Tempest Gaming Pulse 650W

Serial Number -

Lab ID TE65002769

Certification ID 252769

Test Result Report ID: 25PS2769A

Certificate Issue Date: Mar 19, 2025

230V

Scheme: ETA-EMI PSU



230V



Scheme: LAMBDA PSU



Outside Validation Scope



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	Tempest Gaming
Model	Pulse 650W
OEM/ODM	Kinpower
Serial Number	-
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	220-240

Rated Current (Arms)	5
Rated Frequency (Hz)	50-60
Rated Power (W)	650
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fixed cables
Warranty	5 years
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225M12F-Z)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	TE65002769
Date of receipt	Mar 7, 2025
Testing Date	Mar 14, 2025
Report Issued Date	Mar 19, 2025
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 (475mm)	1	1	18-20AWG	No
4+4 pin EPS12V (540mm)	1	1	18AWG	No
6+2 pin PCIe (500mm+150mm)	1	2	18AWG	No
SATA (360mm+155mm) / 4-pin Molex (+155mm)	2	4 / 2	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	54.2	3	0.3
	Watts	103		650	15	3.6
Total Max. Power (W)		650				

Parts Description

General Data	
Manufacturer (OEM)	Kinpower
PCB Type	Double-Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV,
Inrush Protection	1x NTC Thermistor M72 20D15 (20 ohm) & Relay
Bridge Rectifier(s)	1x
APFC MOSFETs	1x SI-Trend SI24N50F
APFC Boost Diode	1x SI-Trend SI8L600F (600V, 8A @ 25°C)
Bulk Cap(s)	1x Toshin Kogyo TK (420V, 470uF, 2,000h @ 105°C, LW)

Main Switchers	2x Fuxin Semiconductor FXN180N50F (500V, 10.2 @ 100°C, Rds(on): 0.38Ohm)
PFC / PWM Combo Controller	Champion CM6800UBX
Topology	Primary side: APFC, Double Forward Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	4x Fuxin Semiconductor FXN0206C (65V, 118A @ 100°C, Rds(on): 2.8mOhm)
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: 12x TK (@105°C, SZ) Polymer: 4x Chengx (PC)
Supervisor IC	IN1S4291-SCG
Fan Model	Hong Hua HA1225M12F-Z (120mm, 12V, 0.45A, Fluid Dynamic Bearing Fan)
5VSB	
Rectifier	2x SMC Schottky SK54 (40V, 5A @ 150°C)
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	✓
ATX v3.1 PSU Power Excursion	✓

Performance Summary 230V

Accredited	
Average Efficiency (>1450 load combinations)	87.785%
Average Noise Output (>1450 Load Combinations)	35.79dBA

Average PF (>1450 Load Combinations)		0.949
Efficiency With 10W (≤500W) or 2% (>500W) Load		63.886%
Standby Power Consumption		0.1587W
Non-Accredited		
12V Ripple (Full Load)		34.56mV
5V Ripple (Full Load)		32.11mV
3.3V Ripple (Full Load)		44.63mV
5VSB Ripple (Full Load)		31.21mV
12V Load Regulation		1.25%
5V Load Regulation		1.13%
3.3V Load Regulation		2.51%
5VSB Load Regulation		3.21%
Inrush Current		112.600A
12V Transient Response (150%)		11.59V
5V Transient Response (150%)		5.010V
3.3V Transient Response (150%)		3.220V
5VSB Transient Response (150%)		5.063V
Hold-Up Time & PWR_OK Signal		20.90ms
AC Loss to PWR_OK Hold Up Time		18.40ms
PWR_OK Inactive to DC Loss Delay		2.50ms
PSU Timings: T1 (20% / 100%)	25.0ms	25.0ms
PSU Timings: T3 (20% / 100%)	115.0ms	115.0ms
12V OCP (31.4°C / 45.8°C)	73.20A (135.06%), 11.919V	70.00A (129.15%), 11.923V
5V OCP (31.4°C / 45.8°C)	23.3A (116.50%), 5.044V	22.6A (113.00%), 5.035V
3.3V OCP (31.4°C / 45.8°C)	23.4A (117.00%), 3.271V	22.6A (113.00%), 3.262V
5VSB OCP (31.4°C / 45.8°C)	4.6A (153.33%), 5.056V	4.4A (146.67%), 5.059V
OPP (30.56°C / 45.11°C)	139.93%	129.02%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	20.9
AC Loss to PWR_OK Hold Up Time (ms)	18.4

PWR_OK Inactive to DC Loss Delay (ms)	2.5

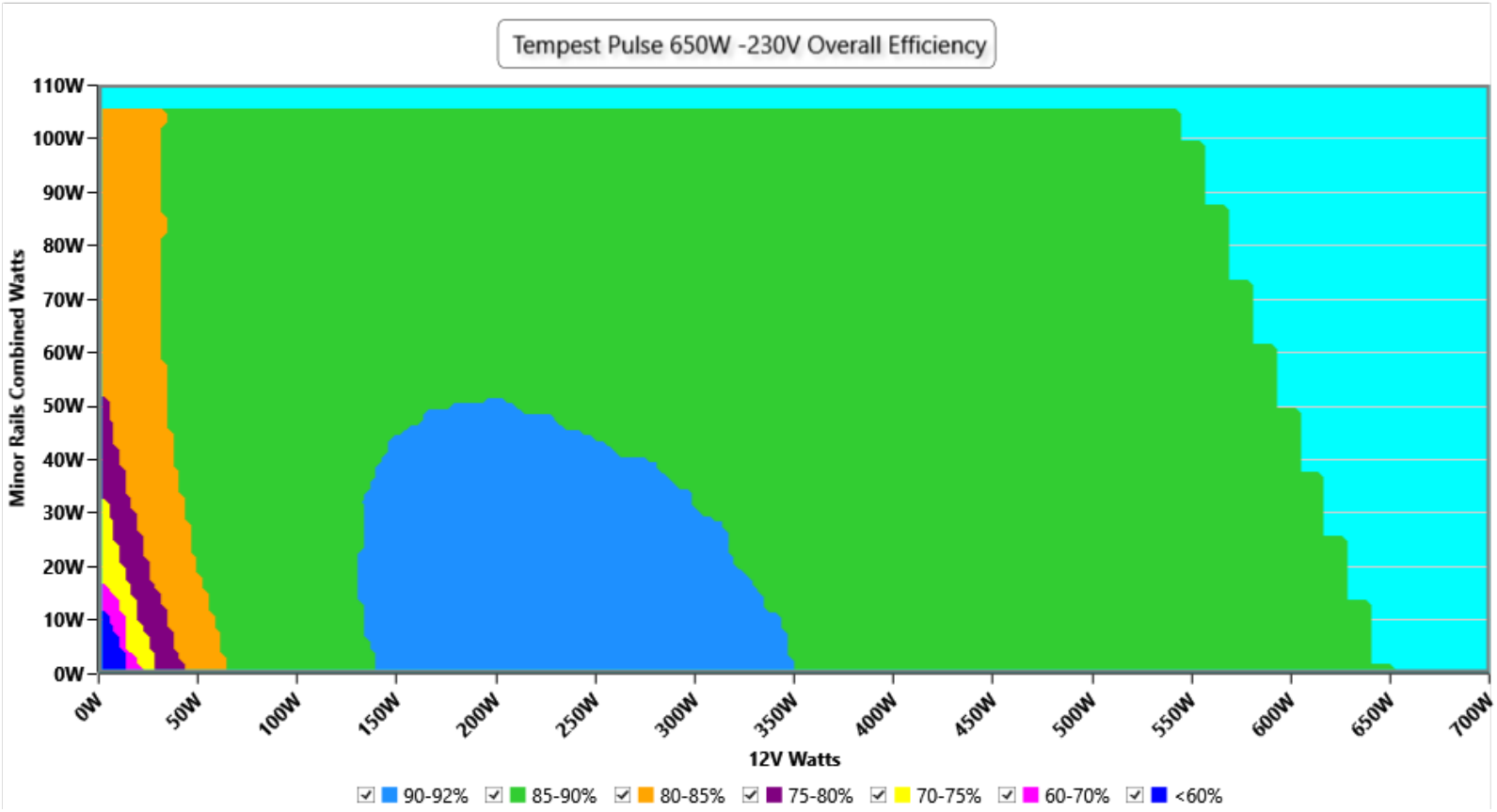
Stromverbrauch im Ruhezustand

Tables 230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.90 V	229.82 V	227.70 V	230.00 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:	0.24 %	0.22 %	N/A	0.28 %	2.00 %	PASS
Real Power:	0.159 W	0.133 W	N/A	0.177 W	N/A	N/A
Apparent Power:	15.264 W	15.013 W	N/A	15.524 W	N/A	N/A
Power Factor:	0.011	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

230V

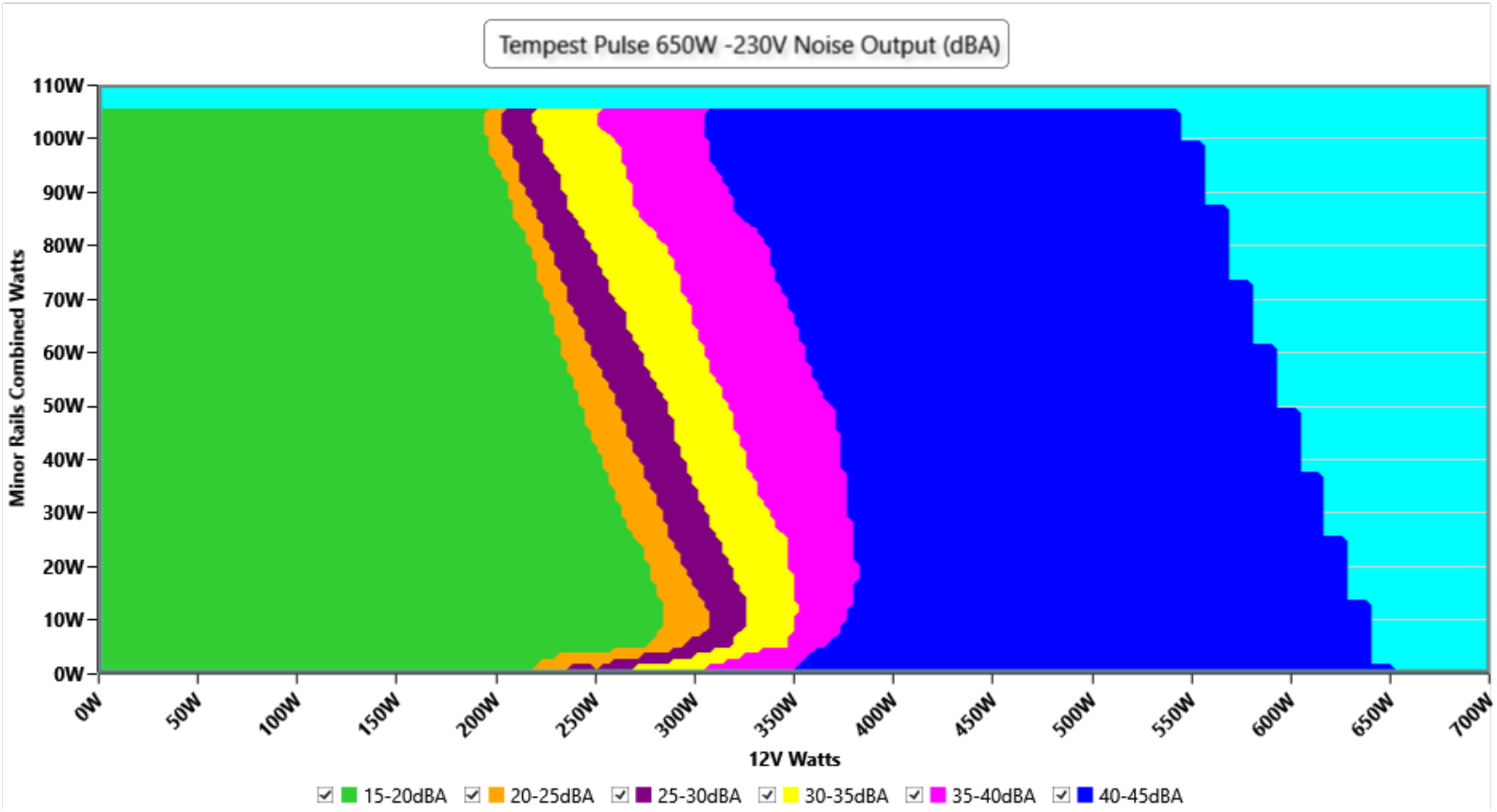


INFO

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

Noise under high ambient temperature (indicative)

230V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	676 RPM · 15.0 dB(A) · 30.9 °C	696 RPM · 15.5 dB(A) · 40.2 °C	**+0.5 dB(A)**
20%	681 RPM · 16.3 dB(A) · 30.7 °C	699 RPM · 15.5 dB(A) · 40.7 °C	**-0.8 dB(A)**
50%	1203 RPM · 31.5 dB(A) · 30.5 °C	1795 RPM · 42.2 dB(A) · 42.0 °C	**+10.7 dB(A)**
100%	1785 RPM · 42.2 dB(A) · 30.1 °C	1801 RPM · 42.7 dB(A) · 45.7 °C	**+0.5 dB(A)**

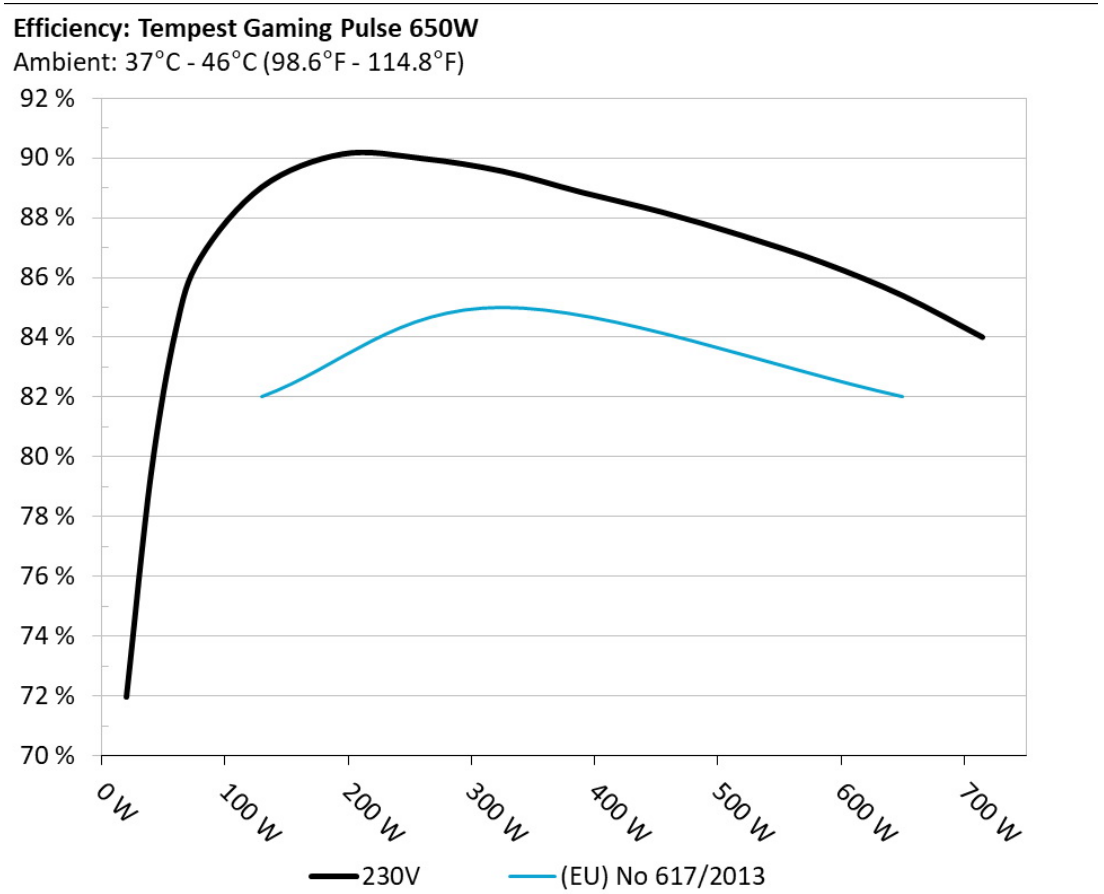
INFO

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

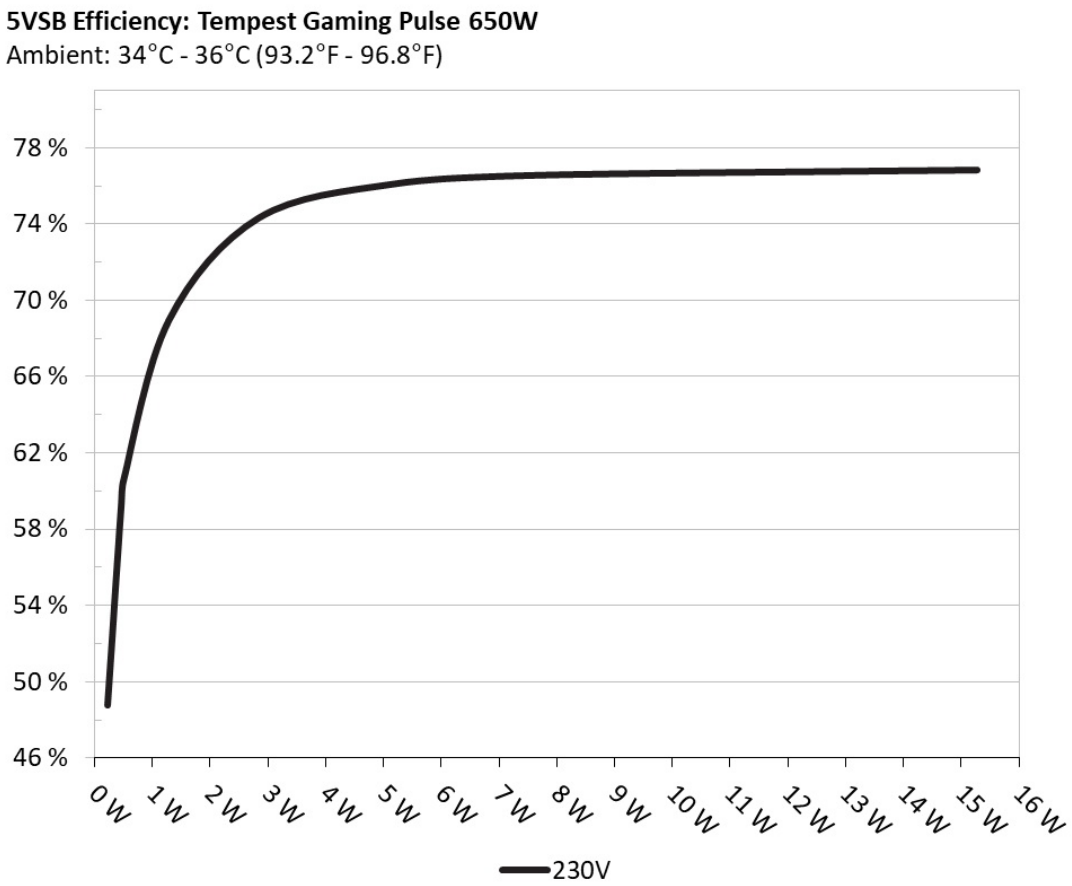
Efficiency under high ambient temperature



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) 230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	**0.045A**	0.233W	48.796%	0.033
	5.184V	0.479W		229.91V

2	**0.09A**	0.466W	59.169%	0.054
	5.182V	0.788W		229.89V
3	**0.55A**	2.842W	74.293%	0.227
	5.167V	3.825W		229.89V
4	**1A**	5.153W	76.066%	0.328
	5.153V	6.775W		229.89V
5	**1.5A**	7.707W	76.538%	0.391
	5.138V	10.07W		229.89V
6	**3A**	15.27W	76.811%	0.462
	5.09V	19.88W		229.89V

Protection Features

OCP (Normal @ 31.4°C)	12V: 73.2A (135.06%), 11.919V 5V: 23.3A (116.5%), 5.044V 3.3V: 23.4A (117%), 3.271V 5VSB: 4.6A (153.33%), 5.056V
OCP (Hot @ 45.8°C)	12V: 70A (129.15%), 11.923V 5V: 22.6A (113%), 5.035V 3.3V: 22.6A (113%), 3.262V 5VSB: 4.4A (146.67%), 5.059V
OPP (Normal @ 30.6°C)	909.57W (139.93%)
OPP (Hot @ 45.1°C)	838.61W (129.02%)
OTP	✓ (139°C @ Secondary Side)
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 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%	**3.586A**	**1.968A**	**2.003A**	**0.971A**	65.003	84.166%	696	15.5	40.17°C	0.874
	12.104V	5.082V	3.295V	5.148V	77.233				50.47°C	229.88V
20%	**8.190A**	**2.955A**	**3.011A**	**1.169A**	129.94	89.042%	699	15.5	40.72°C	0.928
	12.092V	5.076V	3.288V	5.135V	145.931				52.89°C	229.87V
30%	**13.154A**	**3.451A**	**3.52A**	**1.367A**	194.943	90.142%	940	24.2	41.35°C	0.943
	12.080V	5.071V	3.281V	5.121V	216.262				52.58°C	229.86V
40%	**18.132A**	**3.948A**	**4.029A**	**1.566A**	260.029	89.995%	1481	37.1	41.82°C	0.952
	12.069V	5.067V	3.277V	5.108V	288.935				50.44°C	229.85V
50%	**22.770A**	**4.94A**	**5.047A**	**1.767A**	325.027	89.566%	1795	42.2	42.04°C	0.956
	12.057V	5.061V	3.269V	5.094V	362.886				51.38°C	229.84V
60%	**27.367A**	**5.934A**	**6.071A**	**1.969A**	389.387	88.861%	1799	42.7	42.98°C	0.96
	12.043V	5.056V	3.262V	5.08V	438.196				53.62°C	229.83V
70%	**32.060A**	**6.931A**	**7.103A**	**2.172A**	454.714	88.197%	1799	42.7	43.05°C	0.962
	12.028V	5.05V	3.253V	5.065V	515.568				55.36°C	229.82V
80%	**36.763A**	**7.929A**	**8.139A**	**2.276A**	519.496	87.409%	1802	42.7	43.68°C	0.965
	12.012V	5.044V	3.244V	5.053V	594.325				58.55°C	229.8V
90%	**41.890A**	**8.433A**	**8.651A**	**2.381A**	584.898	86.508%	1802	42.7	44.55°C	0.968
	11.993V	5.038V	3.237V	5.041V	676.115				61.49°C	229.79V
100%	**46.790A**	**8.94A**	**9.2A**	**2.991A**	649.733	85.401%	1801	42.7	45.65°C	0.969
	11.969V	5.033V	3.228V	5.015V	760.806				65.34°C	229.77V
110%	**51.584A**	**9.948A**	**10.353A**	**2.997A**	714.358	84.013%	1802	42.7	46.05°C	0.967
	11.943V	5.025V	3.216V	5.005V	850.297				70.64°C	229.76V
CL1	**0.116A**	**12.246A**	**12.6A**	**0A**	104.291	83.004%	1334	34.5	42.08°C	0.918
	12.079V	5.062V	3.246V	5.154V	125.649				52.77°C	229.87V
CL2	**0.115A**	**19.782A**	**0A**	**0A**	101.349	81.837%	846	22.1	40.44°C	0.917
	12.078V	5.053V	3.281V	5.16V	123.81				51.66°C	229.88V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL3	**0.114A**	**0A**	**20.517A**	**0A**	67.396	74.785%	705	15.1	40.32°C	0.89
	12.088V	5.059V	3.217V	5.159V	90.116				51.28°C	229.88V
CL4	**54.235A**	**0A**	**0A**	**0.001A**	649.55	86.414%	1802	42.7	45.01°C	0.969
	11.976V	5.045V	3.257V	5.111V	751.694				59.97°C	229.78V

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	**1.226A**	**0.491A**	**0.499A**	**0.193A**	20	71.967%	686	15.7	36.45°C	0.718
	12.119V	5.09V	3.309V	5.176V	27.79				40.83°C	229.89V
40W	**2.698A**	**0.688A**	**0.699A**	**0.29A**	40	79.455%	690	15.5	37.96°C	0.824
	12.113V	5.086V	3.303V	5.17V	50.342				44.21°C	229.88V
60W	**4.174A**	**0.885A**	**0.9A**	**0.387A**	60	84.248%	692	15.3	38.78°C	0.866
	12.108V	5.084V	3.3V	5.165V	71.22				45.87°C	229.89V
80W	**5.644A**	**1.082A**	**1.101A**	**0.484A**	79.95	86.667%	694	15.5	39.52°C	0.895
	12.103V	5.082V	3.298V	5.16V	92.249				46.7°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	17.55mV	16.55mV	18.41mV	23.94mV	Pass
20% Load	20.62mV	18.19mV	19.64mV	26.85mV	Pass
30% Load	20.05mV	19.87mV	21.07mV	24.91mV	Pass
40% Load	20.41mV	19.93mV	20.46mV	26.70mV	Pass
50% Load	21.23mV	21.41mV	21.64mV	27.16mV	Pass
60% Load	23.18mV	19.52mV	22.25mV	24.86mV	Pass
70% Load	24.35mV	21.05mV	23.99mV	27.72mV	Pass
80% Load	27.27mV	25.24mV	33.61mV	27.16mV	Pass
90% Load	30.29mV	28.00mV	37.09mV	27.72mV	Pass

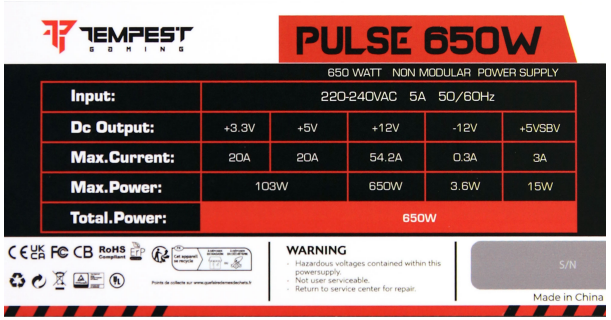
Test	12V	5V	3.3V	5VSB	Pass/Fail
100% Load	34.56mV	32.11mV	44.63mV	31.21mV	Pass
110% Load	38.28mV	38.38mV	47.40mV	33.27mV	Pass
Crossload1	34.53mV	24.25mV	22.10mV	16.95mV	Pass
Crossload2	30.39mV	21.36mV	20.51mV	17.75mV	Pass
Crossload3	31.52mV	29.38mV	26.40mV	18.98mV	Pass
Crossload4	39.08mV	24.43mV	29.09mV	23.34mV	Pass

The results above are not used in the certification process

Tempest Gaming Pulse 650W



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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