



Montech Titan PLA 850W White



Lab ID MT85002426

Certification ID 252426

Test Result Report ID: 24PS2426A

Certificate Issue Date: Apr 26, 2024

Scheme: ETA-EMI PSU

115V

230V

115V

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	Montech
Model	Titan PLA 850W White
OEM/ODM	Seasonic
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
□□□□ (Vrms)	100-240
□□□□ (Arms)	11-5.5

□□□□ (Hz)	50-60
□□□□ (W)	850
Operating Temperature (Continuous Full Load) (°C)	
□□	ATX12V
□□□□	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
□□	135mm Fluid Dynamic Bearing Fan (HA13525H12F-Z)
□□□□	✓ (selectable)
Cybenetics Testing Information	
Lab ID	MT85002426
Date of receipt	Apr 9, 2024
Testing Date	Apr 24, 2024
Report Issued Date	Apr 26, 2024
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□ (Non-accredited measurements)

□□□□				
□□	□□□□	□□□□□	Gauge	In Cable Capacitors
ATX □□ 20+4 pin (615mm)	1	1	16-18AWG	□
4+4 pin EPS 12V □□ (710mm)	2	2	16AWG	□
6+2pin PCIe□□ (760mm)	3	3	16-18AWG	□
12+4 pin PCIe (760mm) (600W)	1	1	16-28AWG	□
SATA□□ 3.3 (515mm+160mm)	1	2	18AWG	□
SATA□□ (510mm+160mm+160mm+160mm)	2	8	18AWG	□
4-pin Molex (510mm+160mm+160mm+160mm)	1	4	18AWG	No



□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	20	20	70	3	0.3
	□	100		840	15	3.6
□□□□ (W)		850				

Parts Description

General Data	
Manufacturer (OEM)	Seasonic
PCB Type	Double-Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	1x NTC Thermistor MF72 5D-20 (5 Ohm) & Relay
Bridge Rectifier(s)	2x Liteon GBU15JL (600V, 15A @ 115°C)
APFC MOSFETs	2x Infineon IPA60R160P6 (650V, 15A @ 100°C, Rds(on): 0.160Ohm)
APFC Boost Diode	1x Cree C6D10065 (650V, 10A @ 155°C)
Bulk Cap(s)	1x Nippon Chemi-con (420V, 390uF, 2,000h @ 105°C, KMR) 1x Nippon Chemi-con (420V, 330uF, 2,000h @ 105°C, KMR)
Main Switchers	4x Infineon IPA60R190P6 (650V, 12.7A @ 100°C, Rds(on): 0.190Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CU6901VPA
Topology	Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	6x Nexperia PSMN1R0-40YLD (40V, 280A @ 25°C, Rds(on): 1.1mOhm)
5V & 3.3V	DC-DC Converters: 4x Nexperia PSMN4R0-30YLD (30V, 95A @ 25°C, Rds(on): 4mOhm) PWM Controller(s): ANPEC APW7159C

Filtering Capacitors	Electrolytic: 3x Nichicon (2-5,000h @ 105°C, HD), 4x Nippon Chemi-Con (5-6,000h @ 105°C, KZH), 4x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 1x Nippon Chemi-Con (2-5,000h @ 105°C, KZE), 5x Rubycon (3-6,000h @ 105°C, YXG), Polymer: 26x Nichicon FPCAP, 8x Nippon Chemi-con
Supervisor IC	Weltrend WT7527RA (OCP, OVP, UVP, SCP, PG)
Fan Controller	Nuvoton M031
Fan Model	Hong Hua HA13525H12F-Z (135mm, 12V, 0.5A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
Rectifier	1x DK5V45R10S (45V, 10A)
Standby PWM Controller	Excelliance MOS EM85690

Test Results

Temperature & Compliance Info

□□□□ (°C /°F)	28-32 / 82.4-89.6
□□ ErP Lot3/6□□	✓
□□ (EU) No 617/2013□□	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.1 PSU Power Excursion	✓

Performance Summary

115V	
Accredited	
□□□□ (>1450 load combinations)	90.115%
Average Noise Output (>1450 Load Combinations)	18.22dBA
PF□□□ (>1450 Load Combinations)	0.975
Efficiency With 10W (≤500W) or 2% (>500W) Load	77.110%

	0.0496W
Non-Accredited	
12V Ripple (Full Load)	32.41mV
5V Ripple (Full Load)	14.56mV
3.3V Ripple (Full Load)	18.01mV
5VSB Ripple (Full Load)	31.07mV
12V Load Regulation	0.83%
5V Load Regulation	0.54%
3.3V Load Regulation	0.61%
5VSB Load Regulation	2.06%
Inrush Current	33.110A

230V

Accredited	
(>1450 load combinations)	92.081%
Average Noise Output (>1450 Load Combinations)	17.85dBA
PF (>1450 Load Combinations)	0.937
Efficiency With 10W ($\leq 500W$) or 2% ($> 500W$) Load	76.074%
	0.1367W
Non-Accredited	
12V Ripple (Full Load)	33.35mV
5V Ripple (Full Load)	15.90mV
3.3V Ripple (Full Load)	17.92mV
5VSB Ripple (Full Load)	30.34mV
12V Load Regulation	0.79%
5V Load Regulation	0.54%
3.3V Load Regulation	0.58%
5VSB Load Regulation	2.04%
Inrush Current	66.400A
12V Transient Response (200%)	11.68V
5V Transient Response (200%)	4.924V
3.3V Transient Response (200%)	3.204V

5VSB Transient Response (200%)	5.014V	
□□□□ & PG□□	23.90ms	
AC Loss to PWR_OK Hold Up Time	19.20ms	
PWR_OK Inactive to DC Loss Delay	4.70ms	
PSU Timings: T1 (20% / 100%)	72.0ms	73.0ms
PSU Timings: T3 (20% / 100%)	123.0ms	125.0ms
12V OCP (26.2°C / 42.5°C)	96.60A (138.00%), 12.133V	96.80A (138.29%), 12.156V
5V OCP (26.2°C / 42.5°C)	27.1A (135.50%), 4.981V	26.9A (134.50%), 4.98V
3.3V OCP (26.2°C / 42.5°C)	28.9A (144.50%), 3.332V	28.8A (144.00%), 3.335V
5VSB OCP (26.2°C / 42.5°C)	6.5A (216.67%), 5.012V	6.5A (216.67%), 5.01V
OPP (27.70°C / 41.29°C)	139.19%	138.01%

□□□□ & PG□□

Hold-Up Time (ms)	19.2
AC Loss to PWR_OK Hold Up Time (ms)	23.9
PWR_OK Inactive to DC Loss Delay (ms)	4.7

□□□□

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.06 V	115.02 V	113.85 V	115.10 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:	1.417	1.416	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.14 %	0.10 %	N/A	0.21 %	2.00 %	PASS
Real Power:	0.050 W	0.015 W	N/A	0.080 W	N/A	N/A
Apparent Power:	10.675 W	10.505 W	N/A	10.848 W	N/A	N/A

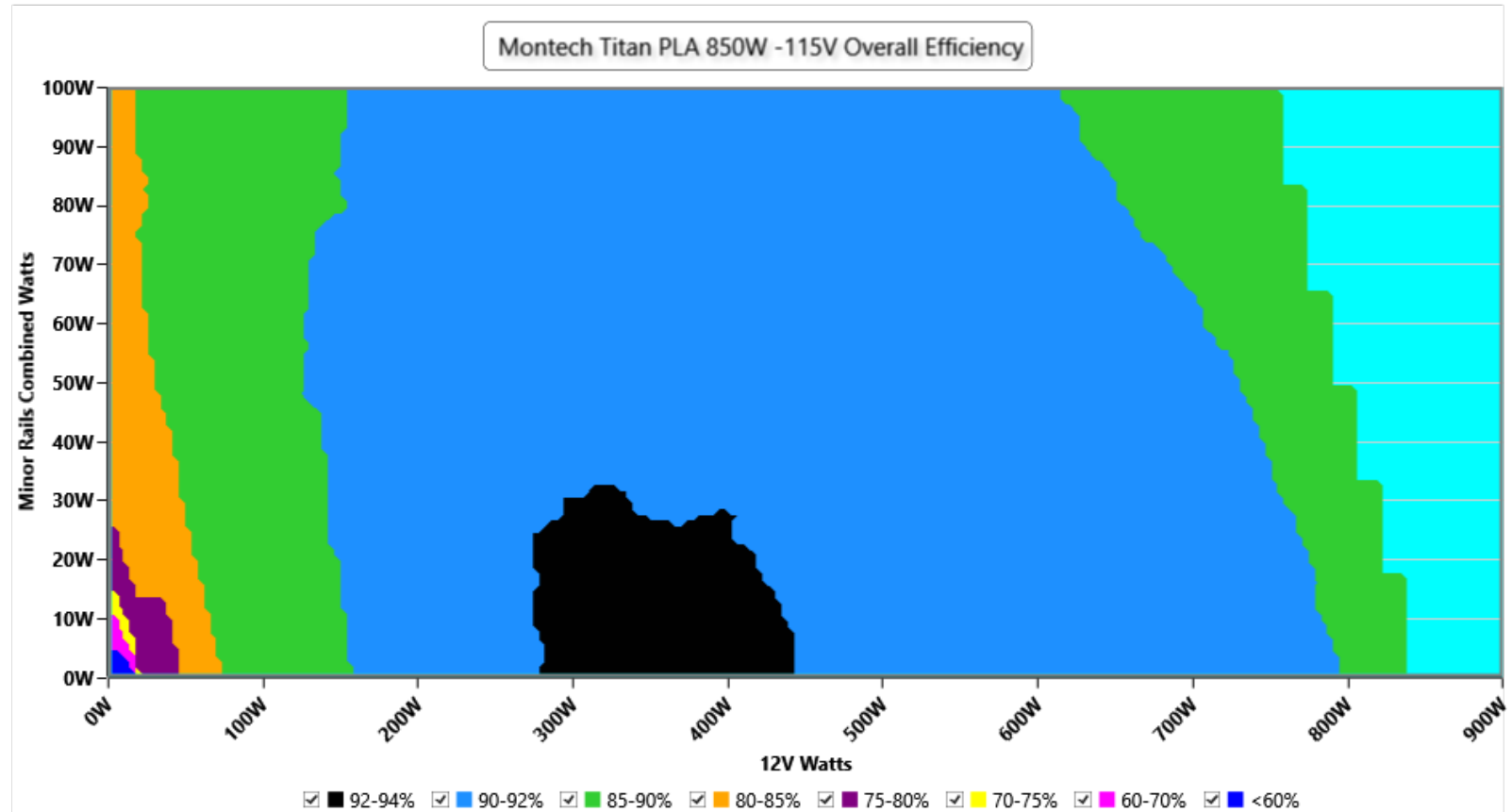
Power Factor:	0.006	N/A	N/A	N/A	N/A	N/A
---------------	-------	-----	-----	-----	-----	-----

230V

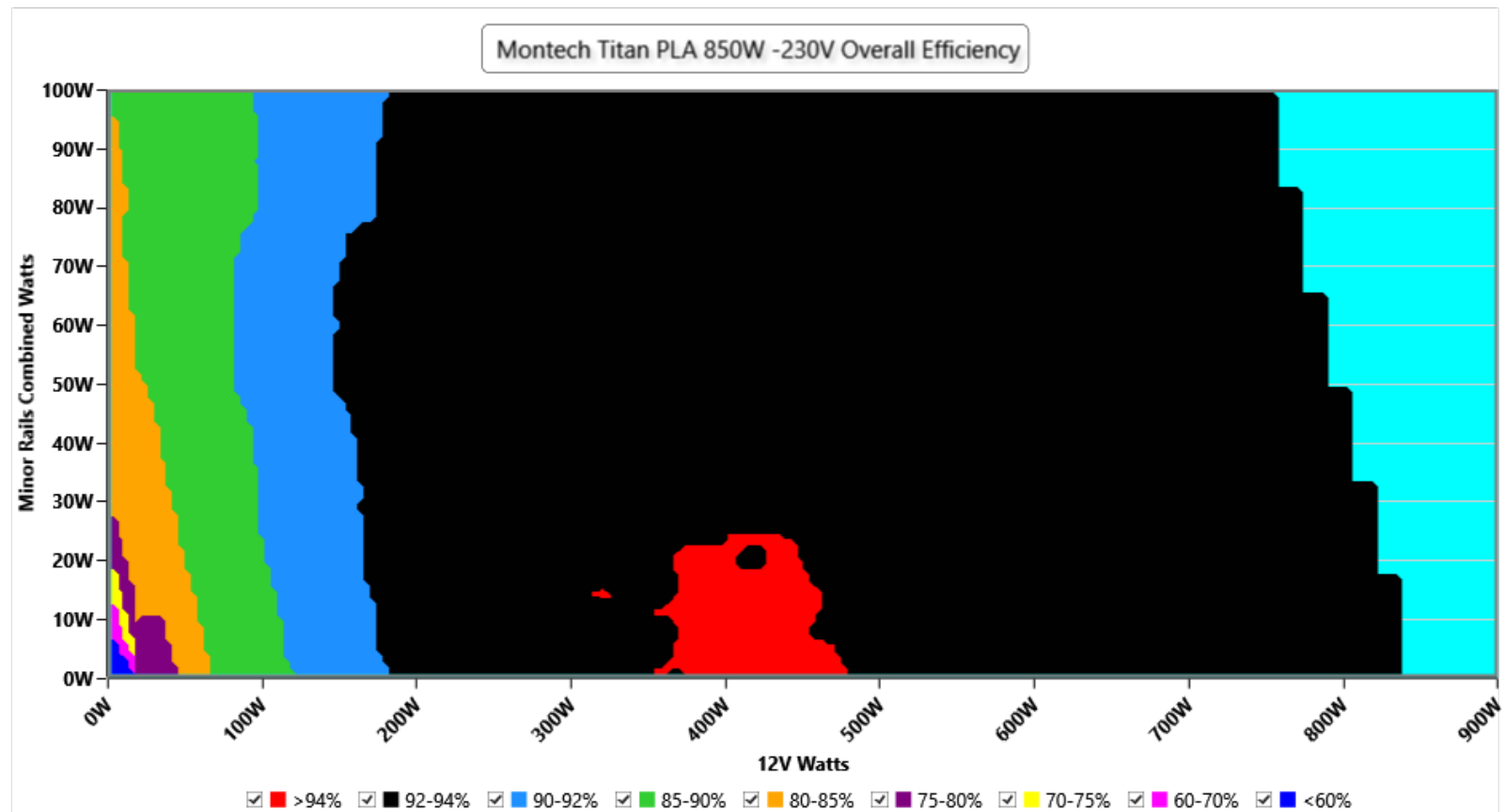
Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	231.01 V	230.90 V	227.70 V	231.07 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.17 %	0.14 %	N/A	0.26 %	2.00 %	PASS
Real Power:	0.137 W	0.107 W	N/A	0.179 W	N/A	N/A
Apparent Power:	34.974 W	34.683 W	N/A	35.277 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A



115V



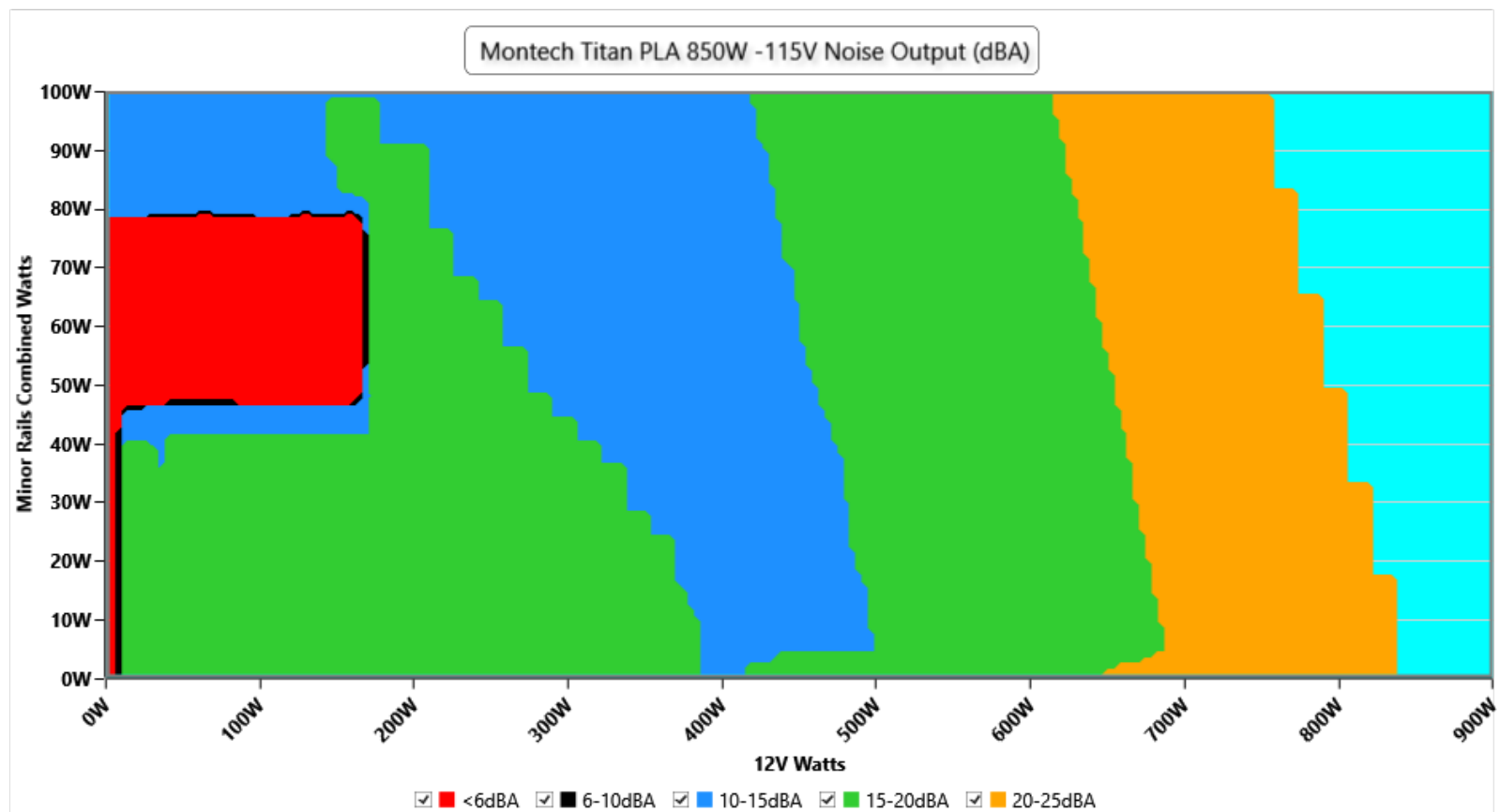
This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations



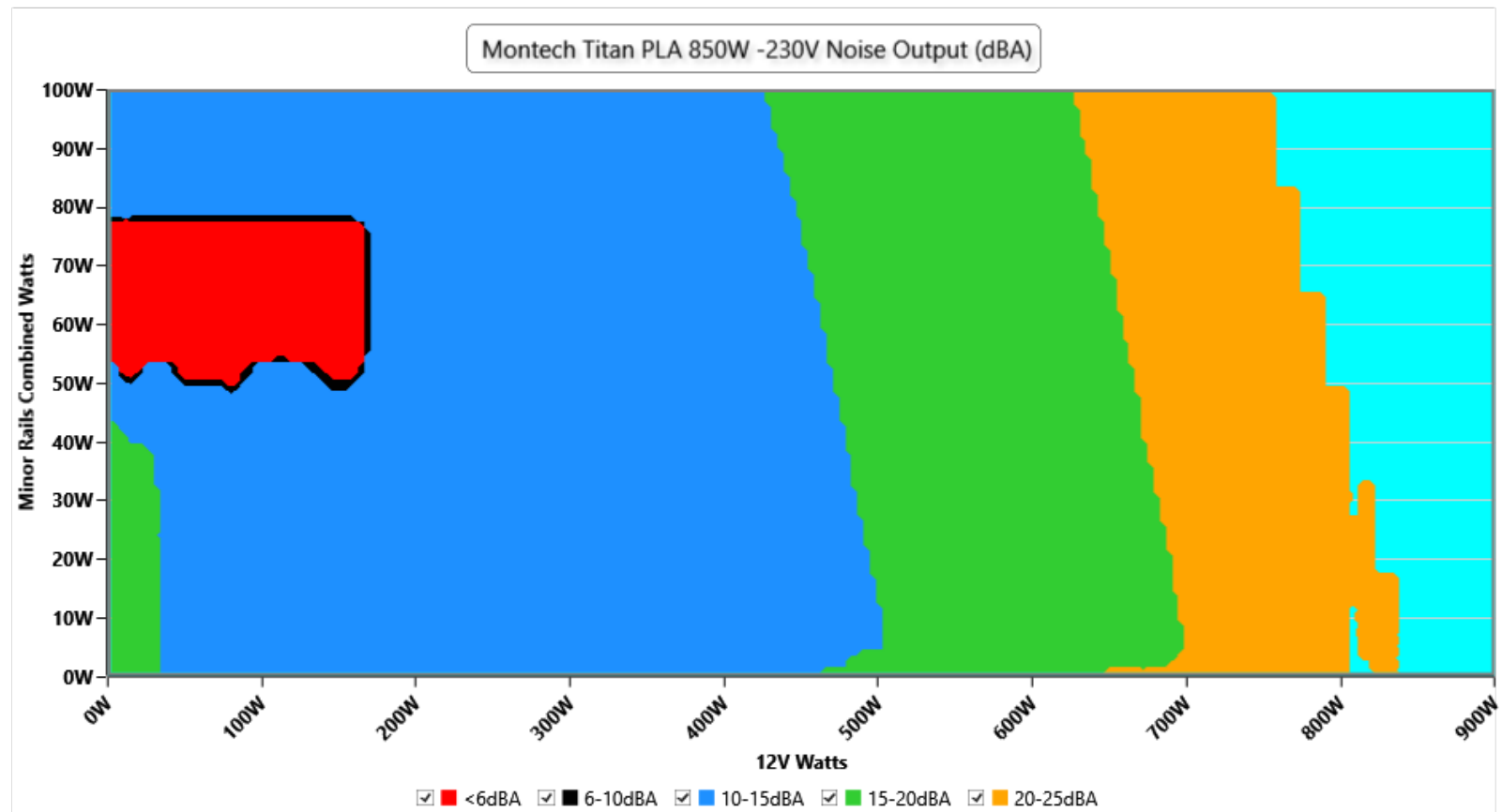
This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations



115V

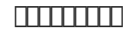


The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails



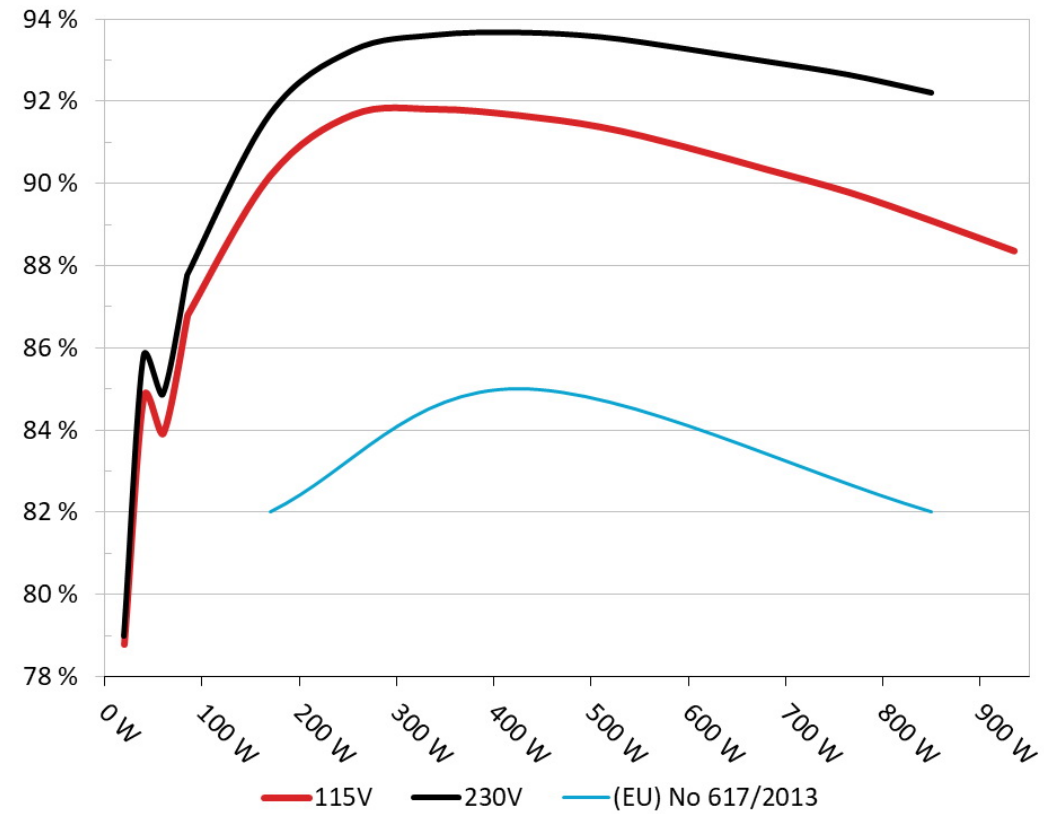
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance



Efficiency: Montech Titan PLA 850W White

Ambient: 37°C - 47°C (98.6°F - 116.6°F)

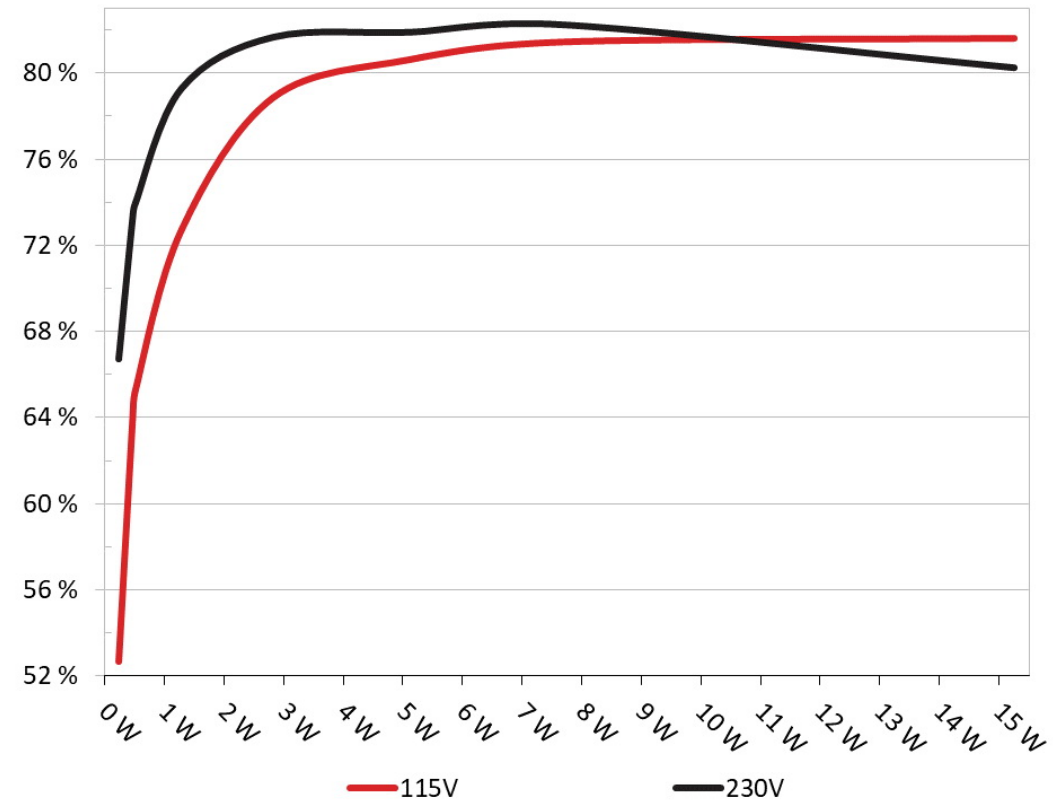


The PSU's efficiency under high ambient temperatures with 115V and 230V input. For this graph the results of the 10-110% load regulation table are used

5Vsb

5VSB Efficiency: Montech Titan PLA 850W White

Ambient: 34°C - 36°C (93.2°F - 96.8°F)



□

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	0.045A	0.232W	66.723%	0.034
	5.147V	0.348W		114.91V
2	0.09A	0.463W	73.234%	0.061
	5.145V	0.632W		114.93V
3	0.55A	2.824W	81.677%	0.26
	5.136V	3.458W		114.91V
4	1A	5.127W	81.904%	0.35
	5.126V	6.26W		114.91V
5	1.5A	7.675W	82.254%	0.408
	5.117V	9.331W		114.9V
6	3A	15.253W	80.256%	0.483
	5.085V	19.005W		114.9V

230V

#	5VSB	DC/AC ()		PF/AC
1	0.045A	0.232W	52.651%	0.013
	5.146V	0.442W		229.91V
2	0.09A	0.463W	63.855%	0.021
	5.145V	0.725W		229.91V
3	0.55A	2.824W	78.882%	0.099
	5.135V	3.581W		229.89V
4	1A	5.126W	80.651%	0.165
	5.126V	6.356W		229.89V
5	1.5A	7.675W	81.467%	0.214
	5.116V	9.422W		229.88V
6	3A	15.254W	81.635%	0.325
	5.085V	18.686W		229.88V

Protection Features

OCP (Normal @ 26.2°C)	12V: 96.60A (138.00%), 12.133V 5V: 27.1A (135.50%), 4.981V 3.3V: 28.9A (144.50%), 3.332V 5VSB: 6.5A (216.67%), 5.012V
OCP (Hot @ 42.5°C)	12V: 96.80A (138.29%), 12.156V 5V: 26.9A (134.50%), 4.98V 3.3V: 28.8A (144.00%), 3.335V 5VSB: 6.5A (216.67%), 5.01V
OPP (Normal @ 27.7°C)	1183.09W (139.19%)
OPP (Hot @ 41.3°C)	1173.07W (138.01%)
OTP	✓ (115°C @ Primary Heatsink)
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)

10-110%□□□□

115V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□□ (RPM)	□□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
10%	5.216A	1.999A	1.989A	0.976A	85.005	86.803%	0	<6.0	44.5°C	0.948
	12.154V	5.004V	3.319V	5.124V	97.93				40.46°C	114.89V

20%	11.440A	3A	2.985A	1.173A	169.955	90.197%	0	<6.0	44.83°C	0.966
	12.155V	5V	3.317V	5.115V	188.422				40.58°C	114.86V
30%	18.021A	3.501A	3.484A	1.371A	254.973	91.68%	0	<6.0	45.67°C	0.976
	12.148V	4.998V	3.316V	5.107V	278.114				41.13°C	114.84V
40%	24.627A	4.003A	3.984A	1.57A	340.065	91.814%	727	15.1	41.57°C	0.978
	12.135V	4.996V	3.314V	5.097V	370.385				46.39°C	114.8V
50%	30.865A	5.007A	4.984A	1.769A	424.92	91.664%	731	15.2	42.19°C	0.981
	12.131V	4.994V	3.311V	5.088V	463.561				47.57°C	114.77V
60%	37.058A	6.011A	5.984A	1.969A	509.427	91.381%	725	17.9	42.94°C	0.982
	12.133V	4.991V	3.31V	5.079V	557.488				49.21°C	114.75V
70%	43.325A	7.017A	6.985A	2.169A	594.706	90.904%	788	17.5	43.33°C	0.984
	12.132V	4.989V	3.308V	5.07V	654.215				50.71°C	114.71V
80%	49.577A	8.021A	7.987A	2.271A	679.534	90.35%	854	20.2	43.88°C	0.986
	12.136V	4.986V	3.306V	5.063V	752.116				52.38°C	114.68V
90%	56.233A	8.526A	8.475A	2.373A	764.953	89.789%	948	23.6	44.37°C	0.987
	12.136V	4.984V	3.304V	5.056V	851.943				53.72°C	114.64V
100%	62.619A	9.031A	8.994A	2.977A	849.764	89.096%	1073	27.7	45.04°C	0.989
	12.138V	4.982V	3.303V	5.039V	953.764				55.68°C	114.6V
110%	68.863A	10.041A	10.09A	2.98A	934.333	88.365%	1158	30.2	46.79°C	0.99
	12.141V	4.979V	3.3V	5.034V	1057.358				57.64°C	114.57V
CL1	0.115A	12.08A	12.011A	0A	101.295	84.088%	727	15.1	40.73°C	0.954
	12.194V	4.983V	3.306V	5.14V	120.463				46.08°C	114.87V
CL2	0.114A	20.061A	0A	0A	101.339	82.873%	892	21.5	40.8°C	0.953
	12.184V	4.982V	3.311V	5.141V	122.283				48.71°C	114.87V
CL3	0.113A	0A	19.947A	0A	67.396	77.14%	870	20.7	40.34°C	0.941
	12.177V	4.996V	3.309V	5.141V	87.368				49.59°C	114.88V
CL4	70.076A	0A	0A	0A	849.514	89.77%	1001	25.3	44.92°C	0.988
	12.123V	5.001V	3.316V	5.104V	946.319				55.14°C	114.61V

The results above are not used in the certification process

230V

項目	12V	5V	3.3V	5VSB	DC/AC (W)	項目	回転数 (RPM)	騒音レベル (dB[A])	温度 (中心 / 表面)	PF/AC 項目
10%	5.214A	1.999A	1.988A	0.976A	85	87.778%	0	<6.0	44.27°C	0.812
	12.160V	5.003V	3.319V	5.124V	96.835				40.24°C	229.87V
20%	11.434A	3A	2.985A	1.173A	169.933	91.694%	0	<6.0	44.95°C	0.902
	12.160V	5V	3.317V	5.116V	185.328				40.57°C	229.86V
30%	18.017A	3.501A	3.483A	1.371A	254.939	93.25%	0	<6.0	46.17°C	0.935
	12.150V	4.998V	3.316V	5.107V	273.393				41.38°C	229.85V
40%	24.619A	4.003A	3.983A	1.569A	340.024	93.626%	730	15.2	41.88°C	0.95
	12.138V	4.996V	3.314V	5.098V	363.169				46.84°C	229.83V
50%	30.854A	5.006A	4.983A	1.769A	424.808	93.687%	726	14.9	42.11°C	0.959
	12.131V	4.994V	3.312V	5.089V	453.431				47.53°C	229.81V
60%	37.056A	6.01A	5.983A	1.969A	509.339	93.579%	723	14.8	42.56°C	0.965
	12.131V	4.992V	3.31V	5.08V	544.286				49.1°C	229.8V
70%	43.322A	7.016A	6.984A	2.169A	594.646	93.297%	787	17.5	43.5°C	0.969
	12.131V	4.989V	3.308V	5.071V	637.365				51.07°C	229.79V
80%	49.589A	8.021A	7.986A	2.271A	679.473	92.984%	854	20.2	43.83°C	0.972
	12.131V	4.986V	3.306V	5.064V	730.751				52.42°C	229.77V
90%	56.237A	8.526A	8.474A	2.373A	764.909	92.656%	941	23.4	44.8°C	0.975
	12.134V	4.984V	3.304V	5.057V	825.55				53.91°C	229.76V
100%	62.620A	9.031A	8.993A	2.976A	849.732	92.22%	1063	27.5	45.66°C	0.976
	12.137V	4.982V	3.303V	5.04V	921.413				55.87°C	229.75V
110%	68.874A	10.04A	10.089A	2.979A	934.295	91.768%	1128	29.5	46.89°C	0.978
	12.139V	4.979V	3.301V	5.034V	1018.1				57.69°C	229.73V
CL1	0.114A	12.077A	12.01A	0A	101.284	85.342%	731	15.2	41.92°C	0.846
	12.180V	4.984V	3.306V	5.14V	118.681				47.01°C	229.87V
CL2	0.113A	20.058A	0A	0A	101.33	83.977%	891	21.4	40.97°C	0.848
	12.179V	4.983V	3.312V	5.141V	120.664				48.58°C	229.87V
CL3	0.113A	0A	19.946A	0A	67.394	78.029%	869	20.7	40.25°C	0.79
	12.176V	4.996V	3.309V	5.141V	86.371				50.09°C	229.87V

CL4	70.093A	0A	0A	0A	849.48	92.813%	995	25.2	45.04°C	0.976
	12.120V	5.001V	3.316V	5.105V	915.273				55.55°C	229.75V

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 □□
20W	1.231A	0.499A	0.497A	0.194A	19.999	78.789%	0	<6.0	40.03°C	0.824
	12.063V	5.009V	3.323V	5.143V	25.383				36.72°C	114.91V
40W	2.712A	0.699A	0.696A	0.292A	39.998	84.819%	0	<6.0	41.13°C	0.906
	12.055V	5.008V	3.321V	5.139V	47.158				37.74°C	114.91V
60W	4.160A	0.899A	0.894A	0.389A	59.999	83.925%	0	<6.0	42.22°C	0.934
	12.145V	5.007V	3.321V	5.137V	71.491				38.42°C	114.89V
80W	5.622A	1.099A	1.093A	0.487A	79.949	86.781%	0	<6.0	42.95°C	0.944
	12.150V	5.006V	3.321V	5.134V	92.131				39.1°C	114.89V

The results above are not used in the certification process

230V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□ (RPM)	□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
20W	1.230A	0.499A	0.497A	0.194A	19.995	78.987%	0	<6.0	39.98°C	0.459
	12.068V	5.009V	3.322V	5.143V	25.317				36.65°C	229.88V
40W	2.710A	0.699A	0.695A	0.292A	39.995	85.788%	0	<6.0	40.62°C	0.635
	12.064V	5.008V	3.322V	5.14V	46.625				37.16°C	229.88V
60W	4.158A	0.899A	0.894A	0.389A	59.995	84.87%	0	<6.0	42.02°C	0.744
	12.152V	5.007V	3.321V	5.137V	70.689				38.44°C	229.88V
80W	5.620A	1.099A	1.093A	0.487A	79.939	87.716%	0	<6.0	42.72°C	0.8
	12.155V	5.006V	3.321V	5.134V	91.13				39.03°C	229.87V

The results above are not used in the certification process

**115V**

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.2 mV	14.1 mV	12.0 mV	15.4 mV	Pass
20% Load	12.6 mV	12.6 mV	11.9 mV	14.5 mV	Pass
30% Load	29.9 mV	10.5 mV	9.4 mV	13.0 mV	Pass
40% Load	24.4 mV	12.2 mV	12.1 mV	25.1 mV	Pass
50% Load	20.2 mV	12.4 mV	12.7 mV	25.1 mV	Pass
60% Load	17.9 mV	11.9 mV	11.3 mV	24.0 mV	Pass
70% Load	20.2 mV	12.3 mV	13.1 mV	26.8 mV	Pass
80% Load	20.0 mV	13.0 mV	14.3 mV	27.0 mV	Pass
90% Load	20.6 mV	13.3 mV	14.8 mV	28.4 mV	Pass
100% Load	32.4 mV	14.6 mV	18.0 mV	31.1 mV	Pass
110% Load	32.4 mV	15.9 mV	18.6 mV	31.2 mV	Pass
Crossload 1	13.7 mV	14.2 mV	14.8 mV	29.2 mV	Pass
Crossload 2	14.4 mV	19.6 mV	15.0 mV	28.9 mV	Pass
Crossload 3	12.8 mV	14.4 mV	16.3 mV	30.4 mV	Pass
Crossload 4	32.0 mV	17.0 mV	18.4 mV	31.6 mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	13.4 mV	14.6 mV	12.9 mV	16.8 mV	Pass
20% Load	12.3 mV	12.6 mV	11.9 mV	14.5 mV	Pass
30% Load	36.0 mV	11.9 mV	11.2 mV	14.2 mV	Pass
40% Load	25.6 mV	12.2 mV	12.6 mV	26.2 mV	Pass
50% Load	21.8 mV	11.8 mV	12.3 mV	26.1 mV	Pass
60% Load	23.3 mV	12.0 mV	13.2 mV	27.2 mV	Pass

