Tempest Gaming Pulse 650W

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Lab ID TE65002769

□□ ID 252769

□□□□□□ ID: 25PS2769A

□□□□□□ : Mar 19, 2025

230V

□□□□□ ETA-EMI PSU



230V



□□□□□ LAMBDA PSU



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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	
□□□□ (Vrms)	220-240

□□□□ (Arms)	5
□□□□ (Hz)	50-60
□□□□ (W)	650
□□□□□□□□□□ (°C)	
□□	ATX12V
□□□□	Fixed cables
□□	5 years
Cybenetics Measurements	
Dimensions (W x H x D)	
□□	
□□	120mm Fluid Dynamic Bearing Fan (HA1225M12F-Z)
□□□□□	✗
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	

□□□□□
(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

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

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

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot 3/6	✓
□□ (EU) No 617/2013□□	✓
□□ ALPM□ Alternative Low Power Mode□	✓
ATX v3.1 PSU □□□□	✓

Performance Summary 230V

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

PF□□□ (>1450 Load Combinations)		0.949
Efficiency With 10W (≤500W) or 2% (>500W) Load		63.886%
□□□□		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
□□□□ & PWR_OK □□		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%

□□□□ & PWR_OK □□

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



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

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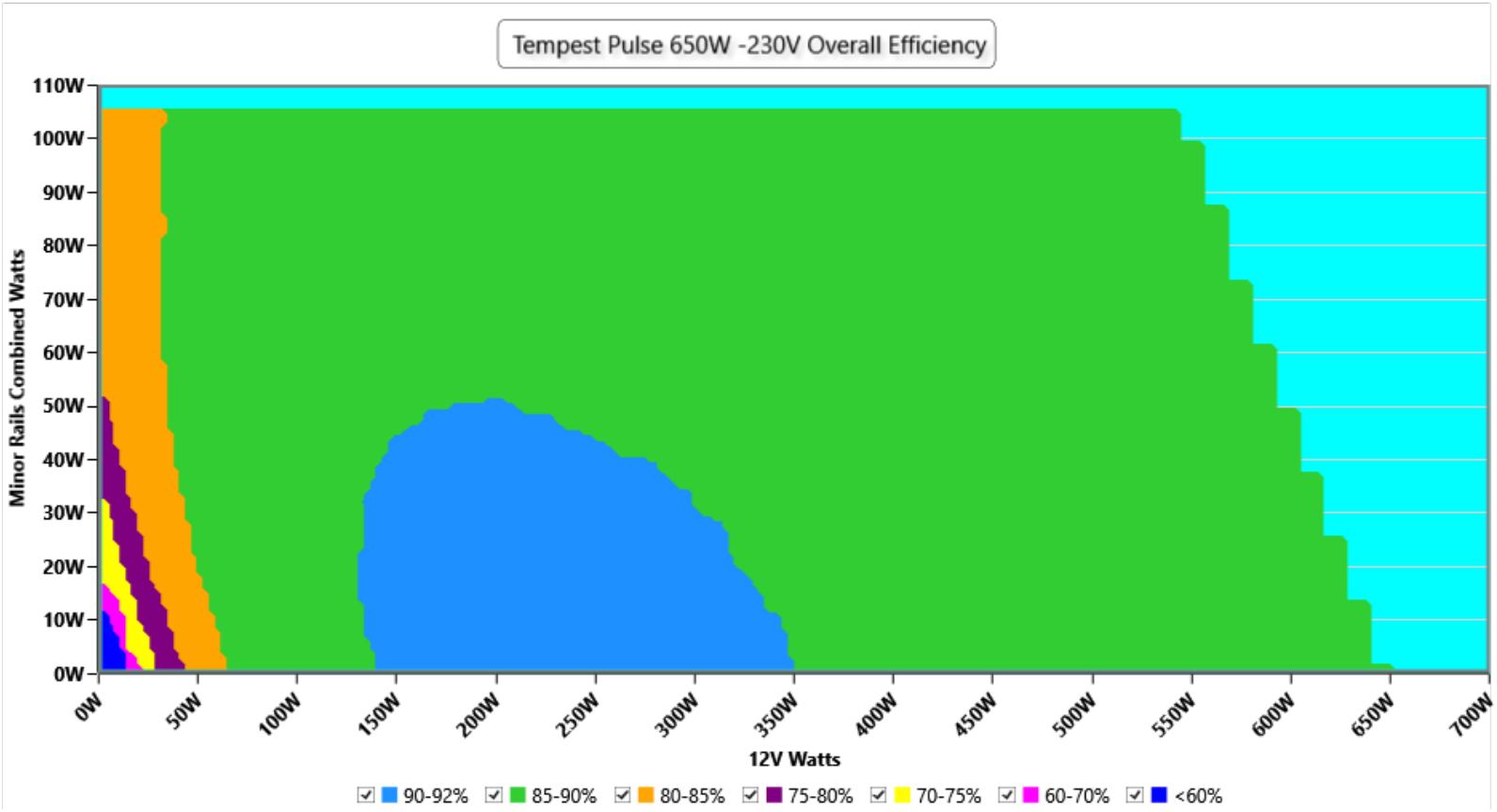
230V



□□

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

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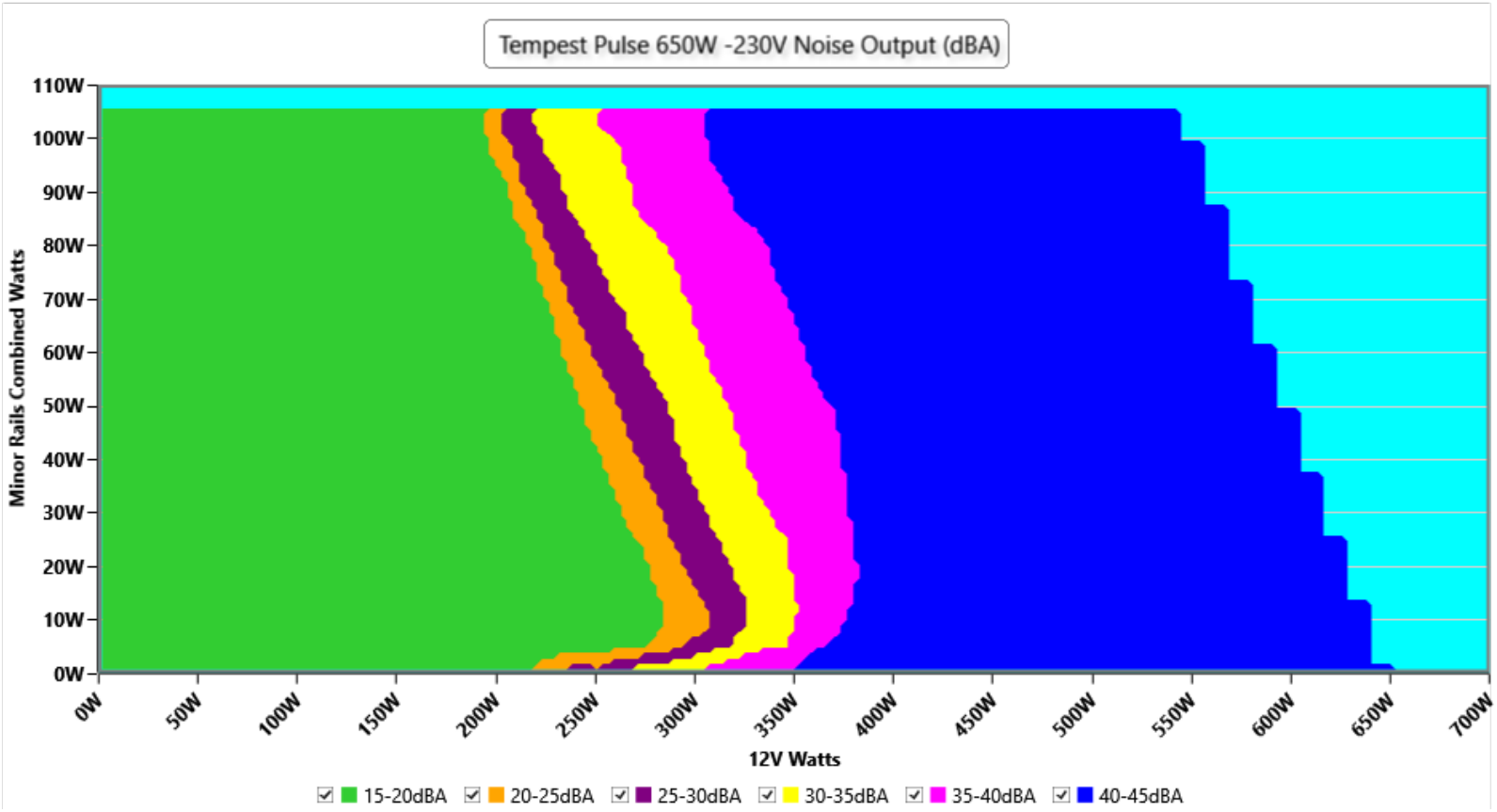
230V



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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

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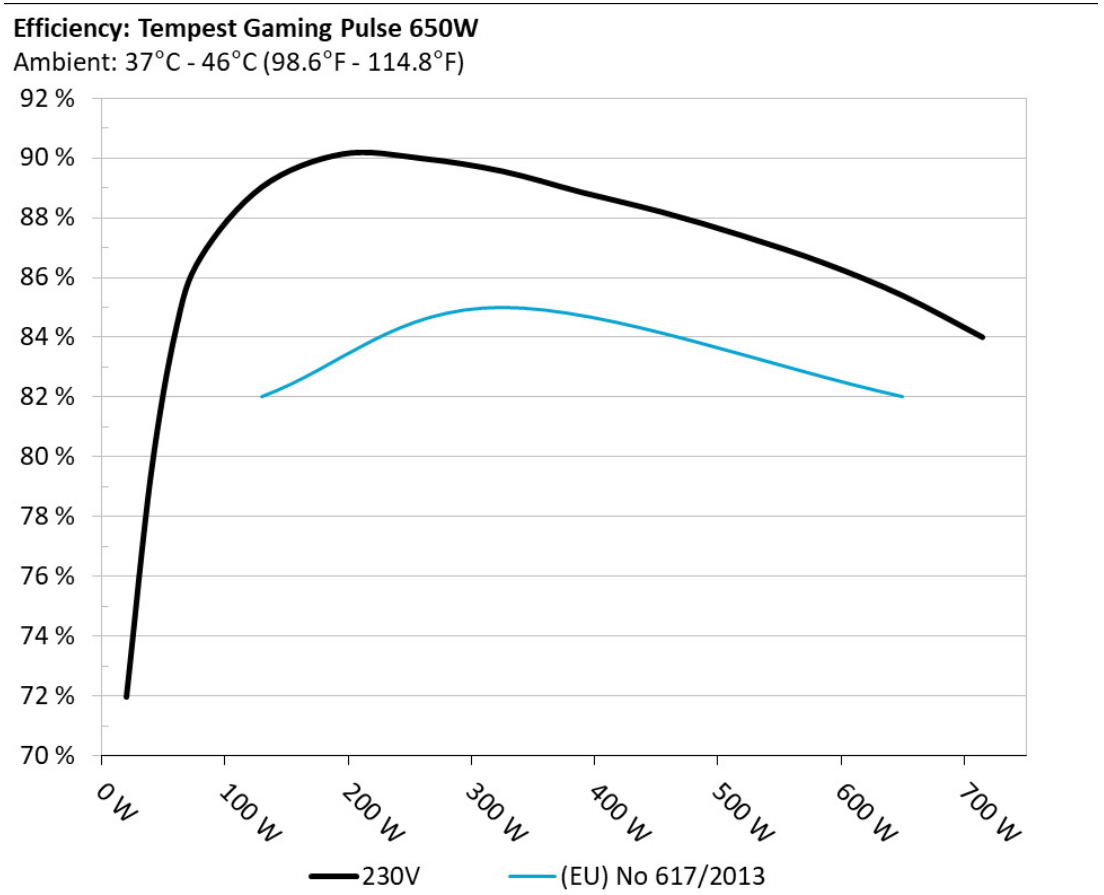

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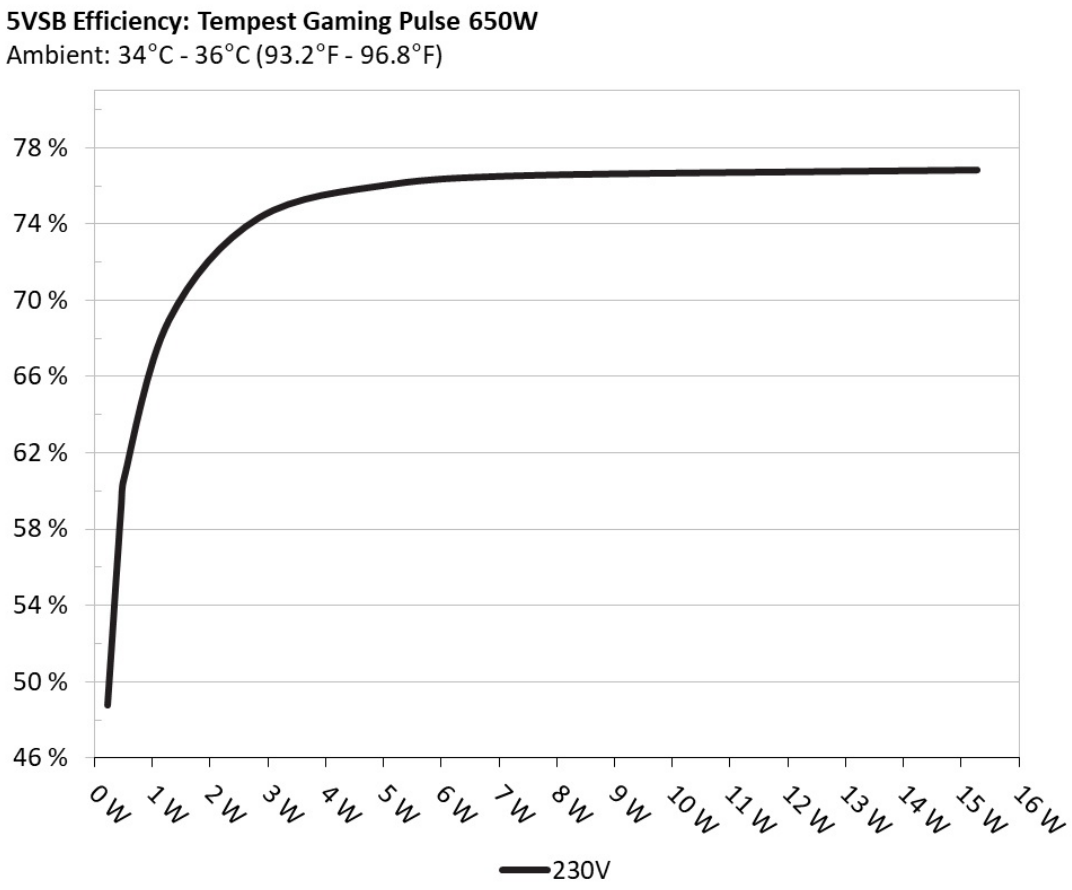
The PSU`s efficiency under high ambient temperatures with 115V and 230V input. For this graph the results of the 10-110% load regulation table are used

5VSB□□



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

5VSB□□□ 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)

□□□□□□ **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

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□□□□ 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

□□□□□□□□□□□

□□□□ 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

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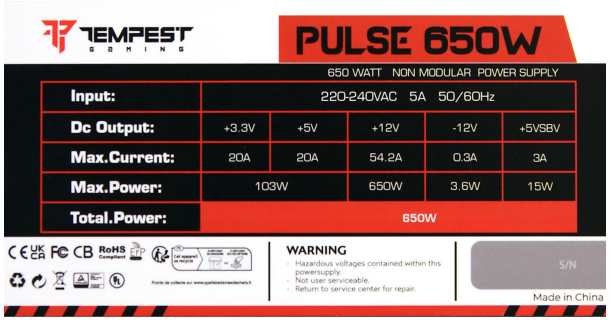
Tempest Gaming Pulse 650W



Top side



Power specifications label

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