Thermaltake Toughpower iRGB Plus 1200W Platinum

PSTPI1200F2FDPU1AL000004

Lab ID 198

Certification ID 25198

Test Result Report ID:

Certificate Issue Date: Oct 17, 2018

Scheme: ETA-EMI PSU

115V



230V



Scheme: LAMBDA PSU

115V



230V





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	Toughpower iRGB Plus 1200W Platinum
OEM/ODM	Channel Well Technology
Serial Number	PSTPI1200F2FDPU1AL000004
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	14
□□□□ (Hz)	50-60

□□□□ (W)	1200
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	140mm HDB RGB Fan (TT-1425/A1425S12S)
□□□□□	✓ (selectable)
Cybenetics Testing Information	
Lab ID	198
Date of receipt	Oct 2, 2018
Testing Date	Oct 13, 2018
Report Issued Date	Oct 17, 2018
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□ (Non-accredited measurements)

□□□□			
□□	□□□□	□□□□□	Gauge
ATX □□ 20+4 pin (600mm)	1	1	16AWG
4+4 pin EPS 12V □□ (650mm)	1	1	16AWG
8 pin EPS 12V □□ (650mm)	1	1	16AWG
6+2pin PCIe□□ (500mm+150mm)	4	8	16-18AWG
SATA□□ (500mm+150mm+150mm+150mm)	3	12	18AWG
□ 4pin Molex□□ (500mm+150mm+150mm+150mm)	2	8	18AWG
□ 4pin □□ (+100mm)	1	1	22AWG
USB Cable (+600mm)	1	1	24-28AWG

		3.3V	5V	12V	5VSB	-12V
		25	25	100	3	0.3
		130		1200	15	3.6
(W)		1200				

Parts Description

General Data	
Manufacturer (OEM)	CWT
Platform Model	-
Primary Side	
Transient Filter	6x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x CM02X
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	2x Vishay LVB2560 (600V, 25A @ 105°C)
APFC MOSFETS	2x Toshiba TK25A60X (600V, 25A @ 150°C, 0.105Ohm)
APFC Boost Diode	2x CREE C3D10060A (600V, 10A @ 153°C)
Hold-up Cap(s)	2x Nichicon (400V, 680uF, 2000h @ 105°C, GG)
Main Switchers	4x A25N60EFL
Driver ICs	2x Silicon Labs Si8230BD
APFC MCU	Texas Instruments UCD3138A (31.25 MHz, 32-bit ARM7TDMI-S Processor, 32KB Flash, 4KB RAM, 3x Feedback loop control, 14-bit DAC, up to 2 MHz switching frequency)
USB Interface MCU	Microchip PIC32MX230F064D (40 MHz, 64KB Flash, 13x analog channels, 10-bit ADC)
LLC Resonant MCU	Texas Instruments UCD3138A (31.25 MHz, 32-bit ARM7TDMI-S Processor, 32KB Flash, 4KB RAM, 3x Feedback loop control, 14-bit DAC, up to 2 MHz switching frequency)
Topology	Primary side: Interleaved PFC, Full-Bridge & LLC Resonant Controller Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	8x Infineon BSC014N06NS (60V, 100A @ 100°C, 1.45mOhm)
5V & 3.3V	DC-DC Converters: 5x FETS PWM Controller: 1x
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (1-5,000 @ 105°C, KZE), Nippon Chemi-Con (4-10,000 @ 105°C, KY) Polymers: CapXon & Suscon

Supervisor IC	Weltrend WT751002 (OVP, UVP, PG) & LM358
Fan Model	Thermaltake TT-1425 (Hong Sheng OEM, A1425S12S-2, 140mm, 12V, 0.70A, hydro dynamic bearing, RGB LED Lighting)
5VSB Circuit	
Rectifiers	ISD04N65A (650V, 4A, 2.5Ohm), SPN5003 (N-Channel Enhancement Mode FET) & PS1045L SBR
Driver IC	Texas Instruments UCC27324
PWM Controller	On-Bright OB5282CP

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓

Performance Summary

115V

Accredited	
□□□□ (>1450 load combinations)	89.708%
Average Noise Output (>1450 Load Combinations)	32.10dBA
PF□□□ (>1450 Load Combinations)	0.993
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
□□□□□□	0.0404W
Non-Accredited	
12V Ripple (Full Load)	21.82mV
5V Ripple (Full Load)	13.00mV
3.3V Ripple (Full Load)	17.34mV
5VSB Ripple (Full Load)	13.44mV
12V Load Regulation	0.37%
5V Load Regulation	0.45%
3.3V Load Regulation	0.81%

5VSB Load Regulation	1.33%
Inrush Current	32.013A

230V

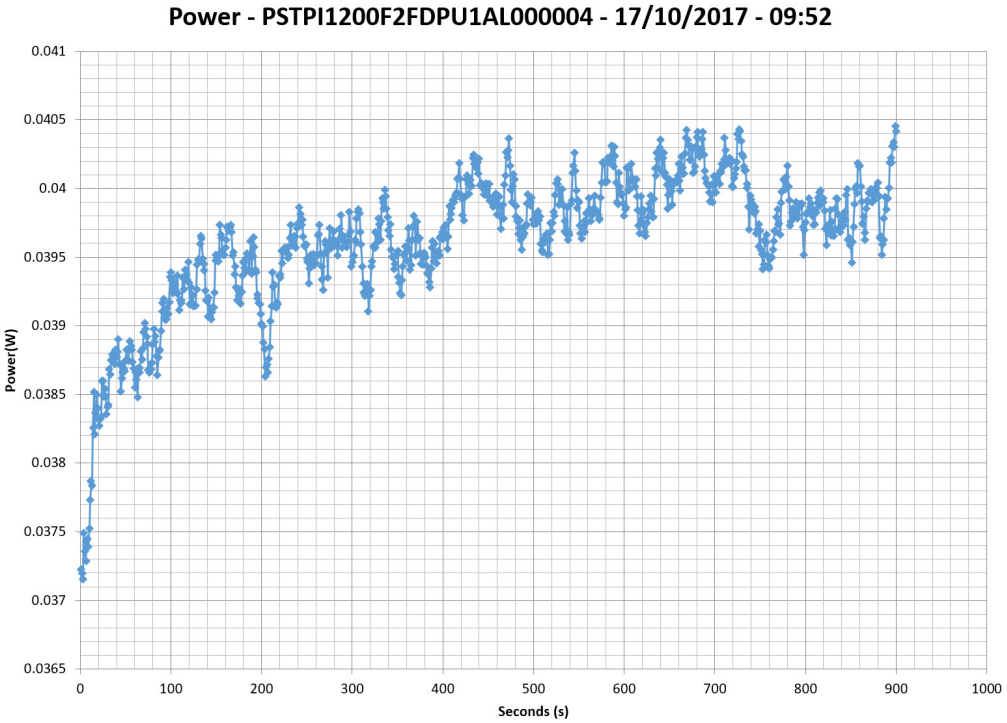
Accredited	
□□□□ (>1450 load combinations)	91.721%
Average Noise Output (>1450 Load Combinations)	31.47dBA
PF□□□ (>1450 Load Combinations)	0.936
Efficiency With 10W (≤500W) or 2% (>500W) Load	-
□□□□□□	0.0588W
Non-Accredited	
12V Ripple (Full Load)	23.21mV
5V Ripple (Full Load)	11.17mV
3.3V Ripple (Full Load)	15.16mV
5VSB Ripple (Full Load)	9.28mV
12V Load Regulation	0.61%
5V Load Regulation	0.34%
3.3V Load Regulation	0.69%
5VSB Load Regulation	1.07%
Inrush Current	65.320A
□□□□ & PG□□	18.20ms
AC Loss to PWR_OK Hold Up Time	22.40ms
PWR_OK Inactive to DC Loss Delay	-4.20ms
OPP (0.00°C / 0.00°C)	- -

□□□□ & PG□□

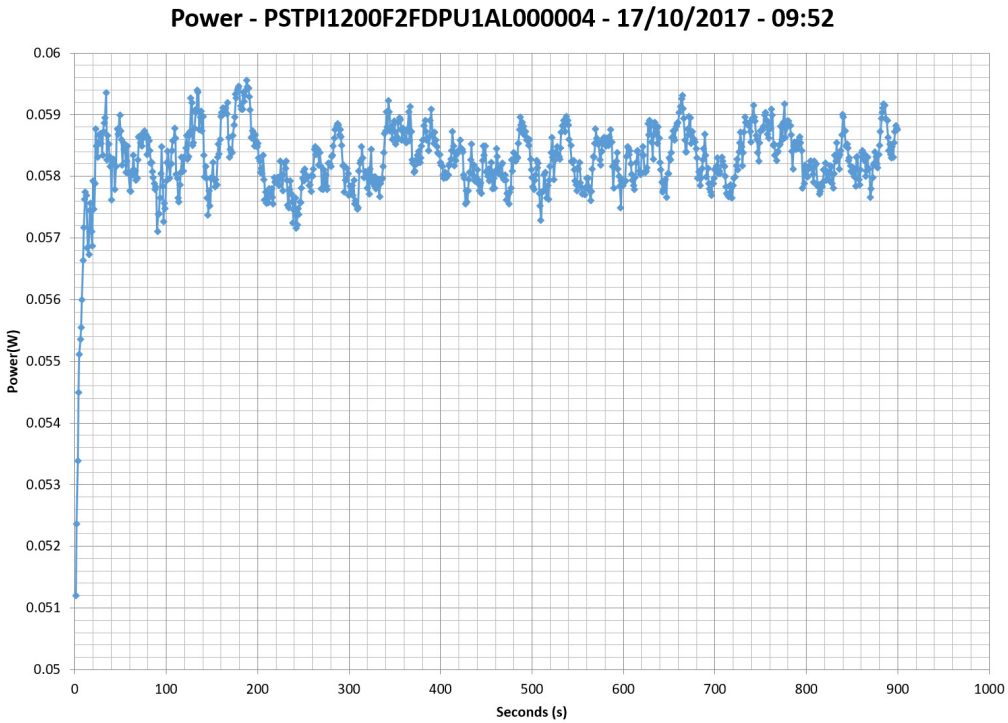
Hold-Up Time (ms)	18.2
AC Loss to PWR_OK Hold Up Time (ms)	22.4
PWR_OK Inactive to DC Loss Delay (ms)	-4.2

Graphs

115V



230V



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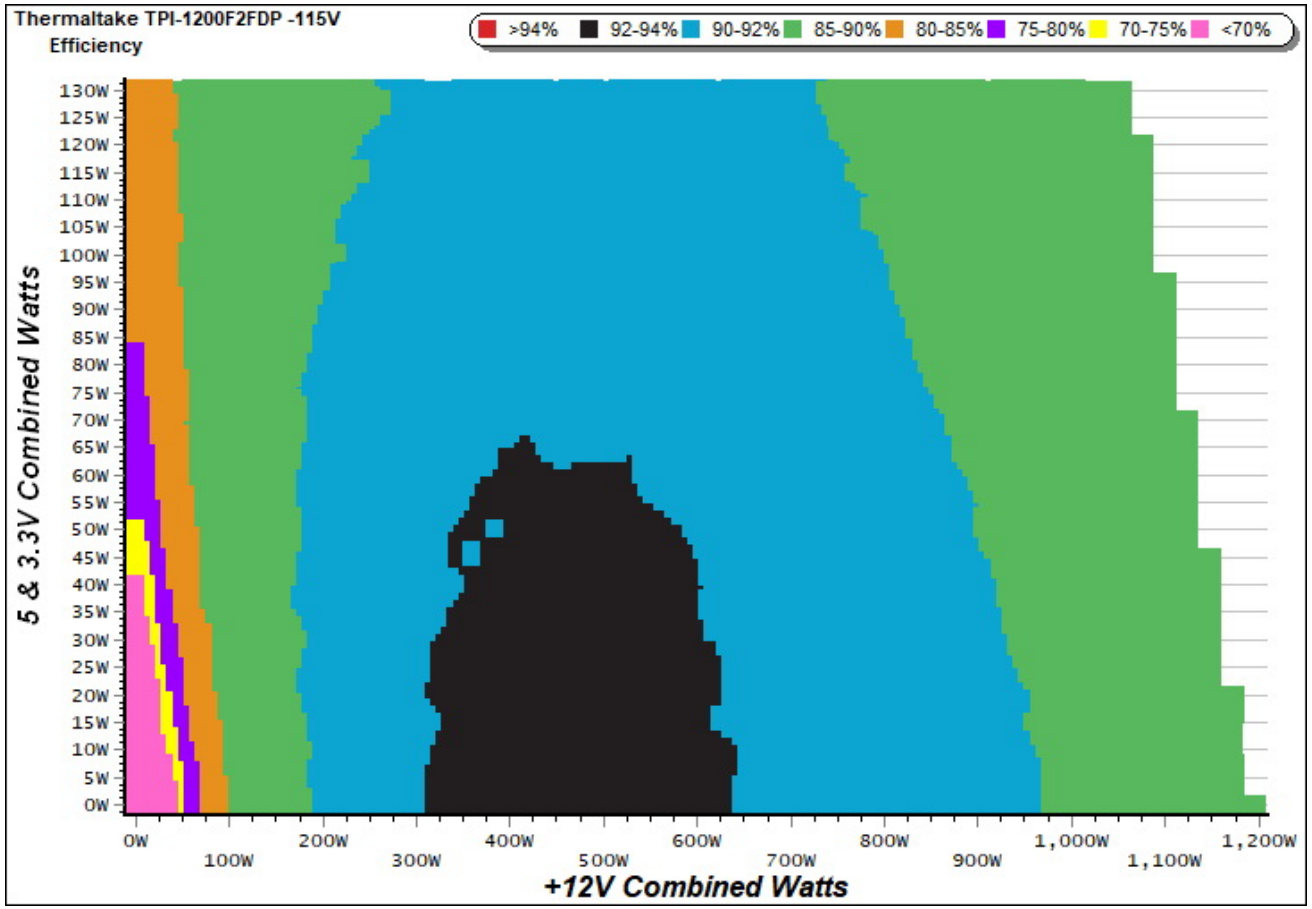
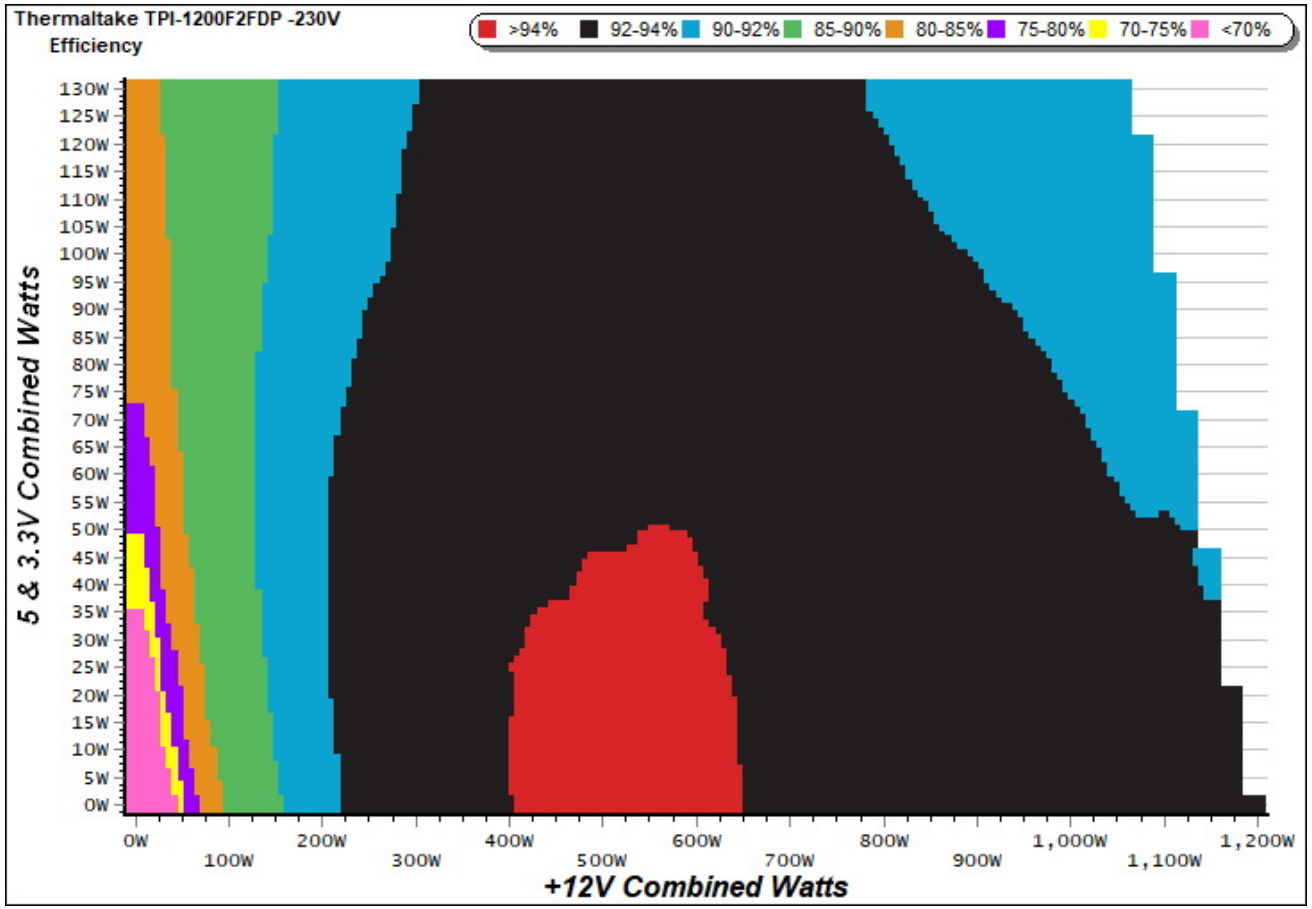
115V



□□

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



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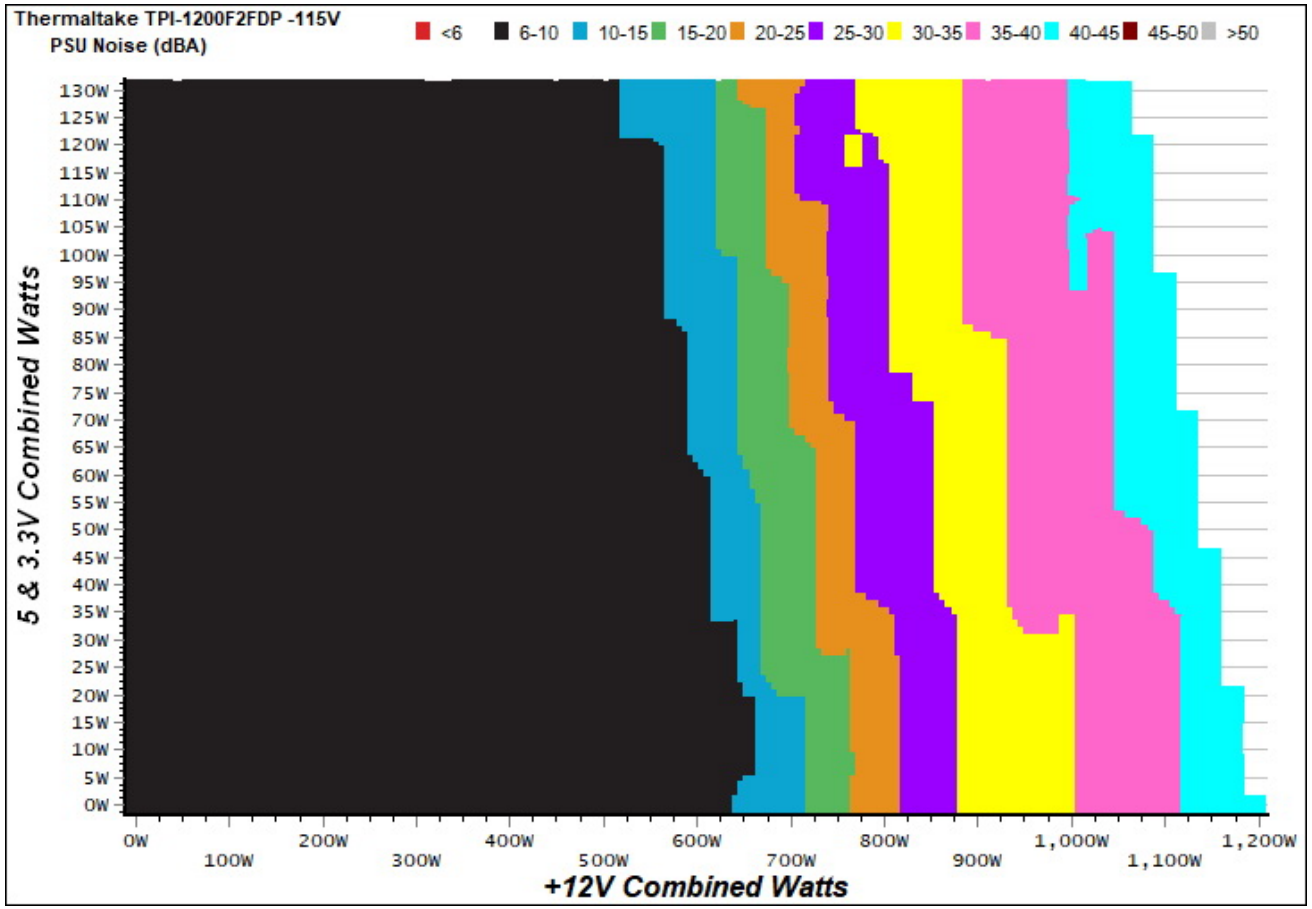
□□□□□

115V



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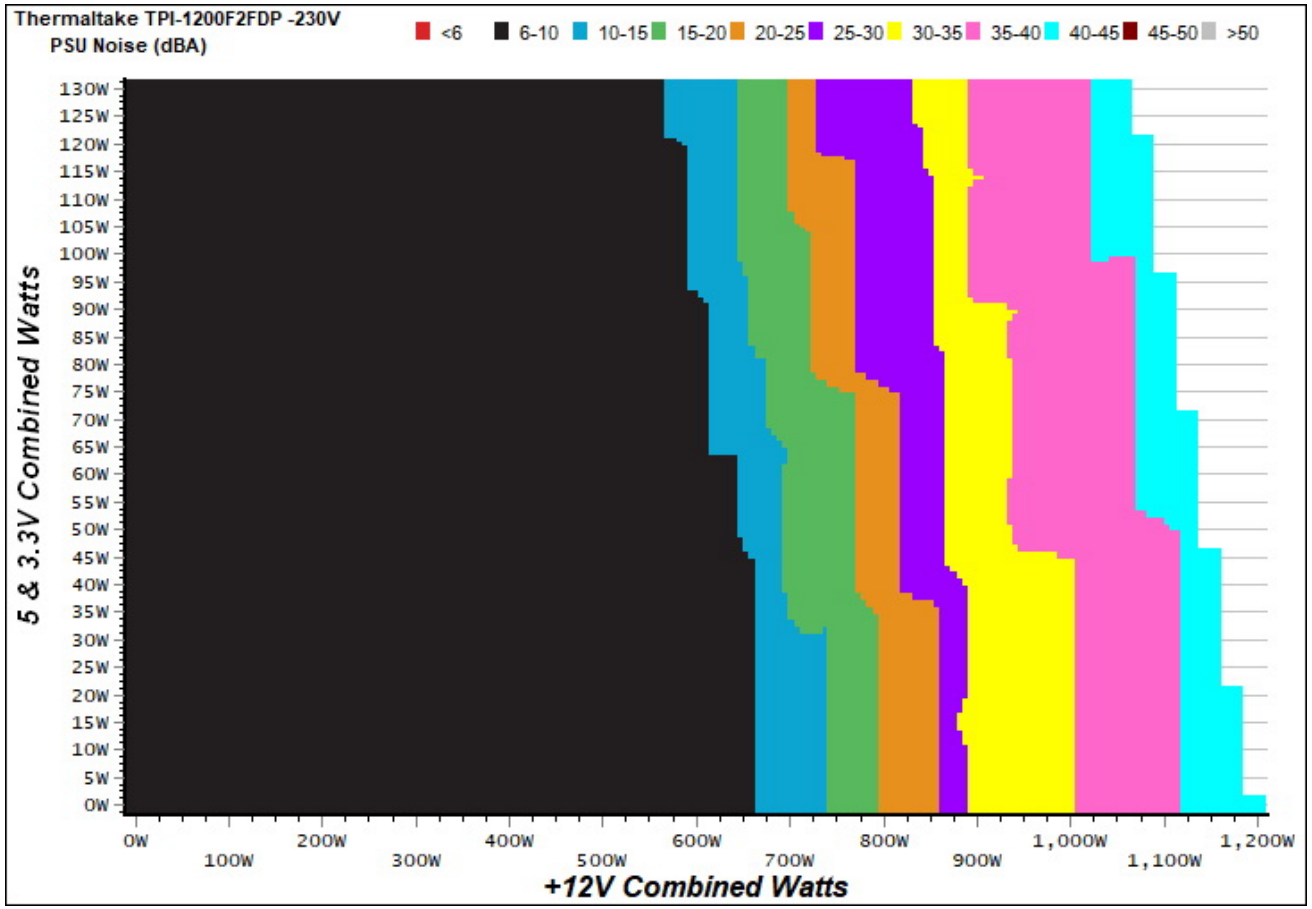
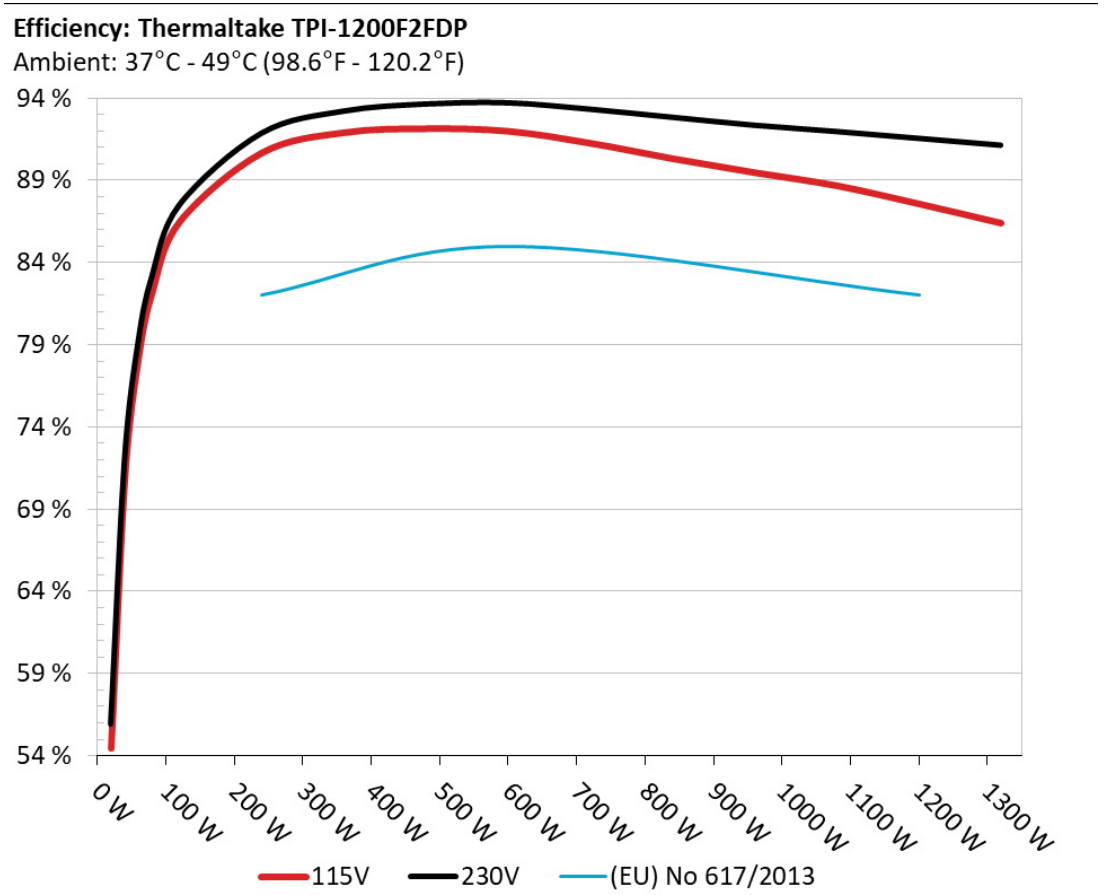
230V



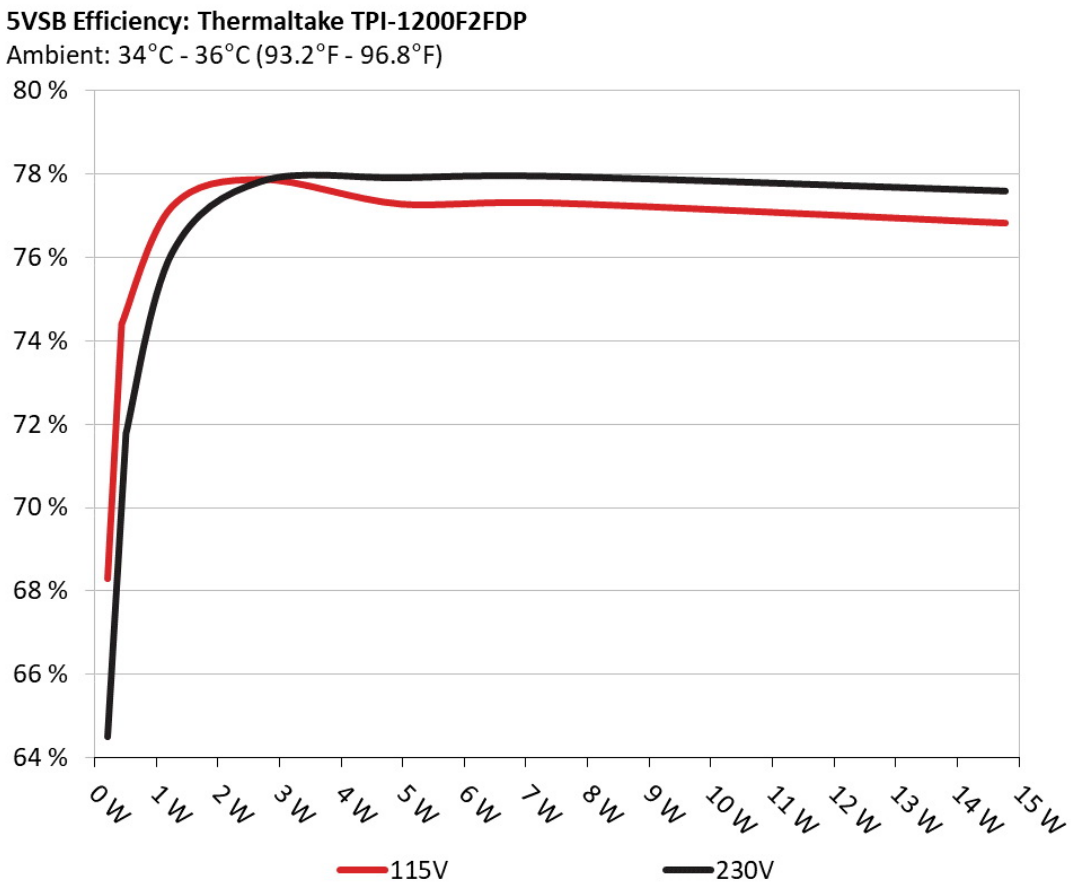
This graph depicts the PSU`s efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations.

Indicative Performance



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□□□□



□□

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

□□□□ □□ 5Vsb □□ (ErP Lot3/6 & CEC)

115V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.042A	0.209	68.301%	0.031
	4.984V	0.306		115.05V
2	0.087A	0.436	74.403%	0.057
	4.983V	0.586		115.05V
3	0.542A	2.697	77.880%	0.270
	4.972V	3.463		115.05V
4	1.002A	4.975	77.288%	0.382
	4.963V	6.437		115.06V
5	1.502A	7.440	77.315%	0.442
	4.954V	9.623		115.06V
6	3.002A	14.779	76.834%	0.506
	4.923V	19.235		115.06V

230V

□□ #	5VSB	DC/AC (□)	□□	PF/AC □□
1	0.042A	0.209	64.506%	0.010
	4.985V	0.324		230.24V
2	0.087A	0.435	71.782%	0.018
	4.984V	0.606		230.24V
3	0.543A	2.698	77.819%	0.099
	4.973V	3.467		230.23V
4	1.002A	4.975	77.905%	0.169
	4.964V	6.386		230.24V
5	1.502A	7.441	77.941%	0.230
	4.954V	9.547		230.24V
6	3.002A	14.778	77.587%	0.342
	4.923V	19.047		230.24V

Supplementary Tests (For Reference)

10-110%□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	8.172A	1.975A	1.985A	0.991A	119.795	86.464%	498	8.8	38.41°C	0.982
	12.020V	5.057V	3.319V	5.038V	138.549				43.96°C	115.10V
2	17.370A	2.959A	2.984A	1.191A	239.635	90.647%	499	8.8	38.90°C	0.994
	12.020V	5.055V	3.316V	5.034V	264.361				46.34°C	115.10V
3	26.937A	3.465A	3.499A	1.391A	359.820	91.879%	500	8.8	39.40°C	0.996
	12.018V	5.052V	3.313V	5.028V	391.622				49.46°C	115.10V
4	36.488A	3.962A	3.983A	1.591A	479.627	92.119%	502	8.8	40.09°C	0.996
	12.016V	5.050V	3.311V	5.023V	520.658				51.45°C	115.10V
5	45.704A	4.957A	4.985A	1.790A	599.583	91.963%	504	8.8	40.68°C	0.996
	12.014V	5.048V	3.308V	5.018V	651.982				53.30°C	115.11V
6	54.948A	5.945A	5.988A	1.993A	719.478	91.235%	653	14.6	41.94°C	0.997
	12.006V	5.045V	3.305V	5.013V	788.596				60.71°C	115.12V
7	64.214A	6.945A	6.989A	2.195A	839.348	90.301%	914	26.1	42.96°C	0.998
	11.995V	5.043V	3.303V	5.008V	929.502				67.15°C	115.12V
8	73.495A	7.934A	8.001A	2.396A	959.289	89.452%	1165	33.9	44.70°C	0.998
	11.986V	5.040V	3.300V	5.003V	1072.409				70.01°C	115.12V
9	83.193A	8.442A	8.519A	2.397A	1079.350	88.652%	1415	38.7	45.58°C	0.997
	11.981V	5.038V	3.298V	5.001V	1217.518				71.06°C	115.13V
10	92.650A	8.943A	9.014A	3.005A	1199.190	87.552%	1611	42.5	47.06°C	0.993
	11.975V	5.035V	3.294V	4.987V	1369.683				75.33°C	115.11V
11	102.722A	8.946A	9.020A	3.005A	1319.188	86.378%	1827	45.5	48.87°C	0.987
	11.969V	5.033V	3.293V	4.985V	1527.224				77.63°C	115.10V
CL1	0.098A	16.027A	16.003A	0.004A	135.506	82.158%	519	9.4	45.82°C	0.975
	12.018V	5.061V	3.324V	5.086V	164.933				64.06°C	115.14V

CL2	99.935A	1.003A	1.003A	1.002A	1210.713	87.862%	1628	42.6	47.40°C	0.992
	11.981V	5.039V	3.298V	5.020V	1377.965				74.97°C	115.11V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
1	8.170A	1.972A	1.984A	0.992A	119.753	88.193%	438	7.6	38.76°C	0.827
	12.018V	5.058V	3.321V	5.043V	135.785				42.61°C	230.63V
2	17.360A	2.964A	2.983A	1.191A	239.484	92.325%	442	7.6	39.38°C	0.893
	12.016V	5.056V	3.318V	5.039V	259.391				43.60°C	230.65V
3	26.893A	3.461A	3.467A	1.391A	359.008	93.574%	442	7.6	39.86°C	0.921
	12.011V	5.055V	3.316V	5.035V	383.661				44.31°C	230.57V
4	36.502A	3.956A	3.982A	1.591A	479.471	93.934%	443	7.6	40.08°C	0.947
	12.007V	5.054V	3.313V	5.031V	510.436				46.12°C	230.48V
5	45.754A	4.948A	4.981A	1.790A	599.628	93.969%	442	7.6	40.96°C	0.955
	12.002V	5.052V	3.311V	5.028V	638.112				48.09°C	230.50V
6	55.040A	5.939A	5.982A	1.991A	719.782	93.558%	557	10.2	42.36°C	0.974
	11.991V	5.051V	3.309V	5.025V	769.347				50.33°C	230.40V
7	64.329A	6.933A	6.988A	2.192A	839.507	92.898%	809	21.5	42.79°C	0.982
	11.976V	5.048V	3.306V	5.020V	903.688				51.01°C	230.43V
8	73.685A	7.925A	7.990A	2.392A	960.047	92.286%	1006	28.9	44.05°C	0.983
	11.965V	5.048V	3.304V	5.018V	1040.296				52.65°C	230.33V
9	83.373A	8.423A	8.481A	2.393A	1079.411	91.839%	1293	36.7	45.42°C	0.984
	11.957V	5.047V	3.302V	5.017V	1175.335				54.86°C	230.23V
10	92.922A	8.923A	9.004A	2.999A	1199.762	91.421%	1496	40.2	46.10°C	0.985
	11.946V	5.044V	3.299V	5.003V	1312.355				55.82°C	230.21V
11	103.046A	8.926A	9.011A	3.000A	1319.883	90.904%	1683	43.3	47.20°C	0.986
	11.938V	5.043V	3.296V	5.002V	1451.950				57.00°C	230.14V
CL1	0.738A	16.004A	16.000A	0.000A	143.077	83.732%	442	7.6	44.84°C	0.783
	12.013V	5.061V	3.326V	5.097V	170.875				52.82°C	230.92V

CL2	100.011A	1.001A	1.000A	1.000A	1208.816	91.723%	1431	39.1	45.30°C	0.985
	11.953V	5.049V	3.301V	5.030V	1317.901				54.74°C	230.24V

The results above are not used in the certification process

20-80□□□□□

115V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.217A	0.489A	0.479A	0.196A	19.675	54.464%	495	8.8	0.858
	12.013V	5.058V	3.321V	5.054V	36.125				115.10V
2	2.457A	0.980A	0.990A	0.395A	39.765	70.975%	496	8.8	0.927
	12.017V	5.058V	3.321V	5.050V	56.027				115.10V
3	3.697A	1.476A	1.503A	0.591A	59.873	78.261%	497	8.8	0.943
	12.019V	5.058V	3.320V	5.047V	76.504				115.10V
4	4.927A	1.974A	1.986A	0.791A	79.784	82.188%	497	8.8	0.965
	12.019V	5.058V	3.320V	5.043V	97.075				115.10V

The results above are not used in the certification process

230V

□□ #	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□□ (dB[A])	PF/AC □□
1	1.179A	0.492A	0.478A	0.198A	19.243	56.761%	434	7.6	0.478
	12.014V	5.059V	3.323V	5.056V	33.902				230.68V
2	2.442A	0.985A	0.989A	0.396A	39.614	72.872%	438	7.6	0.618
	12.017V	5.059V	3.322V	5.053V	54.361				230.69V
3	3.642A	1.481A	1.469A	0.594A	59.145	79.995%	437	7.6	0.704
	12.019V	5.059V	3.322V	5.050V	73.936				230.66V
4	4.904A	1.974A	1.984A	0.793A	79.517	84.005%	438	7.6	0.765
	12.019V	5.058V	3.321V	5.046V	94.657				230.67V

The results above are not used in the certification process

□□□□

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	10.5 mV	5.1 mV	3.3 mV	4.5 mV	Pass
20% Load	16.0 mV	5.6 mV	3.8 mV	5.1 mV	Pass
30% Load	17.7 mV	6.1 mV	4.3 mV	5.6 mV	Pass
40% Load	16.3 mV	5.6 mV	5.0 mV	5.6 mV	Pass
50% Load	20.0 mV	5.9 mV	5.8 mV	5.8 mV	Pass
60% Load	18.3 mV	10.4 mV	10.8 mV	9.6 mV	Pass
70% Load	19.3 mV	6.8 mV	7.6 mV	6.6 mV	Pass
80% Load	19.9 mV	7.0 mV	8.8 mV	6.8 mV	Pass
90% Load	19.8 mV	16.2 mV	17.1 mV	16.2 mV	Pass
100% Load	21.8 mV	13.0 mV	17.3 mV	13.4 mV	Pass
110% Load	25.1 mV	10.6 mV	11.9 mV	11.6 mV	Pass
Crossload 1	12.7 mV	4.6 mV	5.0 mV	3.6 mV	Pass
Crossload 2	21.6 mV	10.8 mV	15.4 mV	11.2 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	12.9 mV	4.4 mV	4.1 mV	3.0 mV	Pass
20% Load	17.7 mV	5.4 mV	5.3 mV	3.5 mV	Pass
30% Load	18.6 mV	5.8 mV	5.4 mV	4.0 mV	Pass
40% Load	17.3 mV	6.9 mV	7.9 mV	5.4 mV	Pass
50% Load	20.7 mV	7.0 mV	7.1 mV	5.2 mV	Pass
60% Load	18.8 mV	7.4 mV	7.9 mV	5.4 mV	Pass
70% Load	20.4 mV	8.5 mV	8.6 mV	6.2 mV	Pass
80% Load	22.0 mV	8.8 mV	10.2 mV	6.8 mV	Pass





Test	12V	5V	3.3V	5VSB	Pass/Fail
90% Load	23.1 mV	14.1 mV	16.3 mV	12.1 mV	Pass
100% Load	23.2 mV	11.2 mV	15.2 mV	9.3 mV	Pass
110% Load	25.1 mV	11.0 mV	13.0 mV	9.4 mV	Pass
Crossload 1	20.8 mV	8.2 mV	7.7 mV	4.8 mV	Pass
Crossload 2	21.3 mV	9.5 mV	11.2 mV	9.0 mV	Pass

The results above are not used in the certification process

Thermaltake Toughpower iRGB Plus 1200W Platinum

Top side

Power specifications label

本测试报告中包含的所有数据和图表均可在以下条件下由任何人使用：使用过程需提及测试结果由 Cybenetics提供。
在任何情况下都应提供原始测试结果文档的网站链接

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