**10.484A**	**3.016A**	879.895	85.918%	1872	44.3	46.21°C	0.995
	12.037V	4.883V	3.176V	4.974V	1024.113				62.16°C	114.53V
CL1	**0.114A**	**12.582A**	**12.681A**	**0A**	104.285	83.277%	867	20.3	42.88°C	0.954
	12.147V	4.928V	3.225V	5.124V	125.229				51.81°C	114.8V
CL2	**0.114A**	**20.28A**	**0A**	**0A**	101.329	81.74%	869	20.4	41.67°C	0.954
	12.152V	4.928V	3.264V	5.129V	123.965				48.98°C	114.81V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL3	**0.113A**	**0A**	**20.51A**	**0A**	67.38	75.15%	862	20.1	41.77°C	0.942
	12.152V	4.956V	3.218V	5.129V	89.66				47.15°C	114.82V
CL4	**66.307A**	**0A**	**0A**	**0.003A**	799.908	87.948%	1882	44.5	46.96°C	0.995
	12.063V	4.972V	3.264V	5.057V	909.531				56.11°C	114.56V

The results above are not used in the certification process

Light 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
20W	**1.220A**	**0.495A**	**0.495A**	**0.195A**	19.993	54.062%	866	20.3	36.31°C	0.903
	12.166V	5.048V	3.335V	5.14V	36.978				41.53°C	114.84V
40W	**2.686A**	**0.694A**	**0.693A**	**0.292A**	39.994	85.217%	864	20.2	37.09°C	0.912
	12.169V	5.041V	3.331V	5.14V	46.934				39.44°C	114.83V
60W	**4.154A**	**0.893A**	**0.892A**	**0.389A**	59.994	88.239%	865	20.2	38.88°C	0.93
	12.166V	5.038V	3.328V	5.136V	67.994				39.27°C	114.82V
80W	**5.616A**	**1.092A**	**1.092A**	**0.487A**	79.931	89.835%	868	20.4	39.13°C	0.942
	12.162V	5.034V	3.325V	5.131V	88.977				41.02°C	114.82V

The results above are not used in the certification process

Ripple Measurements 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	22.30mV	20.27mV	17.75mV	12.57mV	Pass
20% Load	24.35mV	22.89mV	18.11mV	14.78mV	Pass
30% Load	25.98mV	23.35mV	18.27mV	16.16mV	Pass
40% Load	26.13mV	23.66mV	19.70mV	17.29mV	Pass
50% Load	27.26mV	26.33mV	23.14mV	19.55mV	Pass
60% Load	27.77mV	28.48mV	23.75mV	20.22mV	Pass
70% Load	30.23mV	31.00mV	23.55mV	24.01mV	Pass
80% Load	34.47mV	32.80mV	24.99mV	27.76mV	Pass
90% Load	33.35mV	33.31mV	24.47mV	26.22mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
100% Load	41.79mV	37.13mV	26.67mV	29.60mV	Pass
110% Load	44.07mV	37.17mV	27.27mV	31.08mV	Pass
Crossload1	33.87mV	38.36mV	28.12mV	12.67mV	Pass
Crossload2	24.24mV	25.10mV	23.09mV	12.37mV	Pass
Crossload3	29.10mV	89.61mV	24.47mV	11.13mV	Fail
Crossload4	39.22mV	26.05mV	19.99mV	26.28mV	Pass

The results above are not used in the certification process

Duex Pulse 800W



Top side



Power specifications label

Cybenetics □□□□□□□□□□□□□□□□□□ ETA□□□□□ LAMBDA□□□□□ SAFE□□□□□□□□□□□□□□□□□ DELTA□□□□□□□ PHI□□□□□□□□□

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