MICRONICS

Micronics Classic II Full Change 500W

Serial Number 2105CL2F0500PA00001

Lab ID MC50001825

Certification ID 251825

Test Result Report ID: 21PS1825A

Certificate Issue Date: Apr 2, 2021

230V

Scheme: ETA-EMI PSU



230V



Scheme: LAMBDA PSU



Aristeidis Bitziopoulos, Certification Body General Manager

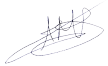
General Information

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	Micronics
Model	Classic II Full Change 500W
OEM/ODM	Sirfa (Dong Guan) Electronic
Serial Number	2105CL2F0500PA00001
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	200-240
Rated Current (Arms)	6.3

Rated Frequency (Hz)	50-60
Rated Power (W)	500
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fixed cables
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Sleeve Bearing Fan (PY-1225M12S)
Semi-Passive Operation	✓
Cybenetics Testing Information	
Lab ID	MC50001825
Date of receipt	Mar 26, 2021
Testing Date	Apr 2, 2021
Report Issued Date	Apr 2, 2021
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors
(Non-accredited measurements)

Captive Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (550mm)	1	1	18-22AWG	No
8 pin EPS12V (620mm) / 4 pin EPS12V (+150mm)	1	1 / 1	18AWG	No
6+2 pin PCIe (430mm+150mm)	1	2	18AWG	No
SATA (440mm+150mm+150mm)	2	6	18AWG	No
4-pin Molex (440mm+150mm+150mm)	1	3	18AWG	No

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	41.6	3	0.3
	Watts	105		500	15	3.6
Total Max. Power (W)		500				

Parts Description

General Data	-
Manufacturer (OEM)	Sirfa (Dong Guan) Electronic
PCB Type	Single Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV, 1x MPS HF81 (Discharge IC)
Inrush Protection	NTC Thermistor SCK-1R38 (1.3Ohm)
Bridge Rectifier(s)	1x GBU1006 (600V, 3A @ 100°C w/o heatsink)
APFC MOSFETs	1x Infineon IPA50R280CE (500V, 11.4A @ 100°C, Rds(on): 0.28Ohm)
APFC Boost Diode	1x SI8U600F
Bulk Cap(s)	1x Teapo (400V, 390uF, 105°C, LE)
Main Switchers	2x Champion GPT13N50D (500V, 13A, Rds(on): 0.49Ohm)
PFC / PWM Combo Controller	Champion CM6800UX
Topology	Primary side: APFC, Double Forward Secondary side: Passive Rectification (+12V rail) & DC-DC converters (5V & 3.3V rails)
Secondary Side	-
+12V SBRs	3x MBR3060CT (60V, 30A @ 100°C)
5V & 3.3V	DC-DC Converters: 4x Infineon BSC0906NS (30V, 18A, Rds(on): 0.295Ohm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytic: 9x Teapo (1-3,000h @ 105°C, SC), 2x Teapo (2,000h @ 105°C, SH) Polymer: 3x G-Luxon
Supervisor IC	Grenergy GR8313 (OVP, UVP, SCP, PG)
Fan Model	Poweryear PY-1225M12S (120mm, 12V, 0.26A, Sleeve Bearing Fan)
5VSB Circuit	-
Rectifier	1x PSA04N70 FET, 1x PS1045 SBR

Standby PWM Controller	SI8016HSP8

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 230V

Accredited		
Average Efficiency (>1450 load combinations)		84.231%
Average Noise Output (>1450 Load Combinations)		34.02dBA
Average PF (>1450 Load Combinations)		0.950
Efficiency With 10W (≤500W) or 2% (>500W) Load		-
Standby Power Consumption		0.1624W
Non-Accredited		
12V Ripple (Full Load)		22.11mV
5V Ripple (Full Load)		25.07mV
3.3V Ripple (Full Load)		20.74mV
5VSB Ripple (Full Load)		20.36mV
12V Load Regulation		1.08%
5V Load Regulation		3.24%
3.3V Load Regulation		4.33%
5VSB Load Regulation		4.58%
Inrush Current		48.380A
Hold-Up Time & PWR_OK Signal		18.70ms
AC Loss to PWR_OK Hold Up Time		16.00ms
PWR_OK Inactive to DC Loss Delay		2.70ms
PSU Timings: T1 (20% / 100%)	64.0ms	62.0ms

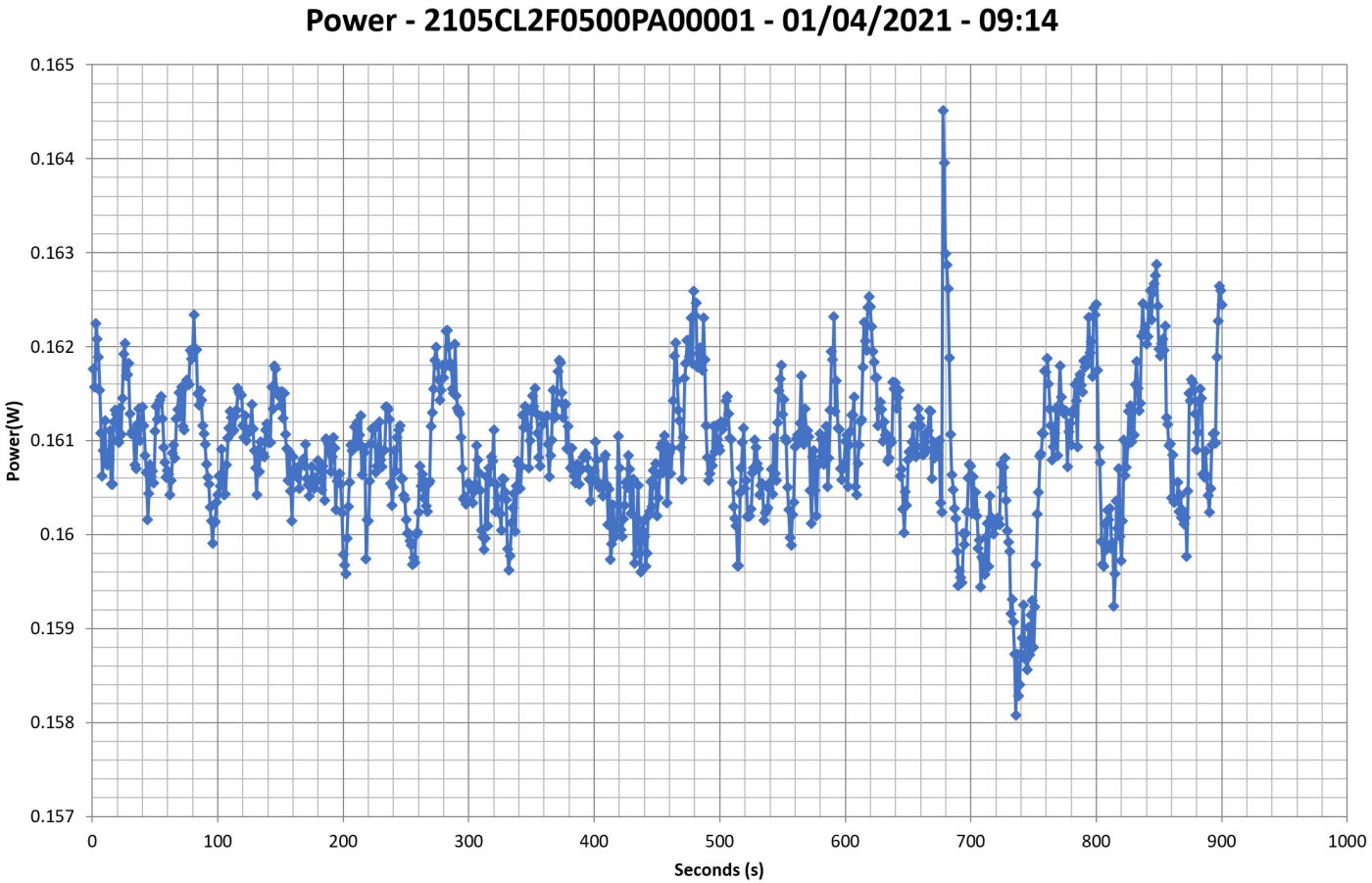
PSU Timings: T3 (20% / 100%)	126.0ms	125.0ms
OPP (0.00°C / 0.00°C)	-	-

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	18.7
AC Loss to PWR_OK Hold Up Time (ms)	16
PWR_OK Inactive to DC Loss Delay (ms)	2.7

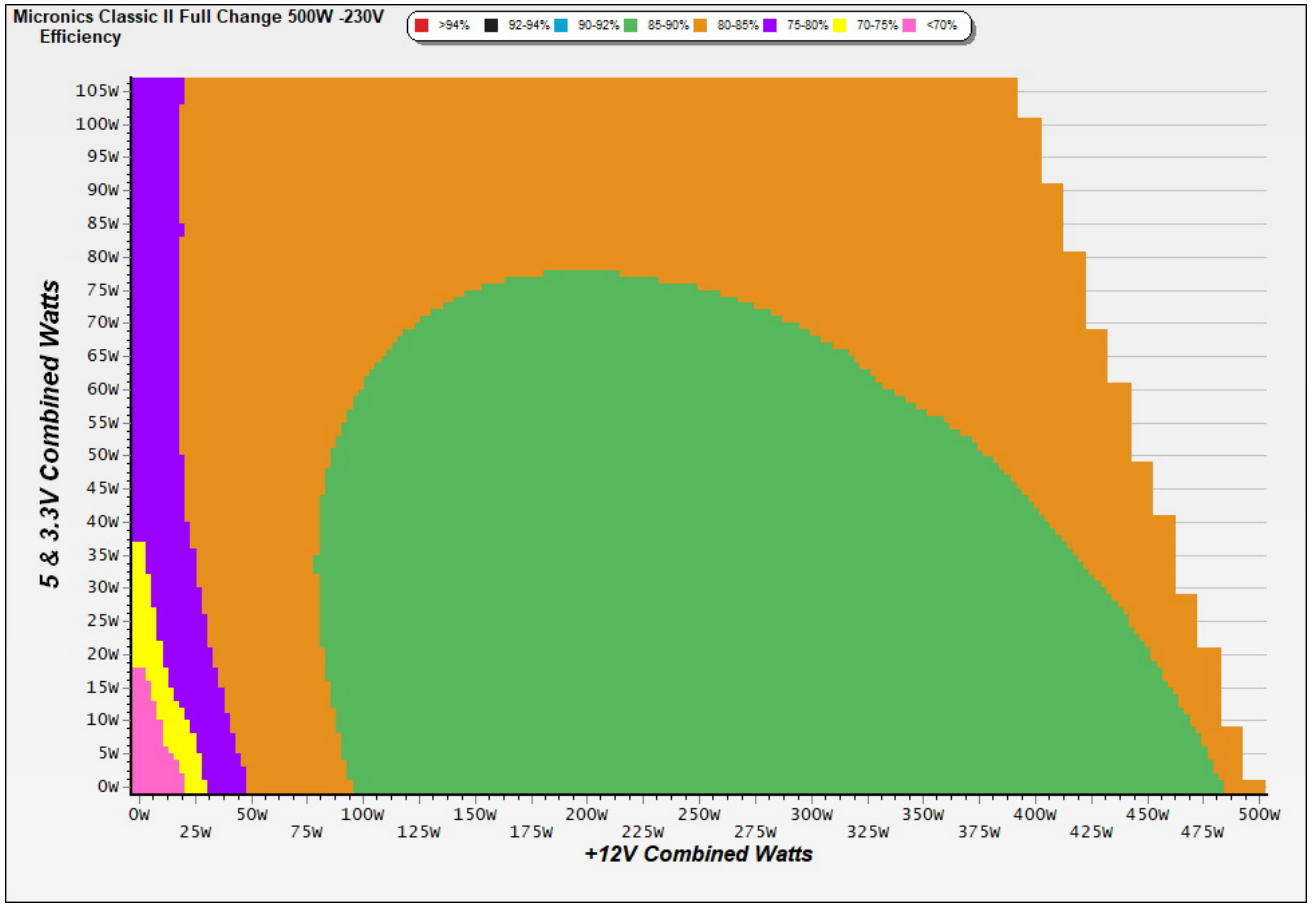
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Graphs 230V



Efficiency Graph

230V

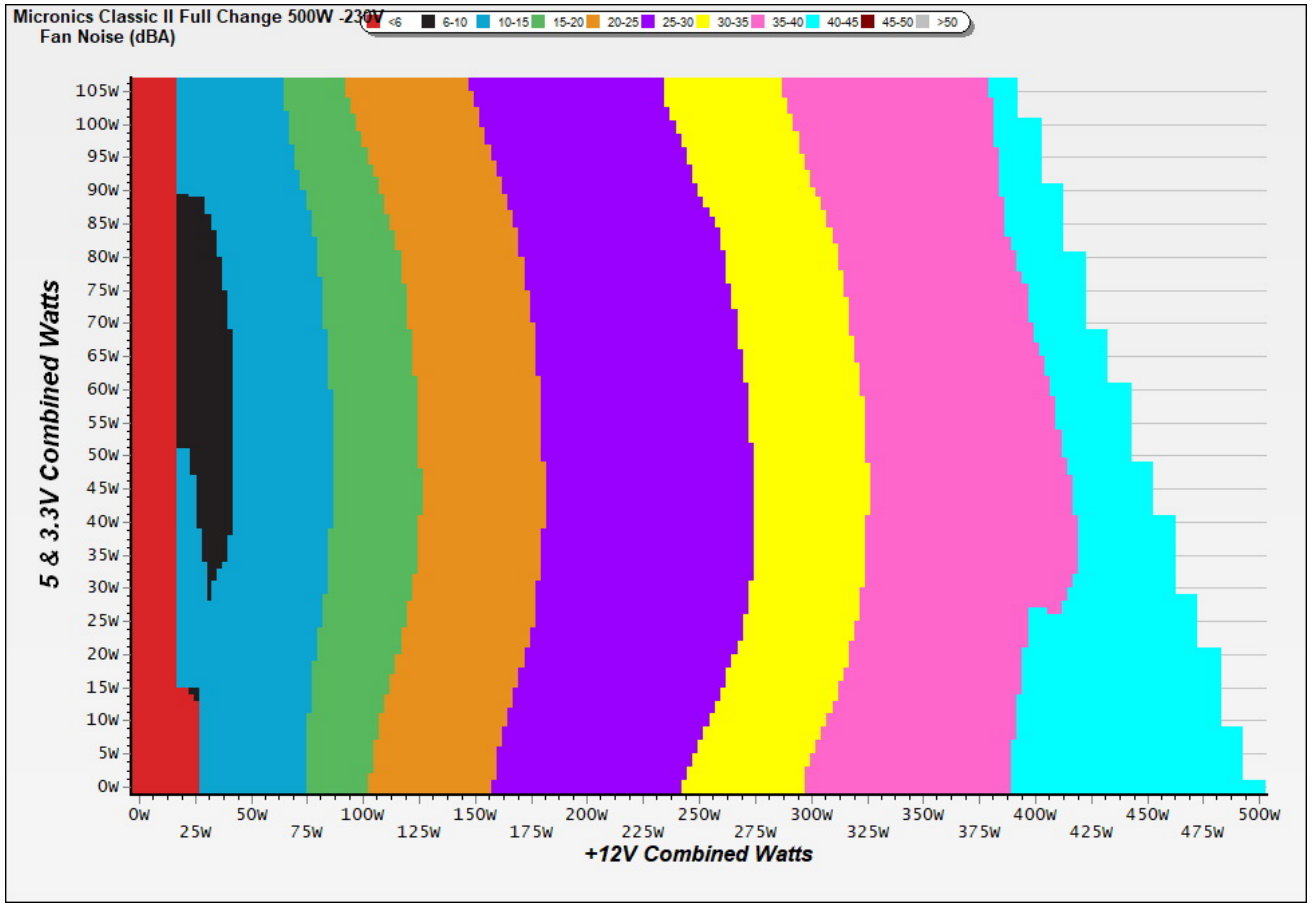


INFO

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

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

Noise under high ambient temperature (indicative)

230V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	440 RPM · 11.3 dB(A) · 34.2 °C	440 RPM · 11.3 dB(A) · 34.2 °C	**+0.0 dB(A)**
20%	548 RPM · 14.9 dB(A) · 34.4 °C	548 RPM · 14.9 dB(A) · 34.4 °C	**+0.0 dB(A)**
50%	1013 RPM · 31.9 dB(A) · 36.5 °C	1013 RPM · 31.9 dB(A) · 36.5 °C	**+0.0 dB(A)**
100%	1735 RPM · 46.1 dB(A) · 39.3 °C	1735 RPM · 46.1 dB(A) · 39.3 °C	**+0.0 dB(A)**

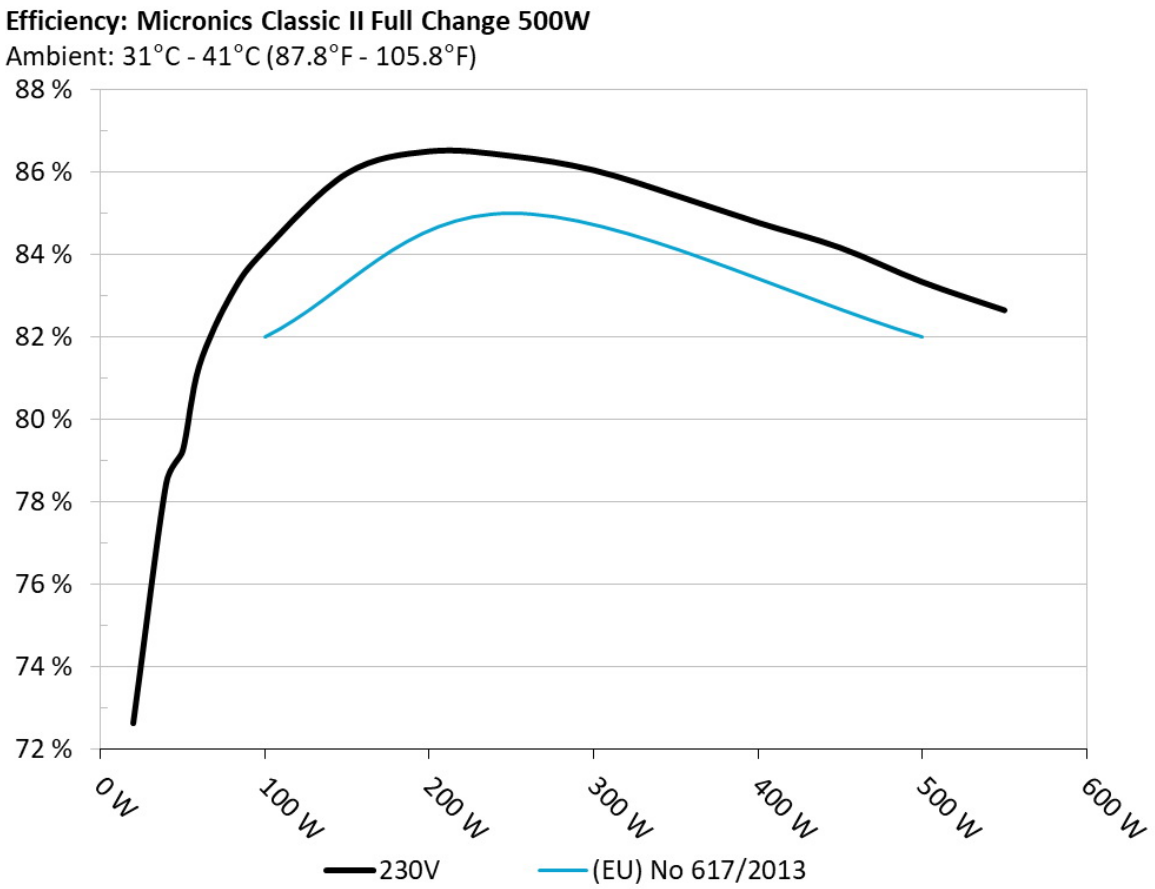
INFO

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

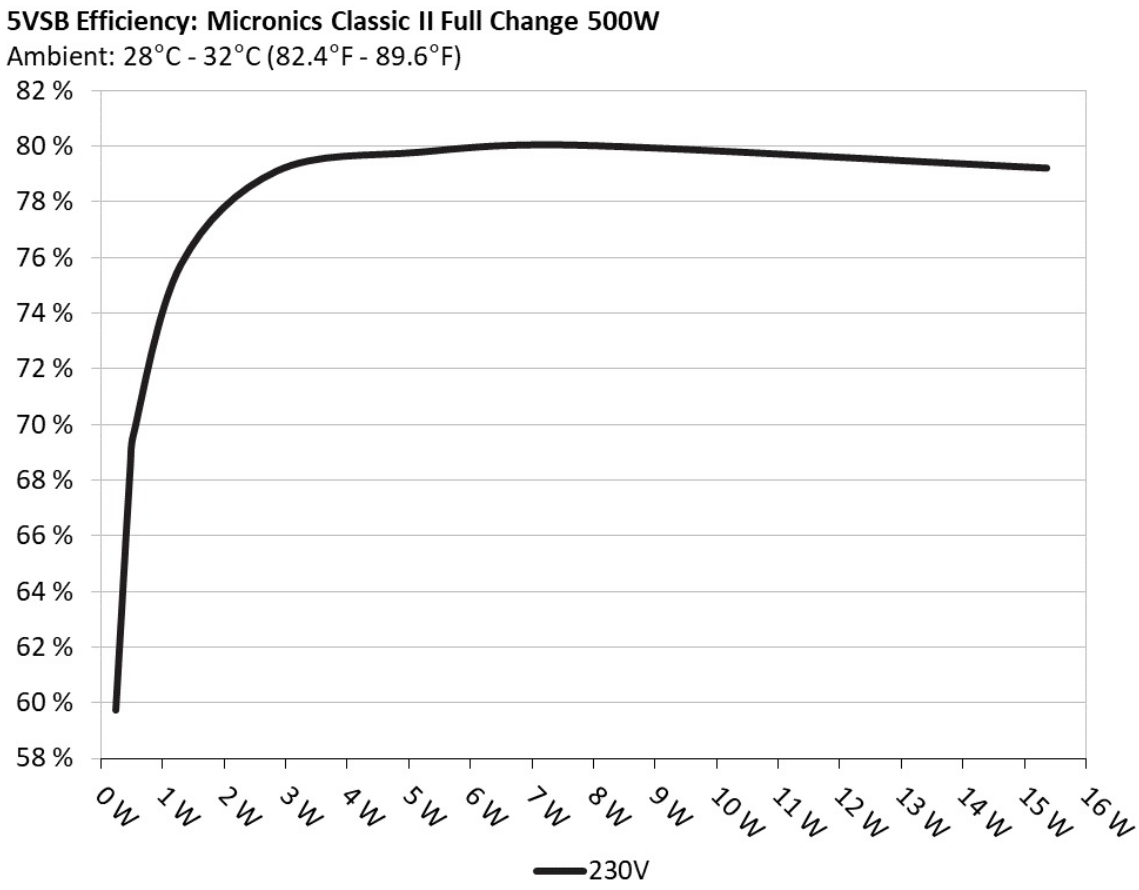
Efficiency under high ambient temperature



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



INFO

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

5VSB Efficiency (ERP LOT 3/6 & CEC) 230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.233	59.744%	0.016
	5.187V	0.390		230.20V

2	0.090A	0.467	68.475%	0.028
	5.186V	0.682		230.20V
3	0.550A	2.846	79.099%	0.131
	5.176V	3.598		230.20V
4	1.000A	5.164	79.778%	0.200
	5.166V	6.473		230.20V
5	1.500A	7.730	80.029%	0.250
	5.155V	9.659		230.20V
6	2.998A	15.352	79.208%	0.323
	5.120V	19.382		230.20V

Supplementary Tests (For Reference)

Typical Load Tests 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	2.338A	1.952A	1.988A	0.972A	49.986	79.237%	440	11.3	34.19°C	0.829
	12.139V	5.123V	3.323V	5.143V	63.084				38.58°C	230.31V
2	5.700A	2.938A	2.995A	1.171A	99.999	84.118%	548	14.9	34.39°C	0.914
	12.123V	5.104V	3.307V	5.122V	118.880				39.32°C	230.31V
3	9.405A	3.439A	3.506A	1.372A	149.946	85.978%	690	20.2	35.24°C	0.942
	12.110V	5.090V	3.294V	5.101V	174.400				40.72°C	230.31V
4	13.124A	3.940A	4.023A	1.575A	199.977	86.509%	860	27.0	35.53°C	0.955
	12.099V	5.075V	3.280V	5.079V	231.164				41.50°C	230.31V
5	16.511A	4.945A	5.055A	1.780A	250.003	86.395%	1013	31.9	36.53°C	0.962
	12.083V	5.056V	3.264V	5.056V	289.372				43.22°C	230.30V
6	19.896A	5.954A	6.097A	1.988A	299.952	86.051%	1222	37.3	36.86°C	0.966
	12.070V	5.039V	3.248V	5.031V	348.575				44.21°C	230.31V
7	23.303A	6.976A	7.150A	2.196A	350.013	85.434%	1334	39.8	37.38°C	0.970
	12.054V	5.020V	3.231V	5.008V	409.689				45.41°C	230.31V
8	26.701A	8.002A	8.211A	2.407A	399.797	84.778%	1454	41.8	38.24°C	0.973
	12.037V	5.001V	3.213V	4.984V	471.579				46.91°C	230.30V

9	30.525A	8.527A	8.751A	2.416A	449.523	84.173%	1605	44.4	38.37°C	0.975
	12.024V	4.984V	3.199V	4.966V	534.047				47.63°C	230.30V
10	34.128A	9.064A	9.329A	3.040A	499.552	83.338%	1735	46.1	39.26°C	0.976
	12.010V	4.964V	3.182V	4.933V	599.431				49.19°C	230.31V
11	38.326A	9.088A	9.369A	3.050A	549.566	82.652%	1805	47.1	40.84°C	0.977
	11.999V	4.952V	3.169V	4.917V	664.915				51.76°C	230.31V
CL1	0.116A	12.997A	12.997A	0.000A	109.303	78.647%	788	24.3	36.97°C	0.927
	12.083V	5.039V	3.263V	5.096V	138.979				43.14°C	230.31V
CL2	41.651A	0.998A	1.000A	1.000A	515.037	84.585%	1695	45.5	39.08°C	0.976
	12.047V	5.033V	3.224V	5.020V	608.902				49.41°C	230.31V

The results above are not used in the certification process

Light Load Tests 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.221A	0.485A	0.495A	0.193A	19.977	72.628%	0	<6.0	0.619
	12.150V	5.137V	3.336V	5.176V	27.506				230.32V
2	2.443A	0.974A	0.990A	0.387A	39.966	78.442%	0	<6.0	0.786
	12.145V	5.133V	3.331V	5.165V	50.950				230.31V
3	3.670A	1.462A	1.488A	0.582A	59.998	81.293%	449	11.3	0.854
	12.141V	5.127V	3.324V	5.151V	73.805				230.32V
4	4.892A	1.953A	1.991A	0.778A	79.950	83.060%	503	12.9	0.892
	12.133V	5.117V	3.317V	5.139V	96.256				230.32V

The results above are not used in the certification process

Ripple Measurements 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.60mV	15.30mV	11.40mV	9.90mV	Pass
20% Load	10.40mV	17.20mV	11.90mV	11.60mV	Pass
30% Load	12.30mV	18.20mV	12.30mV	12.20mV	Pass
40% Load	13.20mV	18.90mV	13.10mV	13.10mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
50% Load	14.50mV	19.30mV	12.90mV	13.10mV	Pass
60% Load	14.80mV	20.10mV	12.80mV	13.30mV	Pass
70% Load	16.60mV	21.50mV	13.60mV	15.10mV	Pass
80% Load	18.60mV	21.40mV	18.80mV	16.70mV	Pass
90% Load	19.10mV	24.30mV	18.70mV	17.10mV	Pass
100% Load	22.10mV	25.10mV	20.70mV	20.40mV	Pass
110% Load	24.40mV	26.40mV	20.80mV	20.10mV	Pass
Crossload1	14.00mV	22.90mV	19.10mV	23.30mV	Pass
Crossload2	21.40mV	21.70mV	15.00mV	14.30mV	Pass

The results above are not used in the certification process

Micronics Classic II Full Change 500W



Top side



Power specifications label

Cybenetics bietet freiwillige Zertifizierungsprogramme für Netzteile – ETA für Effizienz, LAMBDA für Lautstärke und SAFE für Sicherheit und korrekten Betrieb – sowie für Kühlprodukte mit DELTA für die Schalldämmung von Gehäusen und PHI für Luftstrom und statischen Druck von Lüftern