



Montech Titan PLA 1000W



Lab ID MT10002307

Certification ID 252307

Test Result Report ID: 23PS2307A

Certificate Issue Date: Dec 13, 2023

115V

230V

Scheme: ETA-EMI PSU

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 1000W
OEM/ODM		Seasonic
Serial Number		
Product Specifications		
Manufacturer-Provided Information		
(Vrms)	100-240	
(Arms)	13-6.5	

□□□□ (Hz)	50-60
□□□□ (W)	1000
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	MT10002307
Date of receipt	Nov 30, 2023
Testing Date	Dec 13, 2023
Report Issued Date	Dec 13, 2023
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

□□□□ (Non-accredited measurements)

□□□□				
□□	□□□□	□□□□□	Gauge	In Cable Capacitors
ATX □□ 20+4 pin (630mm)	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 (410mm+155mm)	1	2	18AWG	□
SATA□□ (510mm+155mm+155mm+155mm)	4	16	18AWG	□
4-pin Molex (460mm+125mm+125mm)	1	3	18AWG	No



□		3.3V	5V	12V	5VSB	-12V
□□□□	□□	25	25	83	3	0.3
	□	125		996	15	3.6
□□□□ (W)		1000				

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
APFC MOSFETs	2x Infineon IPA60R125P6 (650V, 30A @ 25°C, Rds(on): 0.125Ohm)
APFC Boost Diode	1x Cree C6D10065 (650V, 10A @ 155°C)
Bulk Cap(s)	1x Nippon Chemi-con (420V, 330uF, 2,000h @ 105°C, KMR) & 1x Nippon Chemi-con (420V, 560uF, 2,000h @ 105°C, KMR)
Main Switchers	4x Infineon IPA60R190P6 (600V, 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: 6x 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), 9x Nippon Chemi-Con (5-6,000h @ 105°C, KZH), 5x Rubycon (3-6,000h @ 105°C, YXG), Polymer: 25x FPCAP
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
Standby PWM Controller	Excelliance MOS EM85690

Test Results

Temperature & Compliance Info

温度 (°C / °F)	28-32 / 82.4-89.6
ErP Lot3/6	✓
(EU) No 617/2013	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.0 Compliance	✓

Performance Summary

115V

Accredited	
(>1450 load combinations)	89.923%
Average Noise Output (>1450 Load Combinations)	19.96dBA
PF (>1450 Load Combinations)	0.984
Efficiency With 10W (≤500W) or 2% (>500W) Load	76.321%
	0.0543W
Non-Accredited	
12V Ripple (Full Load)	30.50mV
5V Ripple (Full Load)	20.56mV
3.3V Ripple (Full Load)	22.23mV
5VSB Ripple (Full Load)	27.02mV
12V Load Regulation	1.11%
5V Load Regulation	0.60%

3.3V Load Regulation	0.60%
5VSB Load Regulation	2.50%
Inrush Current	34.890A

230V

Accredited		
□□□□ (>1450 load combinations)		91.829%
Average Noise Output (>1450 Load Combinations)		19.95dBA
PF□□□ (>1450 Load Combinations)		0.956
Efficiency With 10W (≤500W) or 2% (>500W) Load		75.771%
□□□□□		0.1246W
Non-Accredited		
12V Ripple (Full Load)		31.45mV
5V Ripple (Full Load)		19.15mV
3.3V Ripple (Full Load)		23.54mV
5VSB Ripple (Full Load)		24.85mV
12V Load Regulation		1.13%
5V Load Regulation		0.60%
3.3V Load Regulation		0.57%
5VSB Load Regulation		2.50%
Inrush Current		64.700A
12V Transient Response (200%)		11.54V
5V Transient Response (200%)		4.908V
3.3V Transient Response (200%)		3.172V
5VSB Transient Response (200%)		4.896V
□□□□ & PG□□		22.10ms
AC Loss to PWR_OK Hold Up Time		17.20ms
PWR_OK Inactive to DC Loss Delay		4.90ms
PSU Timings: T1 (20% / 100%)	71.0ms	71.0ms
PSU Timings: T3 (20% / 100%)	127.0ms	127.0ms
12V OCP (27.3°C / 42.8°C)	114.59A (138.06%), 12.157V	114.50A (137.95%), 12.193V
5V OCP (27.3°C / 42.8°C)	35A (140.00%), 5.01V	33.5A (134.00%), 5.011V

3.3V OCP (27.3°C / 42.8°C)	34A (136.00%), 3.325V	33.9A (135.60%), 3.329V
5VSB OCP (27.3°C / 42.8°C)	6.5A (216.67%), 4.972V	6.4A (213.33%), 4.974V
OPP (30.66°C / 42.73°C)	139.32%	129.42%

|||| & PG||

Hold-Up Time (ms)	22.1
AC Loss to PWR_OK Hold Up Time (ms)	17.2
PWR_OK Inactive to DC Loss Delay (ms)	4.9

||||

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.87 V	114.83 V	113.85 V	114.91 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	1.417	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.14 %	0.12 %	N/A	0.19 %	2.00 %	PASS
Real Power:	0.054 W	0.000 W	N/A	0.081 W	N/A	N/A
Apparent Power:	10.449 W	10.423 W	N/A	10.483 W	N/A	N/A
Power Factor:	0.005	N/A	N/A	N/A	N/A	N/A

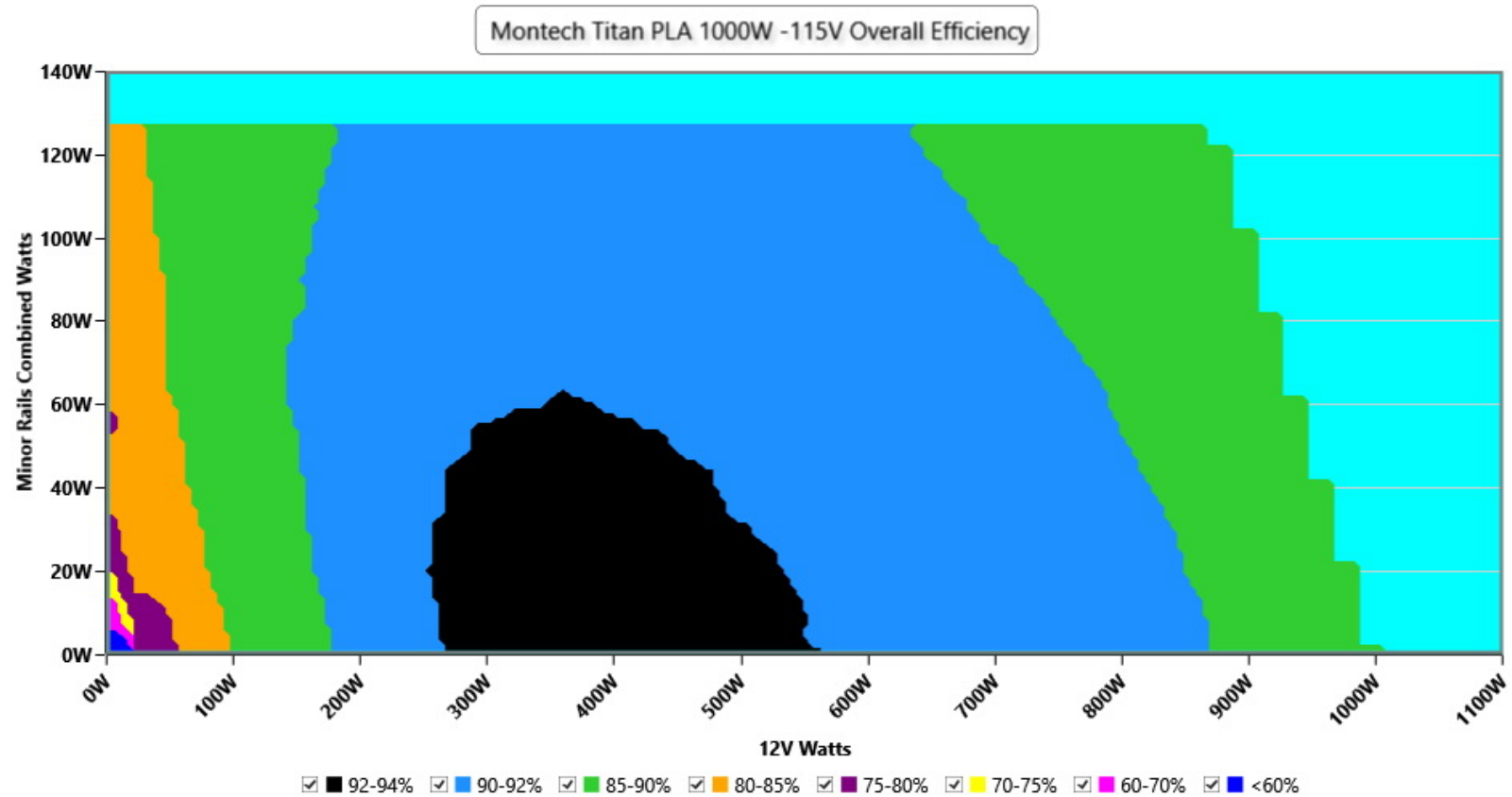
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.88 V	229.84 V	227.70 V	229.93 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	50.00 Hz	49.50 Hz	50.00 Hz	50.50 Hz	PASS

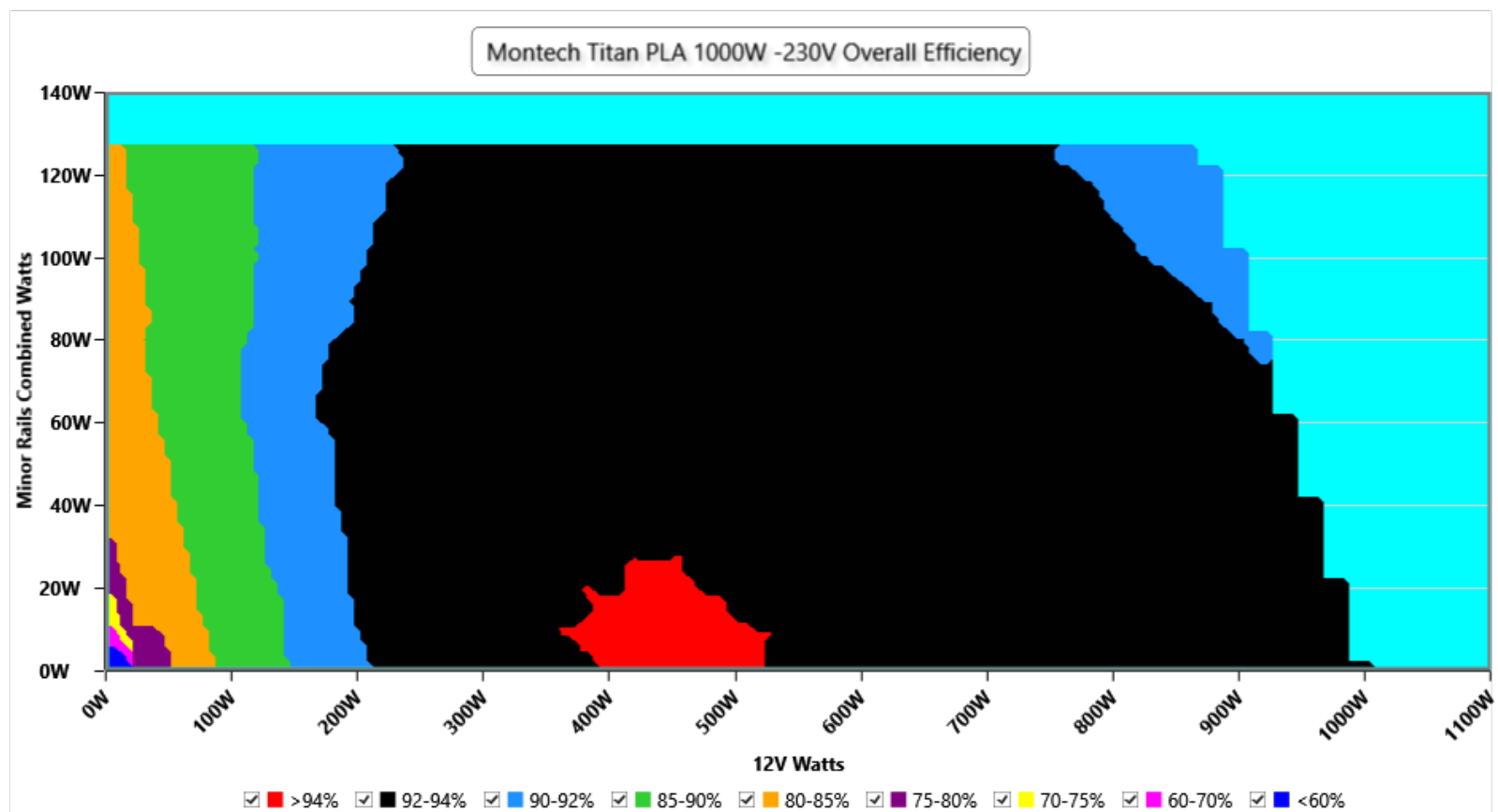
Mains Voltage CF:	1.417	1.416	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.13 %	0.11 %	N/A	0.15 %	2.00 %	PASS
Real Power:	0.125 W	0.075 W	N/A	0.181 W	N/A	N/A
Apparent Power:	35.371 W	35.330 W	N/A	35.428 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A



115V



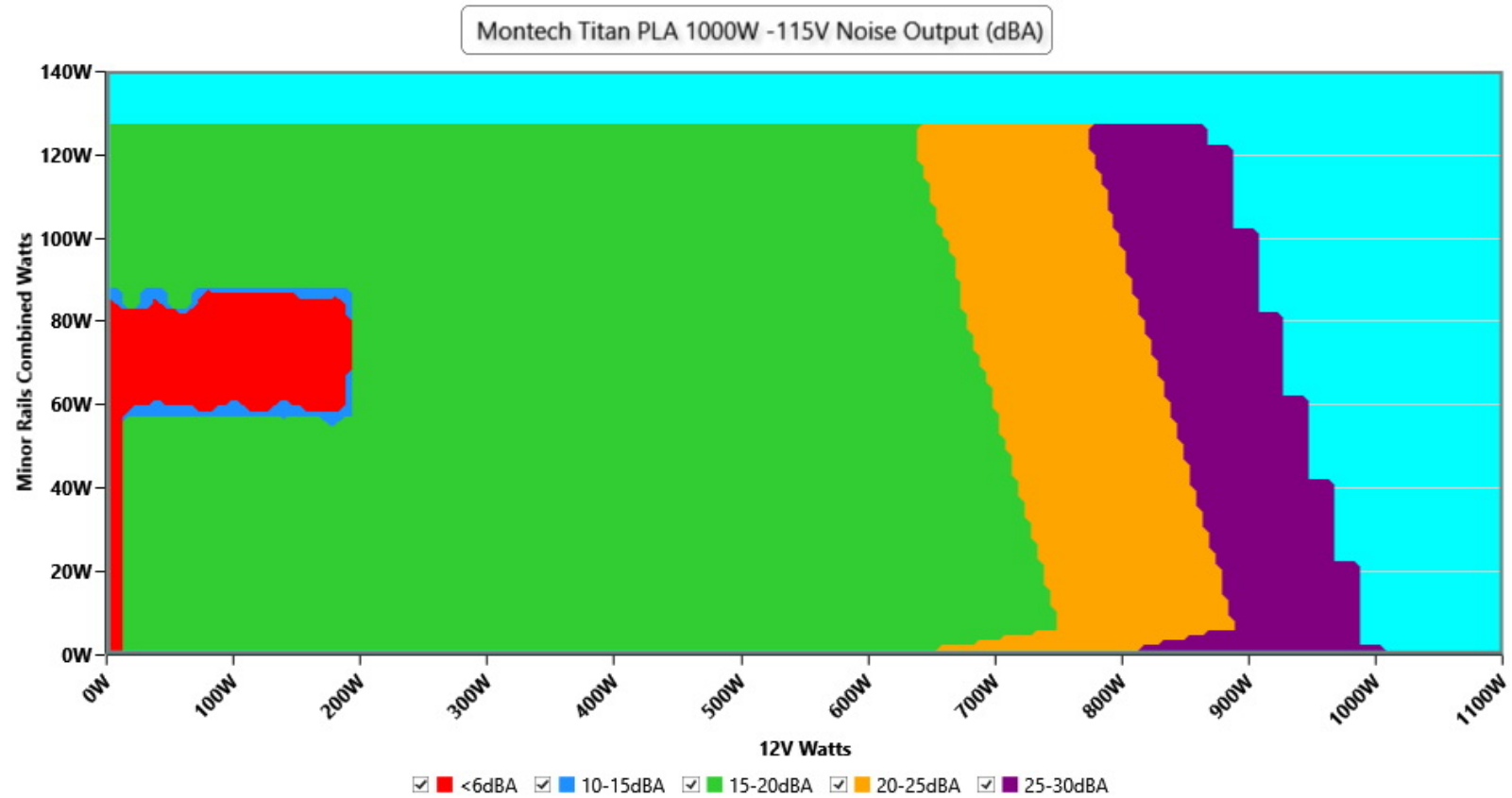
This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations



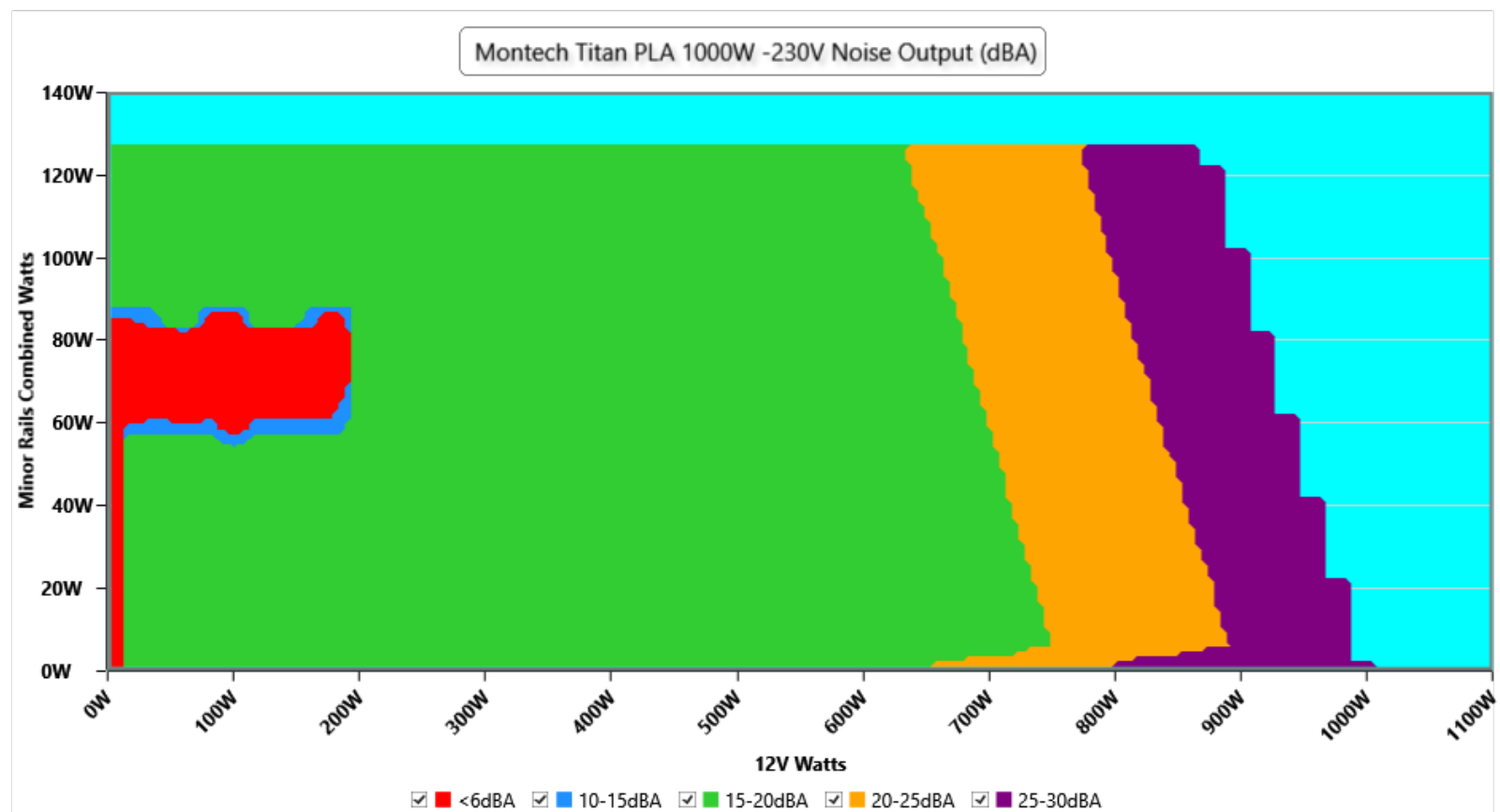
This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations



115V

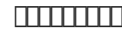


The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails



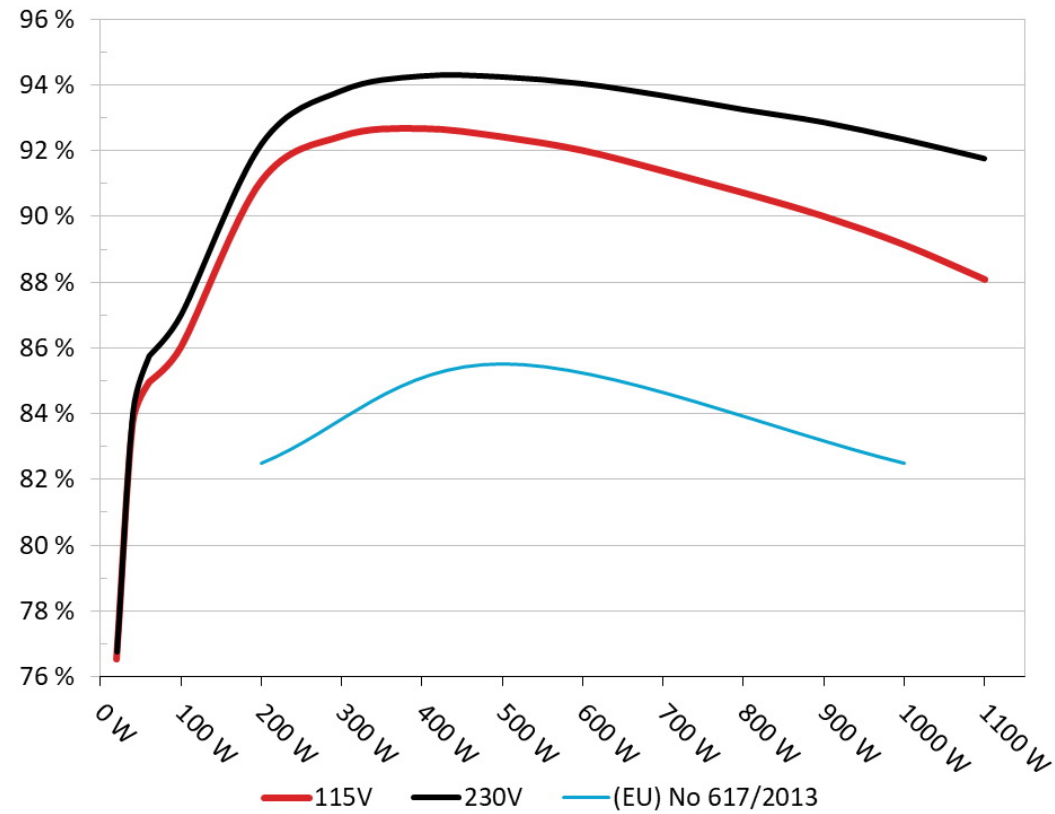
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance



Efficiency: Montech Titan PLA 1000W

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

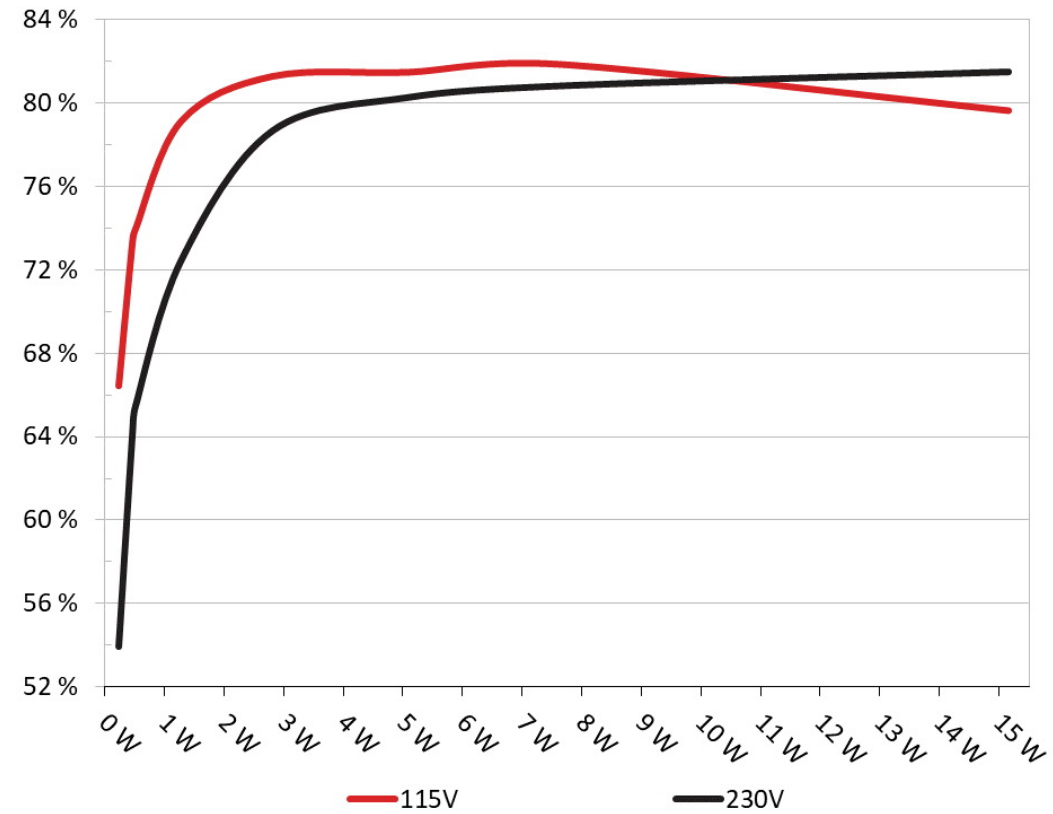


The PSU's efficiency under high ambient temperatures with 115V and 230V input. For this graph the results of the 10-110% load regulation table are used

5Vsb

5VSB Efficiency: Montech Titan PLA 1000W

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	0.23W	66.949%	0.033
	5.118V	0.344W		114.85V
2	0.09A	0.461W	73.855%	0.06
	5.117V	0.624W		114.85V
3	0.55A	2.809W	81.744%	0.26
	5.107V	3.436W		114.85V
4	1A	5.098W	81.942%	0.352
	5.097V	6.221W		114.85V
5	1.5A	7.631W	82.319%	0.409
	5.087V	9.27W		114.85V
6	3A	15.159W	80.105%	0.483
	5.053V	18.924W		114.85V

230V

#	5VSB	DC/AC (%)		PF/AC
1	0.045A	0.23W	54.448%	0.012
	5.12V	0.423W		229.86V
2	0.09A	0.461W	64.716%	0.021
	5.118V	0.713W		229.87V
3	0.55A	2.809W	79.139%	0.099
	5.107V	3.55W		229.87V
4	1A	5.098W	80.744%	0.164
	5.098V	6.315W		229.87V
5	1.5A	7.631W	81.29%	0.218
	5.087V	9.387W		229.86V
6	3A	15.164W	81.961%	0.326
	5.054V	18.501W		229.87V

Protection Features

OCP (Normal @ 27.3°C)	12V: 114.59A (138.06%), 12.157V 5V: 35A (140.00%), 5.01V 3.3V: 34A (136.00%), 3.325V 5VSB: 6.5A (216.67%), 4.972V
OCP (Hot @ 42.8°C)	12V: 114.50A (137.95%), 12.193V 5V: 33.5A (134.00%), 5.011V 3.3V: 33.9A (135.60%), 3.329V 5VSB: 6.4A (213.33%), 4.974V
OPP (Normal @ 30.7°C)	1393.19W (139.32%)
OPP (Hot @ 42.7°C)	1294.15W (129.42%)
OTP	✓ (130°C @ Main Transformer)
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%	6.432A	1.98A	1.982A	0.981A	99.982	85.529%	0	<6.0	44.65°C	0.97
	12.186V	5.049V	3.33V	5.096V	116.911				40.36°C	114.83V

20%	13.872A	2.972A	2.975A	1.18A	199.927	90.59%	0	<6.0	45.45°C	0.982
	12.185V	5.046V	3.328V	5.086V	220.698				40.86°C	114.8V
30%	21.693A	3.47A	3.473A	1.379A	299.976	91.959%	707	15.7	41.02°C	0.985
	12.166V	5.044V	3.326V	5.075V	326.203				46.05°C	114.75V
40%	29.460A	3.967A	3.971A	1.58A	399.491	92.191%	702	15.5	41.5°C	0.986
	12.162V	5.041V	3.324V	5.064V	433.332				47.16°C	114.72V
50%	36.894A	4.962A	4.967A	1.781A	499.239	91.938%	697	15.1	42.03°C	0.986
	12.163V	5.038V	3.322V	5.053V	543.022				48.09°C	114.69V
60%	44.385A	5.958A	5.964A	1.984A	599.777	91.521%	692	15.0	42.5°C	0.987
	12.166V	5.035V	3.32V	5.042V	655.344				49.11°C	114.65V
70%	51.801A	6.956A	6.963A	2.187A	699.521	90.9%	769	18.6	43.22°C	0.989
	12.170V	5.032V	3.318V	5.03V	769.553				50.27°C	114.63V
80%	59.269A	7.953A	7.961A	2.29A	799.545	90.234%	846	21.8	43.89°C	0.99
	12.175V	5.029V	3.316V	5.021V	886.08				52.01°C	114.58V
90%	67.062A	8.454A	8.447A	2.394A	899.352	89.517%	926	24.4	44.42°C	0.992
	12.181V	5.027V	3.314V	5.012V	1004.669				53.48°C	114.55V
100%	74.644A	8.956A	8.964A	3.005A	999.366	88.653%	1020	27.7	45.27°C	0.993
	12.187V	5.025V	3.313V	4.992V	1127.276				55.29°C	114.5V
110%	82.139A	9.958A	10.057A	3.01A	1100.001	87.592%	1522	39.3	46.98°C	0.994
	12.195V	5.021V	3.311V	4.985V	1255.825				57.91°C	114.46V
CL1	0.115A	14.992A	14.95A	0A	126.309	83.029%	712	15.9	41.33°C	0.979
	12.226V	5.023V	3.318V	5.112V	152.127				46.83°C	114.81V
CL2	0.113A	24.866A	0A	0A	126.249	81.777%	893	23.3	40.89°C	0.976
	12.218V	5.021V	3.321V	5.114V	154.383				47.9°C	114.81V
CL3	0.113A	0A	24.808A	0A	83.886	75.203%	893	23.3	41.69°C	0.969
	12.208V	5.041V	3.326V	5.114V	111.548				50.79°C	114.84V
CL4	82.136A	0A	0A	0A	999.865	89.323%	1005	27.2	46.53°C	0.992
	12.173V	5.045V	3.325V	5.064V	1119.366				57.49°C	114.52V

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%	6.432A	1.98A	1.982A	0.981A	99.986	86.524%	0	<6.0	44.3°C	0.859
	12.187V	5.049V	3.33V	5.096V	115.558				40.08°C	229.85V
20%	13.868A	2.973A	2.974A	1.18A	199.933	91.714%	0	<6.0	45.02°C	0.933
	12.189V	5.046V	3.328V	5.086V	217.998				40.45°C	229.83V
30%	21.691A	3.47A	3.473A	1.38A	299.98	93.336%	711	15.9	41.48°C	0.956
	12.168V	5.043V	3.326V	5.075V	321.399				46.56°C	229.82V
40%	29.460A	3.967A	3.971A	1.58A	399.507	93.779%	707	15.7	41.77°C	0.966
	12.162V	5.041V	3.324V	5.064V	426.011				47.29°C	229.8V
50%	36.902A	4.962A	4.967A	1.782A	499.241	93.752%	702	15.5	42.05°C	0.973
	12.160V	5.038V	3.322V	5.052V	532.515				48.06°C	229.79V
60%	44.391A	5.959A	5.964A	1.984A	599.782	93.544%	697	15.1	42.65°C	0.976
	12.164V	5.035V	3.32V	5.041V	641.176				49.18°C	229.77V
70%	51.807A	6.956A	6.963A	2.187A	699.528	93.184%	776	18.9	43.38°C	0.979
	12.168V	5.032V	3.318V	5.03V	750.698				50.47°C	229.75V
80%	59.267A	7.954A	7.961A	2.291A	799.571	92.758%	851	22.0	43.57°C	0.981
	12.177V	5.029V	3.316V	5.021V	861.986				51.62°C	229.74V
90%	67.070A	8.455A	8.447A	2.395A	899.361	92.372%	932	24.6	44.67°C	0.983
	12.180V	5.026V	3.315V	5.012V	973.625				53.68°C	229.72V
100%	74.648A	8.957A	8.964A	3.006A	999.376	91.852%	1028	27.9	45.9°C	0.984
	12.187V	5.024V	3.313V	4.992V	1088.017				55.92°C	229.7V
110%	82.158A	9.959A	10.056A	3.01A	1099.992	91.269%	1533	39.5	46.72°C	0.985
	12.192V	5.021V	3.311V	4.984V	1205.214				57.62°C	229.69V
CL1	0.115A	14.994A	14.948A	0A	126.31	84.381%	715	16.2	42.29°C	0.894
	12.228V	5.023V	3.318V	5.112V	149.689				47.77°C	229.85V
CL2	0.113A	24.871A	0A	0A	126.249	82.861%	899	23.6	39.3°C	0.896
	12.213V	5.02V	3.32V	5.113V	152.36				46.35°C	229.84V
CL3	0.113A	0A	24.804A	0A	83.886	76.076%	898	23.5	41.11°C	0.852
	12.205V	5.04V	3.326V	5.113V	110.265				50.12°C	229.85V

CL4	82.168A	0A	0A	0A	999.946	92.411%	1003	27.1	44.92°C	0.983
	12.169V	5.043V	3.324V	5.063V	1082.073				55.89°C	229.7V

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	1.232A	0.495A	0.495A	0.195A	19.991	76.024%	0	<6.0	39.98°C	0.839
	12.053V	5.055V	3.333V	5.117V	26.298				36.93°C	114.85V
40W	2.710A	0.693A	0.693A	0.293A	39.993	83.227%	0	<6.0	40.6°C	0.923
	12.061V	5.053V	3.332V	5.114V	48.055				37.32°C	114.84V
60W	4.151A	0.89A	0.891A	0.391A	59.993	82.532%	0	<6.0	42.69°C	0.954
	12.171V	5.052V	3.331V	5.111V	72.689				38.96°C	114.84V
80W	5.608A	1.088A	1.089A	0.489A	79.93	84.453%	0	<6.0	43.39°C	0.966
	12.180V	5.052V	3.331V	5.108V	94.643				39.44°C	114.83V

The results above are not used in the certification process

230V

□□	12V	5V	3.3V	5VSB	DC/AC (□)	□□	□□□ (RPM)	□□□□□ (dB[A])	□□ (□□ /□□)	PF/AC □□
20W	1.232A	0.495A	0.495A	0.195A	19.992	76.262%	0	<6.0	39.8°C	0.48
	12.052V	5.054V	3.332V	5.117V	26.222				36.69°C	229.88V
40W	2.710A	0.693A	0.693A	0.293A	39.993	83.571%	0	<6.0	40.83°C	0.659
	12.060V	5.053V	3.332V	5.114V	47.858				37.47°C	229.87V
60W	4.151A	0.891A	0.891A	0.391A	59.994	82.962%	0	<6.0	41.69°C	0.763
	12.172V	5.052V	3.331V	5.111V	72.317				38.17°C	229.86V
80W	5.609A	1.089A	1.09A	0.489A	79.932	85.26%	0	<6.0	42.58°C	0.821
	12.177V	5.051V	3.331V	5.108V	93.749				38.8°C	229.86V

The results above are not used in the certification process



115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	15.81mV	11.08mV	14.93mV	14.88mV	Pass
20% Load	18.77mV	13.81mV	17.03mV	14.88mV	Pass
30% Load	24.35mV	13.96mV	16.83mV	24.32mV	Pass
40% Load	20.51mV	14.11mV	16.98mV	22.99mV	Pass
50% Load	20.77mV	16.06mV	17.44mV	23.40mV	Pass
60% Load	20.87mV	15.24mV	17.55mV	23.19mV	Pass
70% Load	21.59mV	16.32mV	18.06mV	24.94mV	Pass
80% Load	20.51mV	16.21mV	18.98mV	23.50mV	Pass
90% Load	19.90mV	17.25mV	20.01mV	23.29mV	Pass
100% Load	30.50mV	20.56mV	22.23mV	27.02mV	Pass
110% Load	29.45mV	20.01mV	23.03mV	26.83mV	Pass
Crossload1	21.26mV	17.59mV	21.29mV	29.34mV	Pass
Crossload2	19.64mV	20.68mV	22.93mV	27.81mV	Pass
Crossload3	18.77mV	16.93mV	21.91mV	29.55mV	Pass
Crossload4	28.43mV	18.19mV	20.44mV	27.77mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	18.31mV	13.40mV	18.21mV	15.70mV	Pass
20% Load	18.00mV	13.55mV	15.85mV	14.21mV	Pass
30% Load	25.99mV	14.11mV	15.80mV	23.34mV	Pass
40% Load	20.00mV	14.58mV	17.29mV	23.04mV	Pass
50% Load	19.69mV	15.09mV	17.34mV	23.50mV	Pass
60% Load	20.36mV	14.88mV	17.08mV	23.76mV	Pass

