



Thermaltake Smart BM2 750W

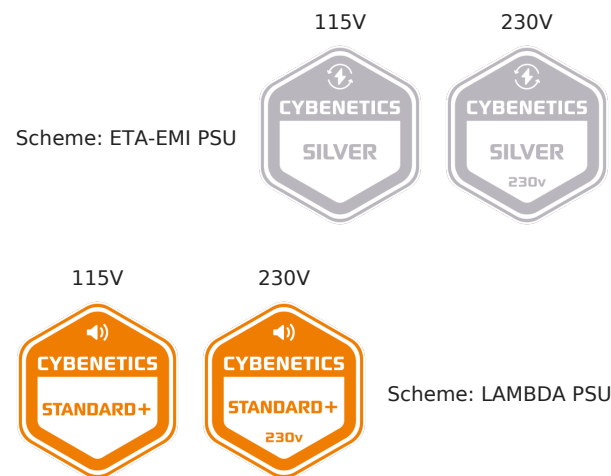
Serial Number PSSPD0750MNFABE1XL000656

Lab ID TT75001726

Certification ID 251726

Test Result Report ID: 20PS1726A

Certificate Issue Date: Jan 20, 2021



A handwritten signature in blue ink, appearing to read 'A. Bitziopoulos', is positioned above the name of the Certification Body General Manager.

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	Thermaltake
Model	Smart BM2 750W
OEM/ODM	Channel Well Technology
Serial Number	PSSPD0750MNFABE1XL000656
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10
Rated Frequency (Hz)	47-63

Rated Power (W)	750
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Semi Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	140mm Rifle Bearing Fan (TT-1425 DF1402512SEMN)
Semi-Passive Operation	X
Cybenetics Testing Information	
Lab ID	TT75001726
Date of receipt	Aug 25, 2020
Testing Date	Dec 10, 2020
Report Issued Date	Jan 20, 2021
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Native Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Caps
ATX connector 20+4 pin (600mm)	1	1	18AWG	No
8 pin EPS12V (660mm) / 4+4 pin EPS12V (150mm)	1	1 / 1	18AWG	No
Modular Cables				
6+2 pin PCIe (500mm+150mm)	2	4	18AWG	No
SATA (500mm+150mm+150mm)	3	9	18AWG	No
4-pin Molex (500mm+150mm+150mm+150mm) / FDD (+150mm)	1	4 / 1	18-20AWG	No
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	62.5	2.5	0.3
	Watts	120		750	12.5	3.6
Total Max. Power (W)		750				

Parts Description

General Data	-
Manufacturer (OEM)	CWT
PCB Type	Single Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x Power Integrations CAP200DG (Discharge IC)
Inrush Protection	NTC Thermistor SCK-1R55 (1.5 Ohm)
Bridge Rectifier(s)	1x GBU1506 (600V, 15A @ 100°C)
APFC MOSFETs	2x Great Power GP28S50G (500V, 28A, Rds(on): 0.125Ohm)
APFC Boost Diode	1x ON Semiconductor FFSP0665A (650V, 6A @ 153°C)
Bulk Cap(s)	1x Nichicon (420V, 390uF, 2,000h @ 105°C, GG)
Main Switchers	2x Great Power GP23S60HX
PFC / PWM Combo Controller	Champion CM6800TX & Champion CM03X
Topology	Primary side: APFC, Double Forward Secondary side: Semi - Synchronous Rectification (12V) & DC-DC converters (5V & 3.3V)
Secondary Side	-
+12V	2x Advanced Power AP6N3R5P (60V, 80A @ 100°C, Rds(on): 3.58mOhm) FETs & 2x PFC PFR40V60CT (60V, 40A @ 100°C) SBRs & 1x Sync Power SP6019 Driver IC
5V & 3.3V	DC-DC Converters: 4x Sync Power SPN3006 (30V, 57A @ 100°C, Rds(on): 5.5mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 2x CapXon (2-5,000h @ 105°C, KF), 6x CapXon (2-5,000h @ 105°C, GF), 10x Chengx (2-4,000h @ 105°C, GR), 1x CapXon (5-10,000h @ 105°C, KH) Polymer: 2x APAQ
Supervisor IC	IN1S429I-DCG
Fan Model	Thermaltake TT-1425 (DF1402512SEHN) (140mm, 12V, 0.60A, Sleeve Bearing Fan)
5VSB Circuit	-
Standby PWM Controller	Power Integrations TNY287PG

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)	85.921%
Average Noise Output (>1450 Load Combinations)	35.56dBA
Average PF (>1450 Load Combinations)	0.984
Efficiency With 10W ($\leq$ 500W) or 2% (>500W) Load	66.029%
Standby Power Consumption	0.0405W
Non-Accredited	
12V Ripple (Full Load)	52.58mV
5V Ripple (Full Load)	17.92mV
3.3V Ripple (Full Load)	23.98mV
5VSB Ripple (Full Load)	22.60mV
12V Load Regulation	1.25%
5V Load Regulation	0.48%
3.3V Load Regulation	0.73%
5VSB Load Regulation	2.73%
Inrush Current	33.090A

230V

Accredited		
Average Efficiency (>1450 load combinations)	88.238%	
Average Noise Output (>1450 Load Combinations)	35.18dBA	
Average PF (>1450 Load Combinations)	0.960	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.0842W	
Non-Accredited		
12V Ripple (Full Load)	52.93mV	
5V Ripple (Full Load)	18.16mV	
3.3V Ripple (Full Load)	24.94mV	
5VSB Ripple (Full Load)	22.83mV	
12V Load Regulation	1.20%	
5V Load Regulation	0.48%	
3.3V Load Regulation	0.73%	
5VSB Load Regulation	2.65%	
Inrush Current	65.870A	
Hold-Up Time & PWR_OK Signal	11.00ms	
AC Loss to PWR_OK Hold Up Time	9.30ms	
PWR_OK Inactive to DC Loss Delay	1.70ms	
PSU Timings: T1 (20% / 100%)	32.0ms	32.0ms
PSU Timings: T3 (20% / 100%)	130.0ms	129.0ms
OPP (27.00°C / 41.00°C)	117.63%	115.94%

Hold-Up Time & PWR_OK Signal

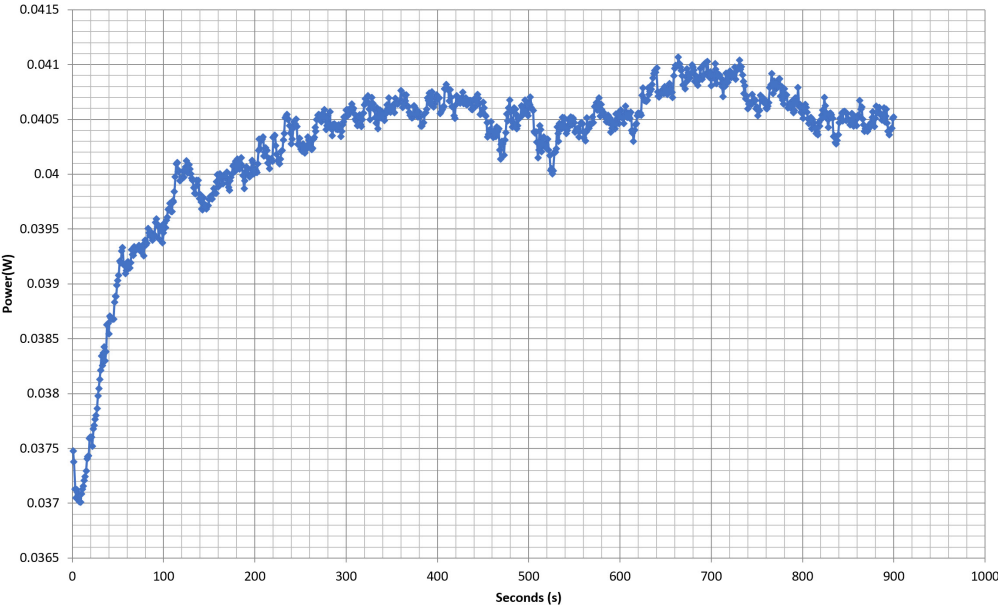
Hold-Up Time (ms)	11
AC Loss to PWR_OK Hold Up Time (ms)	9.3
PWR_OK Inactive to DC Loss Delay (ms)	1.7

Vampire Power

Graphs

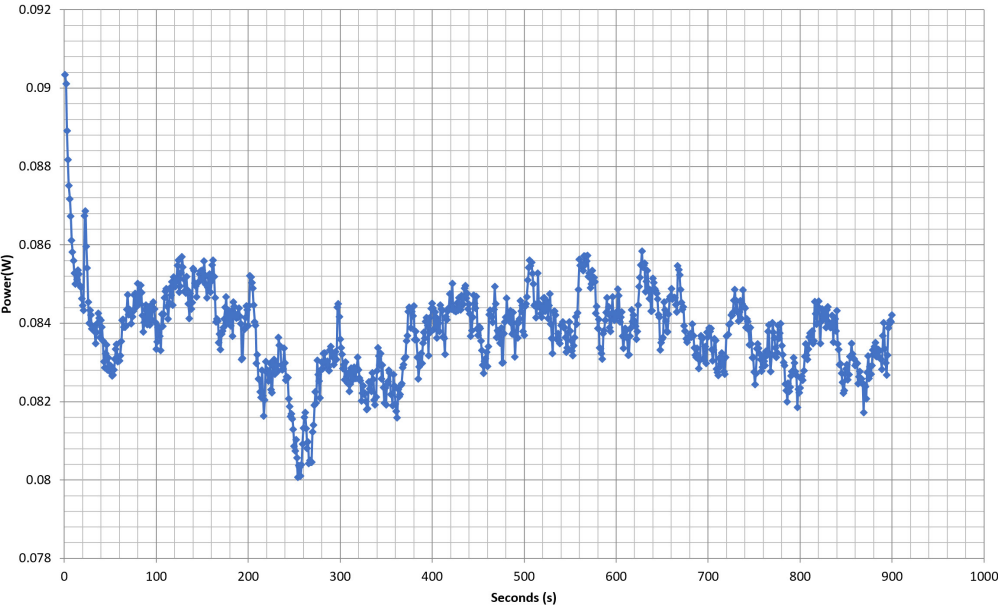
115V

Power - PSSPD0750MNFABE1XL000656 - 08/12/2020 - 09:05



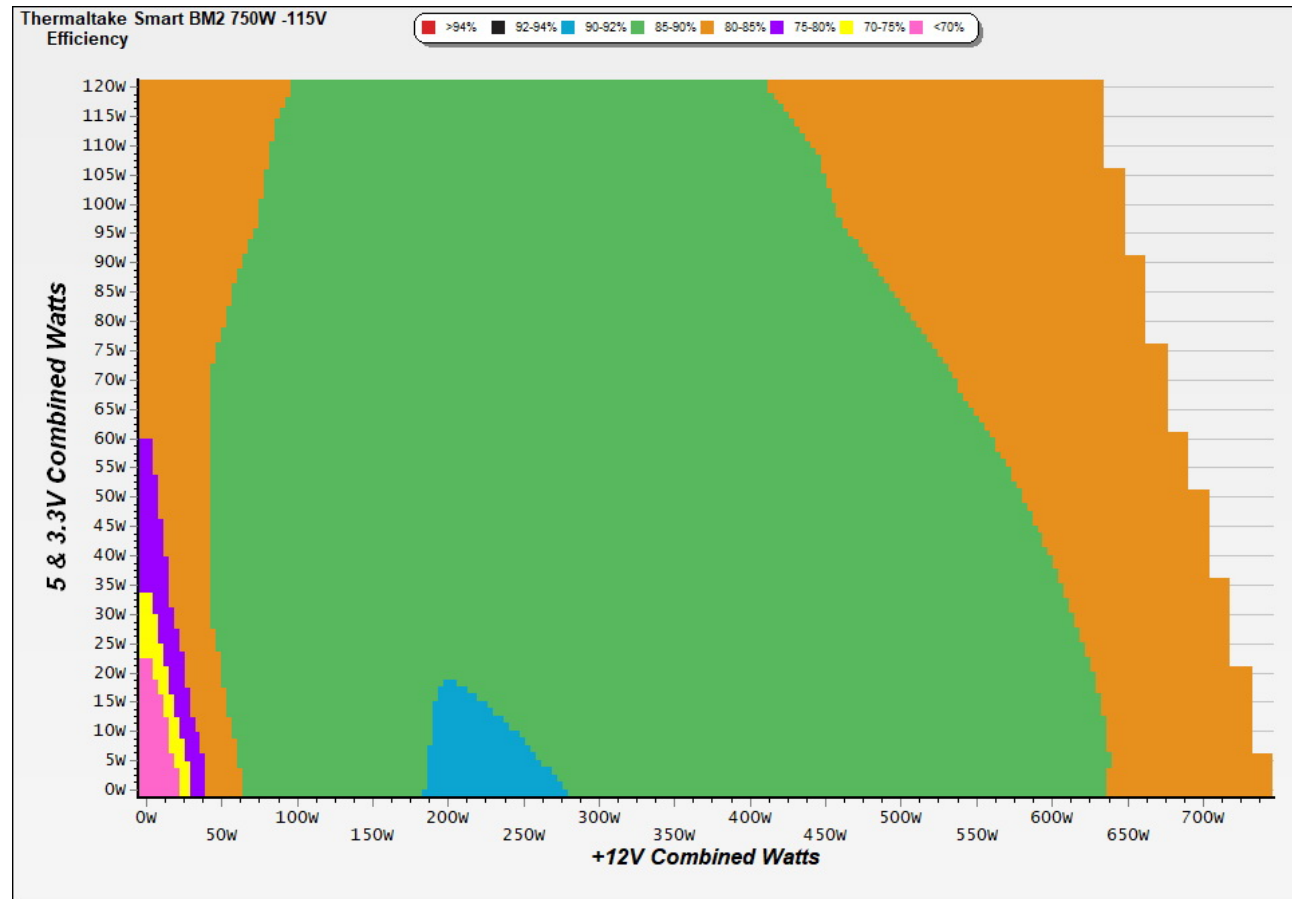
230V

Power - PSSPD0750MNFABE1XL000656 - 08/12/2020 - 09:05



Efficiency Graph

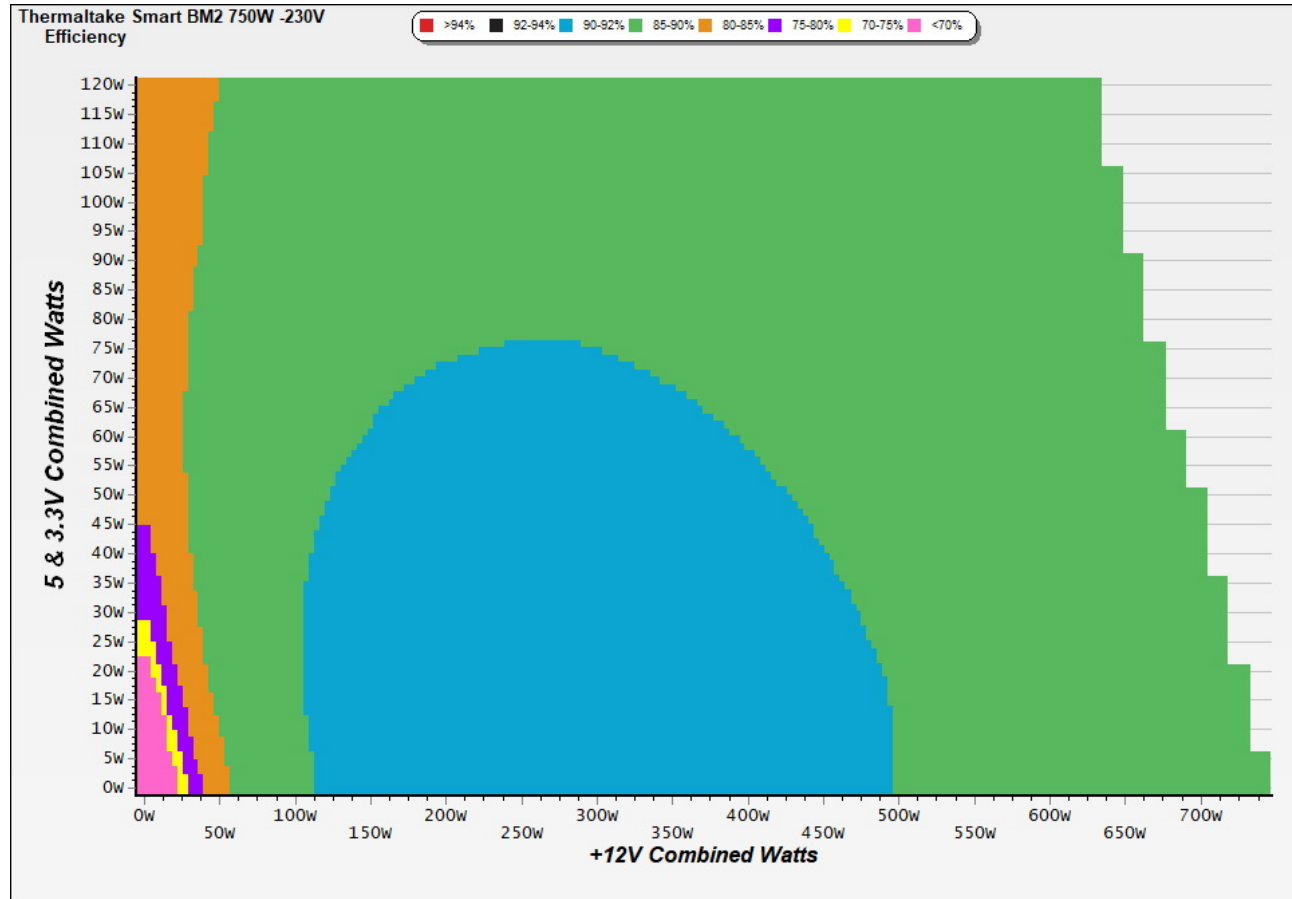
115V



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

230V

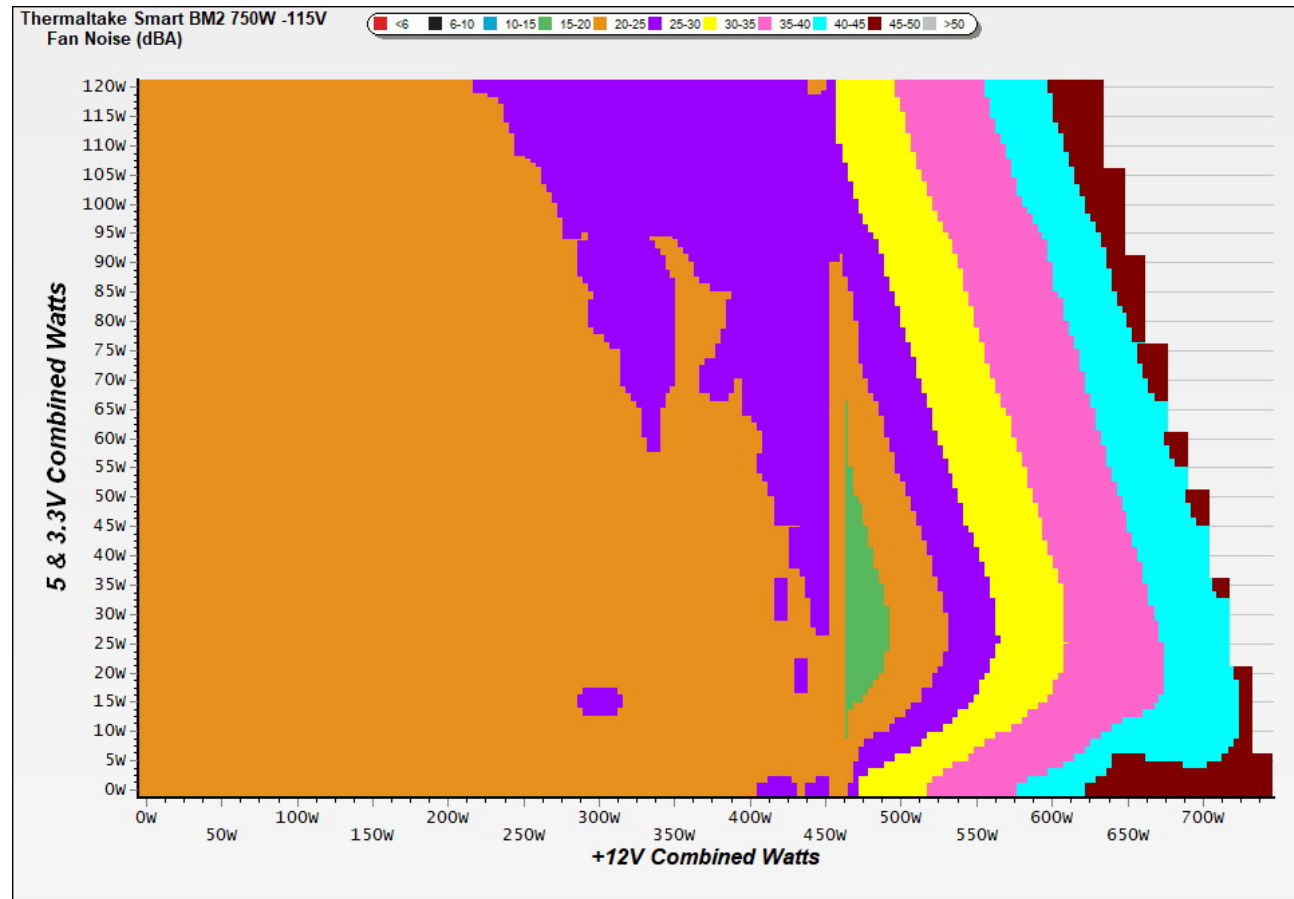


INFO

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

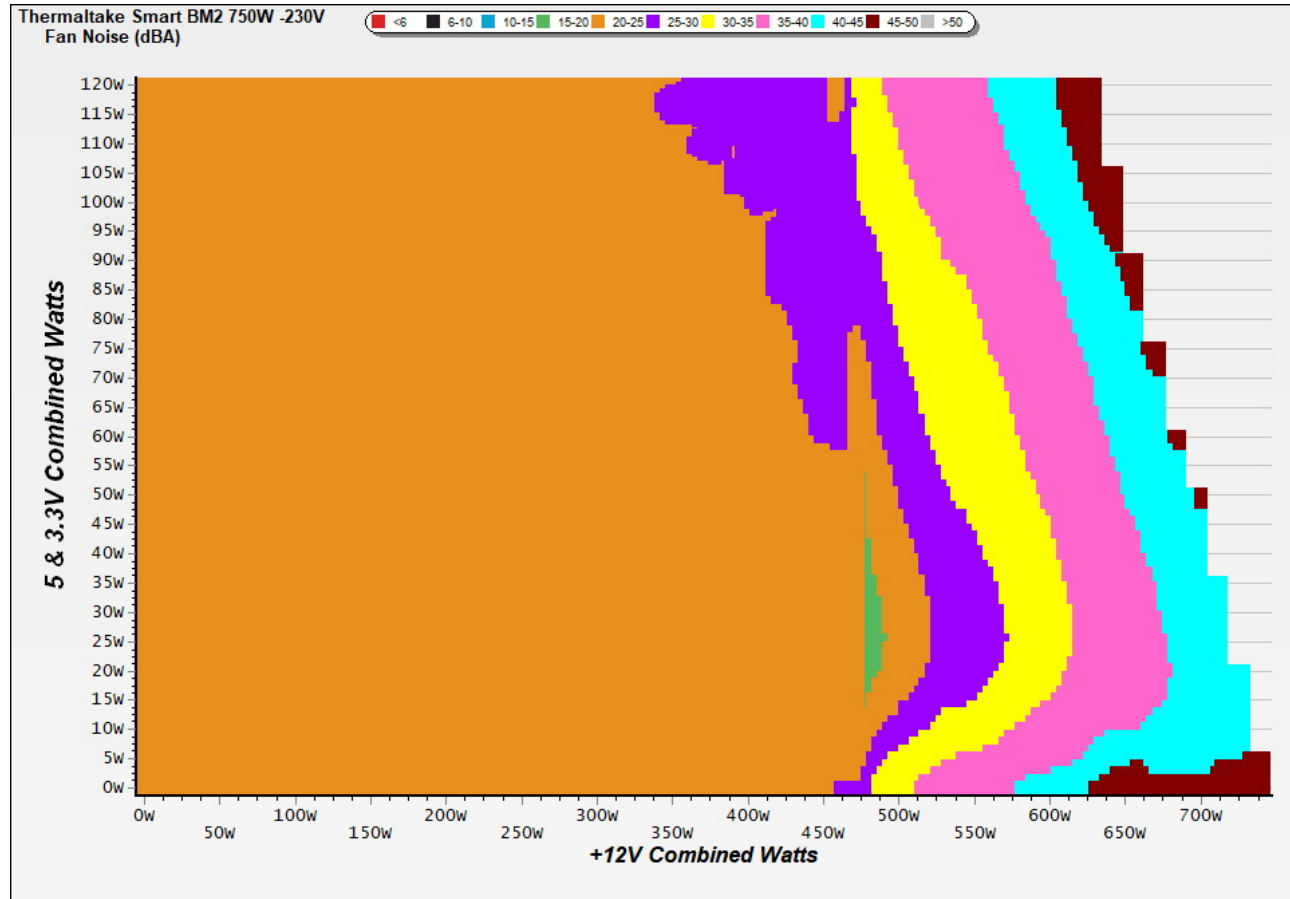
115V



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

230V



INFO

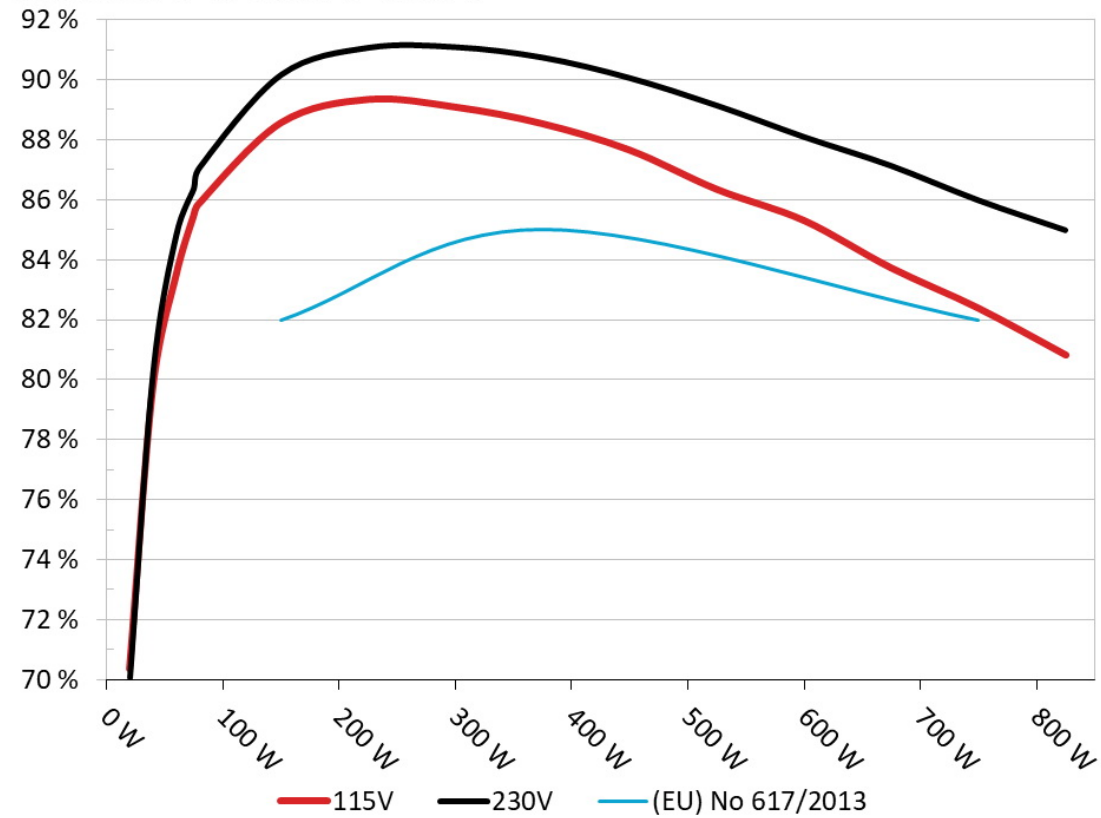
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

Efficiency under high ambient temperature

Efficiency: Thermaltake Smart BM2 750W

Ambient: 33°C - 41°C (91.4°F - 105.8°F)



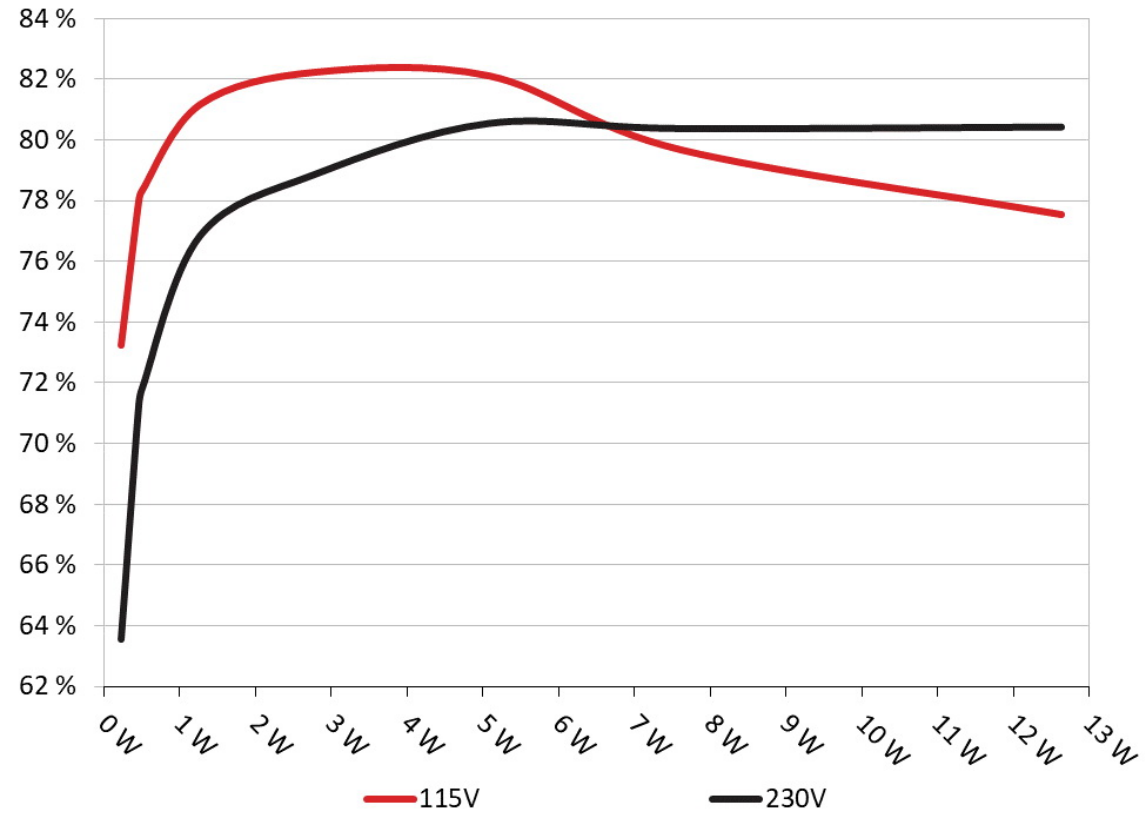
INFO

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

5VSB Efficiency: Thermaltake Smart BM2 750W

Ambient: 28°C - 32°C (82.4°F - 89.6°F)



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	0.230	73.248%	0.034
	5.101V	0.314		115.13V
2	0.090A	0.459	77.929%	0.063
	5.100V	0.589		115.13V
3	0.550A	2.801	82.213%	0.254
	5.091V	3.407		115.13V
4	1.000A	5.083	82.090%	0.329
	5.082V	6.192		115.13V
5	1.500A	7.608	79.665%	0.373
	5.071V	9.550		115.12V
6	2.500A	12.630	77.537%	0.416
	5.052V	16.289		115.13V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	63.536%	0.013
	5.102V	0.362		230.21V
2	0.090A	0.459	71.163%	0.022
	5.101V	0.645		230.23V
3	0.550A	2.801	78.879%	0.111
	5.093V	3.551		230.21V
4	1.000A	5.084	80.545%	0.176
	5.084V	6.312		230.21V
5	1.500A	7.610	80.376%	0.229
	5.073V	9.468		230.21V
6	2.500A	12.637	80.424%	0.293
	5.055V	15.713		230.21V

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
1	4.406A	1.994A	1.998A	0.986A	74.968	85.455%	871	25.0	34.09°C	0.960
	12.112V	5.017V	3.303V	5.071V	87.728				36.11°C	115.12V
2	9.849A	2.993A	3.000A	1.186A	150.049	88.567%	873	25.0	34.63°C	0.976
	12.097V	5.014V	3.300V	5.058V	169.418				37.43°C	115.12V
3	15.643A	3.492A	3.503A	1.388A	225.059	89.349%	875	24.9	35.08°C	0.983
	12.082V	5.013V	3.298V	5.045V	251.887				38.64°C	115.12V
4	21.451A	3.993A	4.005A	1.590A	300.082	89.095%	877	24.9	35.58°C	0.987
	12.068V	5.011V	3.296V	5.033V	336.813				40.22°C	115.12V
5	26.895A	4.994A	5.011A	1.794A	374.650	88.543%	879	24.9	36.32°C	0.989
	12.052V	5.007V	3.293V	5.020V	423.130				41.76°C	115.11V
6	32.384A	5.995A	6.016A	1.999A	449.589	87.665%	881	24.9	36.78°C	0.990
	12.036V	5.006V	3.291V	5.005V	512.847				43.52°C	115.11V
7	37.923A	6.998A	7.026A	2.205A	524.926	86.351%	947	27.8	37.56°C	0.991
	12.019V	5.004V	3.289V	4.990V	607.897				45.67°C	115.11V
8	43.478A	8.003A	8.036A	2.411A	600.151	85.305%	1156	33.7	37.85°C	0.992
	12.000V	5.000V	3.285V	4.978V	703.534				47.55°C	115.10V
9	49.417A	8.506A	8.529A	2.417A	674.730	83.732%	1740	45.3	38.91°C	0.993
	11.984V	4.998V	3.283V	4.966V	805.824				49.30°C	115.09V
10	55.370A	9.012A	9.056A	2.523A	749.833	82.386%	2125	49.4	39.55°C	0.993
	11.967V	4.995V	3.280V	4.955V	910.144				50.61°C	115.08V
11	61.748A	9.016A	9.061A	2.528A	825.049	80.824%	2120	49.3	41.46°C	0.994
	11.949V	4.993V	3.278V	4.946V	1020.802				54.28°C	115.07V
CL1	0.116A	14.005A	13.998A	0.000A	117.594	79.979%	694	18.7	36.37°C	0.974
	12.099V	5.003V	3.295V	5.059V	147.031				41.78°C	115.12V

CL2	62.518A	1.000A	1.000A	1.000A	761.504	82.892%	2127	49.4	39.53°C	0.993
	11.968V	5.007V	3.287V	4.996V	918.666				50.03°C	115.07V

The results above are not used in the certification process

230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	4.407A	1.994A	1.996A	0.987A	74.969	86.383%	675	18.2	34.19°C	0.867
	12.110V	5.017V	3.303V	5.069V	86.787				37.25°C	230.25V
2	9.852A	2.988A	3.001A	1.187A	150.050	90.160%	678	18.0	34.71°C	0.934
	12.095V	5.015V	3.300V	5.056V	166.426				38.67°C	230.24V
3	15.646A	3.492A	3.504A	1.388A	225.066	91.063%	680	18.3	35.21°C	0.957
	12.080V	5.013V	3.298V	5.043V	247.153				40.40°C	230.25V
4	21.456A	3.993A	4.007A	1.590A	300.084	91.082%	683	18.2	35.86°C	0.968
	12.065V	5.011V	3.296V	5.032V	329.467				42.29°C	230.25V
5	26.898A	4.993A	5.012A	1.794A	374.633	90.740%	686	18.2	36.50°C	0.974
	12.050V	5.008V	3.293V	5.019V	412.863				43.47°C	230.24V
6	32.384A	5.995A	6.018A	1.999A	449.561	90.060%	689	18.3	36.91°C	0.979
	12.035V	5.006V	3.291V	5.004V	499.178				44.96°C	230.25V
7	37.919A	6.996A	7.027A	2.206A	524.882	89.142%	914	26.3	37.55°C	0.982
	12.019V	5.005V	3.289V	4.989V	588.814				46.56°C	230.25V
8	43.474A	8.002A	8.033A	2.413A	600.194	88.091%	1283	36.2	37.76°C	0.984
	12.002V	5.001V	3.286V	4.975V	681.335				48.24°C	230.24V
9	49.409A	8.505A	8.527A	2.417A	674.721	87.136%	1696	44.5	38.78°C	0.986
	11.986V	4.998V	3.283V	4.966V	774.332				49.88°C	230.24V
10	55.366A	9.011A	9.057A	2.523A	749.838	85.987%	2128	49.4	39.95°C	0.987
	11.968V	4.995V	3.280V	4.955V	872.038				51.58°C	230.24V
11	61.734A	9.014A	9.060A	2.529A	824.995	84.988%	2120	49.3	40.68°C	0.987
	11.951V	4.993V	3.278V	4.945V	970.721				53.37°C	230.25V
CL1	0.117A	14.003A	13.999A	0.000A	117.585	81.255%	695	18.7	36.44°C	0.925
	12.099V	5.002V	3.295V	5.059V	144.711				43.86°C	230.25V

CL2	62.516A	0.999A	0.999A	1.000A	761.600	86.589%	2131	49.5	39.65°C	0.986
	11.970V	5.008V	3.288V	4.996V	879.557				51.70°C	230.24V

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])	PF/AC Volts
1	1.225A	0.498A	0.497A	0.196A	19.994	70.359%	865	25.1	0.881
	12.123V	5.022V	3.306V	5.094V	28.417				115.12V
2	2.450A	0.996A	0.997A	0.393A	39.984	79.726%	866	25.1	0.931
	12.119V	5.019V	3.304V	5.088V	50.152				115.13V
3	3.678A	1.495A	1.500A	0.591A	60.016	83.485%	868	25.1	0.949
	12.115V	5.017V	3.303V	5.081V	71.888				115.12V
4	4.902A	1.994A	1.999A	0.788A	79.968	85.886%	870	25.0	0.963
	12.111V	5.016V	3.302V	5.074V	93.109				115.12V

The results above are not used in the certification process

230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.225A	0.498A	0.499A	0.196A	19.997	70.086%	668	18.5	0.607
	12.120V	5.022V	3.306V	5.092V	28.532				230.25V
2	2.450A	0.997A	0.998A	0.393A	39.987	80.295%	671	18.4	0.762
	12.116V	5.020V	3.305V	5.086V	49.800				230.25V
3	3.679A	1.495A	1.500A	0.591A	60.018	84.855%	673	18.2	0.835
	12.112V	5.018V	3.303V	5.079V	70.730				230.25V
4	4.903A	1.994A	1.998A	0.789A	79.969	87.081%	674	18.2	0.874
	12.108V	5.017V	3.302V	5.072V	91.833				230.25V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.80mV	18.00mV	13.80mV	7.60mV	Pass
20% Load	9.40mV	15.20mV	13.70mV	7.30mV	Pass
30% Load	11.00mV	12.70mV	13.80mV	8.60mV	Pass
40% Load	12.70mV	10.50mV	14.60mV	7.20mV	Pass
50% Load	14.90mV	9.80mV	14.70mV	8.40mV	Pass
60% Load	16.80mV	11.00mV	15.90mV	12.00mV	Pass
70% Load	20.70mV	13.40mV	16.80mV	13.00mV	Pass
80% Load	28.30mV	15.50mV	18.80mV	15.90mV	Pass
90% Load	40.30mV	15.90mV	21.00mV	18.40mV	Pass
100% Load	52.60mV	17.90mV	24.00mV	22.60mV	Pass
110% Load	64.90mV	20.40mV	26.60mV	23.40mV	Pass
Crossload1	10.90mV	19.70mV	17.90mV	6.20mV	Pass
Crossload2	59.00mV	14.50mV	22.60mV	15.80mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.70mV	17.40mV	12.20mV	7.30mV	Pass
20% Load	9.30mV	15.60mV	12.40mV	7.20mV	Pass
30% Load	10.60mV	12.60mV	12.40mV	7.70mV	Pass
40% Load	12.10mV	10.00mV	12.60mV	7.60mV	Pass
50% Load	14.10mV	9.30mV	13.60mV	8.70mV	Pass
60% Load	15.90mV	10.50mV	13.90mV	11.60mV	Pass
70% Load	20.60mV	13.10mV	16.00mV	13.80mV	Pass
80% Load	29.40mV	13.50mV	18.40mV	16.20mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	39.90mV	16.50mV	21.00mV	18.60mV	Pass
100% Load	52.90mV	18.20mV	24.90mV	22.80mV	Pass
110% Load	65.30mV	19.80mV	28.50mV	26.60mV	Pass
Crossload1	10.30mV	19.20mV	18.00mV	5.70mV	Pass
Crossload2	60.50mV	15.30mV	22.30mV	18.40mV	Pass

The results above are not used in the certification process

Thermaltake Smart BM2 750W



Top side

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 LTD Syrou 6, Latsia, 2231, Nicosia Cyprus



Power specifications label

Cybenetics runs voluntary certification programs for power supplies - ETA for efficiency, LAMBDA for noise and SAFE for safety and correct operation - and for cooling products, with DELTA for chassis soundproofing and PHI for fan airflow and static pressure. THETA rates cooler performance on AMD AM5 and Intel LGA1851 outside ISO 17065 and accreditation scope

www.cybenetics.com - info@cybenetics.com