Super Flower Zillion 850W (ATX v3.1)

Serial Number -

Lab ID SF85002715

Certification ID 252715

Test Result Report ID: 25PS2715A

Certificate Issue Date: Jan 24, 2025

230V

Scheme: ETA-EMI PSU

230V

Scheme: LAMBDA PSU

Outside Validation Scope

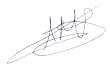
General Information

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	Super Flower
Model	Zillion 850W (ATX v3.1)
OEM/ODM	Zhong Yuan Power
Serial Number	-
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	200-240

Rated Current (Arms)	6
Rated Frequency (Hz)	50-60
Rated Power (W)	850
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 (ZFH122512H)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	SF85002715
Date of receipt	Dec 16, 2024
Testing Date	Jan 20, 2025
Report Issued Date	Jan 24, 2025
Engineer Name	Ioannis Kalyviotis
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 (610mm)	1	1	18AWG	No
4+4 pin EPS12V (665mm)	2	2	18AWG	No
6+2 pin PCIe (610mm+120mm)	2	4	18AWG	No
12+4 pin PCIe (620mm) (600W)	1	1	16-26AWG	No
SATA (605mm+145mm+145mm+145mm)	2	8	18AWG	No

4-pin Molex (605mm+150mm+150mm+150mm)	1	4	18AWG	No
Modular Cables				
AC Power Cord (1380mm) - C13 coupler	1	1	18AWG	-

Protection Features

Over Power Protection	✓
Over Current (+12V) Protection	✓
Over Temperature Protection	✓
Short Circuit Protection	✓
Surge Protection	✓
Inrush Current Protection	✓
Fan Failure Protection	✗

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	18	18	70.8	3	0.3
	Watts	100		849.6	15	3.6
Total Max. Power (W)		850				

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	✓
ATX v3.1 PSU Power Excursion	✓

Performance Summary 230V

Accredited		
Average Efficiency (>1450 load combinations)		88.497%
Average Noise Output (>1450 Load Combinations)		38.72dBA
Average PF (>1450 Load Combinations)		0.957
Efficiency With 10W (≤500W) or 2% (>500W) Load		65.532%
Standby Power Consumption		0.1154W
Non-Accredited		
12V Ripple (Full Load)		81.30mV
5V Ripple (Full Load)		29.81mV
3.3V Ripple (Full Load)		42.63mV
5VSB Ripple (Full Load)		22.76mV
12V Load Regulation		0.81%
5V Load Regulation		1.73%
3.3V Load Regulation		2.76%
5VSB Load Regulation		5.05%
Inrush Current		63.780A
12V Transient Response (200%)		11.10V
5V Transient Response (200%)		4.855V
3.3V Transient Response (200%)		3.181V
5VSB Transient Response (200%)		5.040V
Hold-Up Time & PWR_OK Signal		17.60ms
AC Loss to PWR_OK Hold Up Time		15.90ms
PWR_OK Inactive to DC Loss Delay		1.70ms
PSU Timings: T1 (20% / 100%)	120.0ms	116.0ms
PSU Timings: T3 (20% / 100%)	123.0ms	123.0ms
12V OCP (30.4°C / 43.0°C)	85.80A (121.19%), 12.047V	79.20A (111.86%), 12.048V
5V OCP (30.4°C / 43.0°C)	25.4A (141.11%), 4.947V	25.4A (141.11%), 4.946V
3.3V OCP (30.4°C / 43.0°C)	25.4A (141.11%), 3.268V	25.4A (141.11%), 3.266V
5VSB OCP (30.4°C / 43.0°C)	3.9A (130.00%), 4.942V	3.9A (130.00%), 4.933V
OPP (27.15°C / 43.56°C)	118.54%	109.71%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	17.6
AC Loss to PWR_OK Hold Up Time (ms)	15.9
PWR_OK Inactive to DC Loss Delay (ms)	1.7

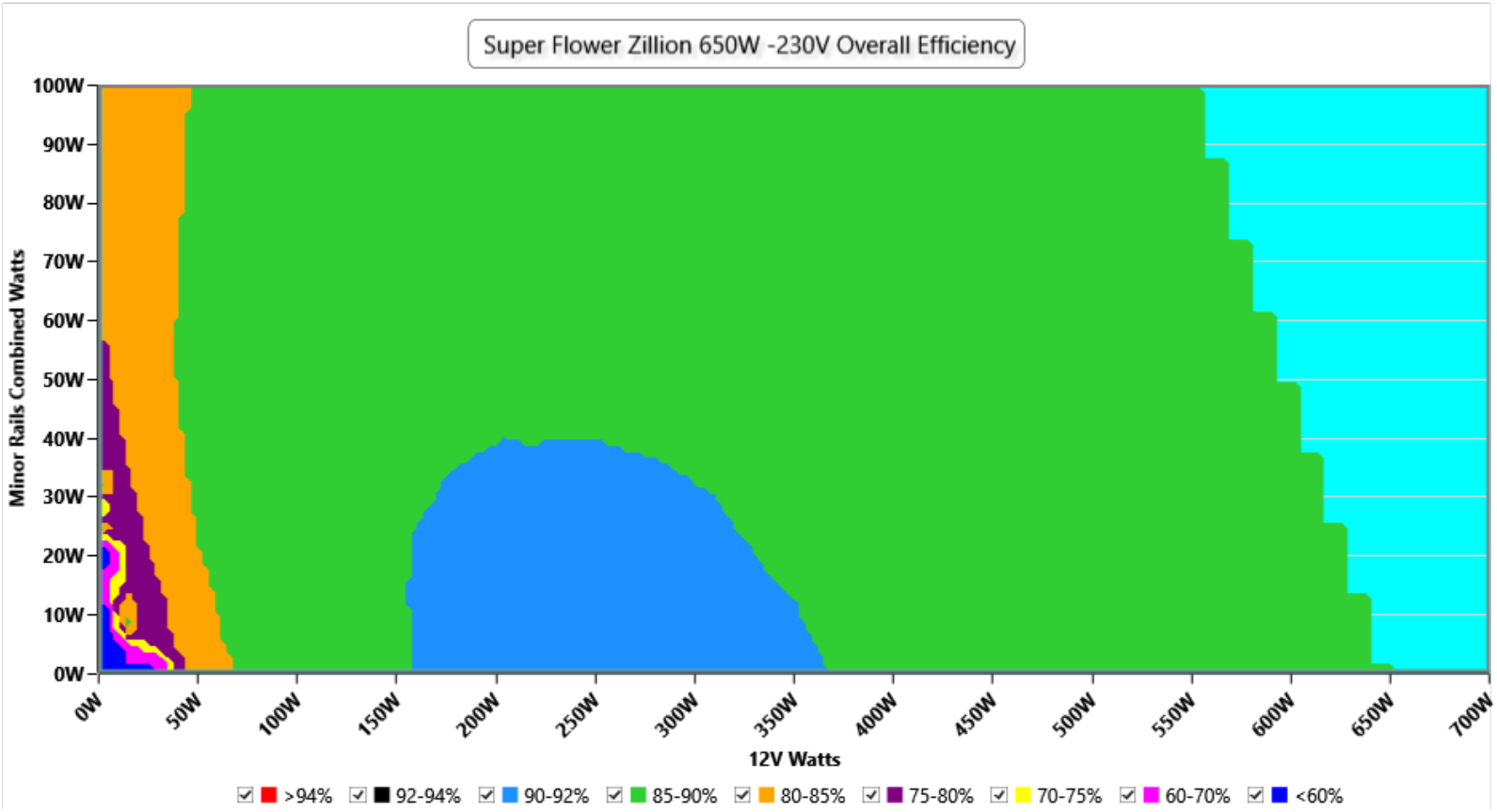
Stromverbrauch im Ruhezustand

Tables 230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.99 V	230.87 V	227.70 V	231.05 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	0.27 %	2.00 %	PASS
Real Power:	0.115 W	0.062 W	N/A	0.195 W	N/A	N/A
Apparent Power:	24.028 W	23.792 W	N/A	24.260 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

230V

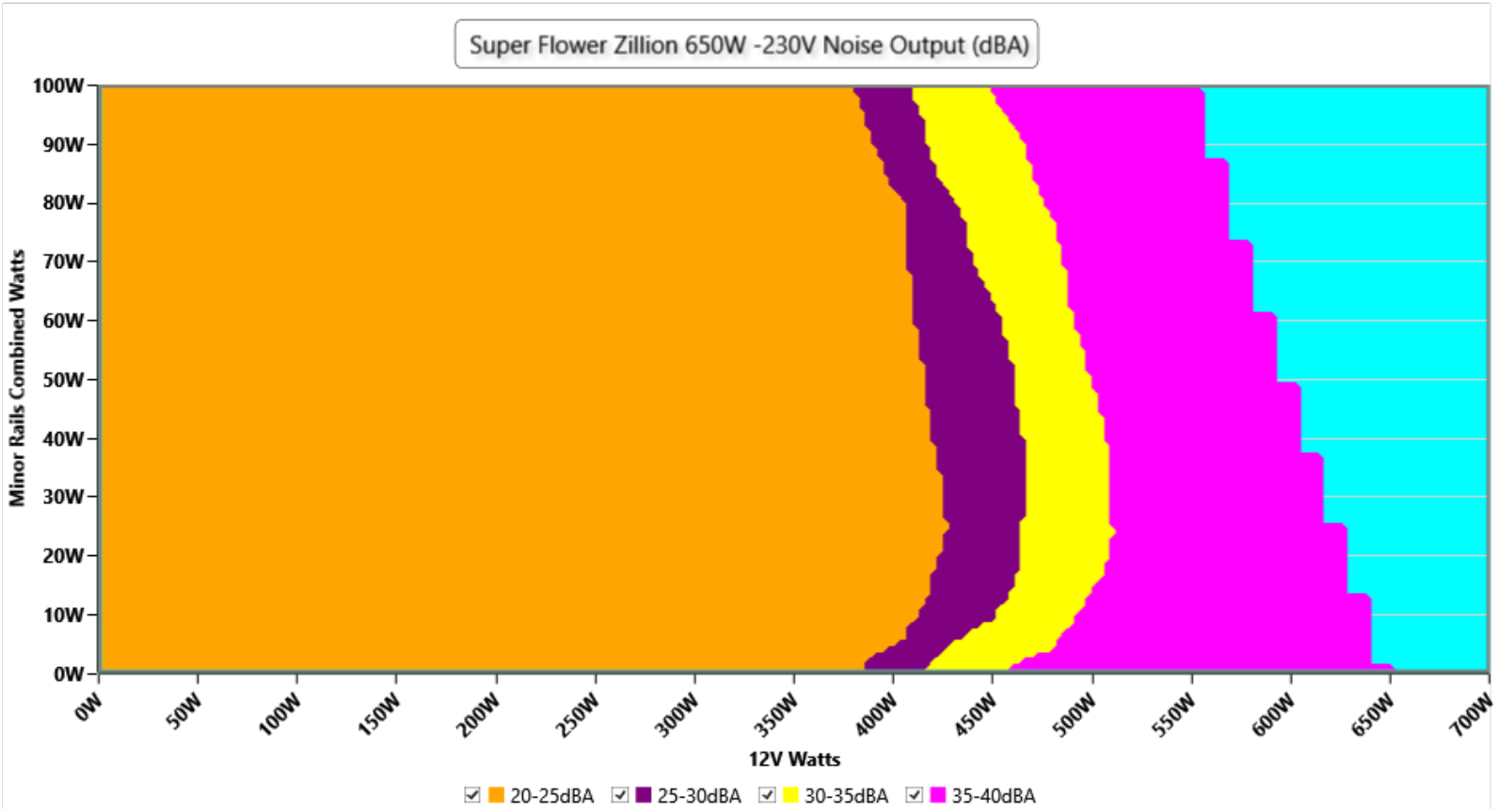


INFO

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%	0 RPM · <6.0 dB(A) · 30.3 °C	980 RPM · 25.0 dB(A) · 40.1 °C	fan starts (<6.0 → 25.0)
20%	0 RPM · <6.0 dB(A) · 30.5 °C	977 RPM · 24.9 dB(A) · 40.6 °C	fan starts (<6.0 → 24.9)
50%	973 RPM · 24.8 dB(A) · 30.4 °C	1811 RPM · 42.8 dB(A) · 42.4 °C	**+18.0 dB(A)**
100%	2175 RPM · 45.8 dB(A) · 30.3 °C	2191 RPM · 46.5 dB(A) · 45.4 °C	**+0.7 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

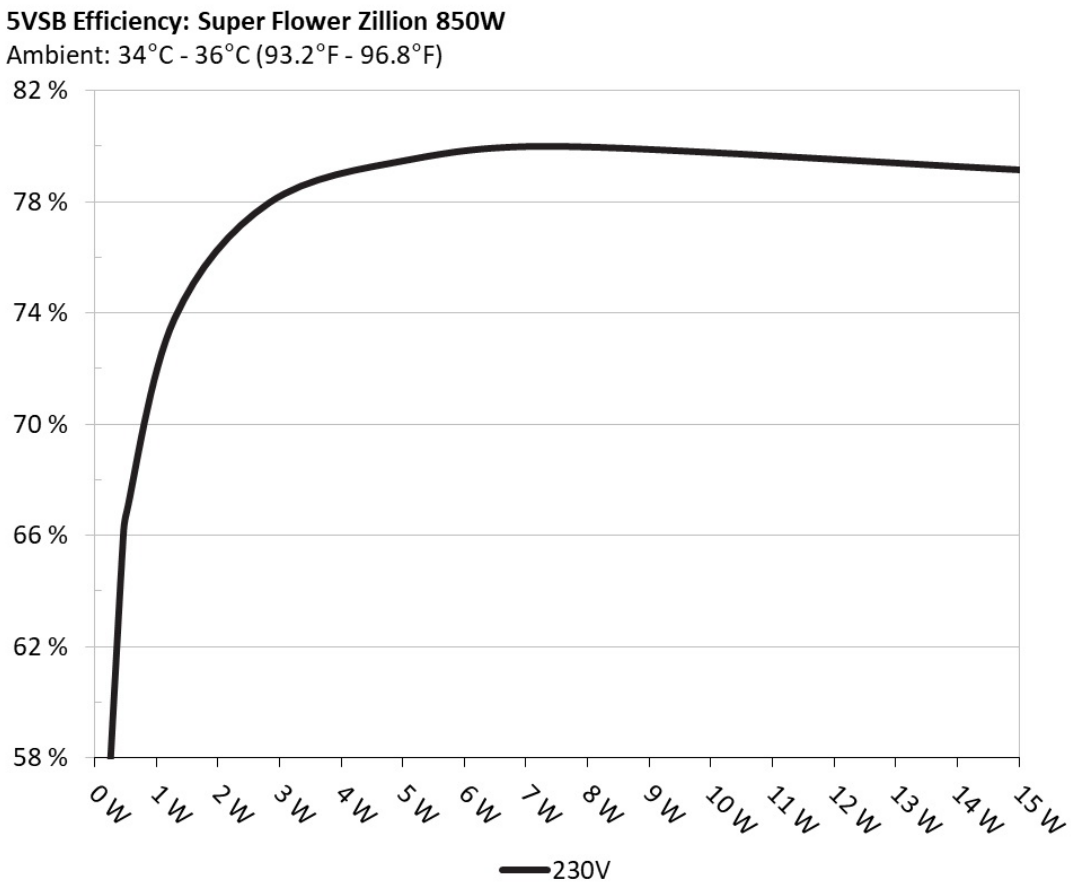
Efficiency under high ambient temperature



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**	0.233W	56.804%	0.017
	5.186V	0.414W		229.89V

2	**0.09A**	0.467W	65.929%	0.028
	5.184V	0.712W		229.89V
3	**0.55A**	2.836W	77.97%	0.132
	5.157V	3.637W		229.89V
4	**1A**	5.131W	79.53%	0.205
	5.13V	6.453W		229.89V
5	**1.5A**	7.651W	79.996%	0.248
	5.1V	9.566W		229.88V
6	**3A**	15.02W	79.156%	0.332
	5.007V	18.975W		229.88V

Protection Features

OCP (Normal @ 30.4°C)	12V: 85.8A (121.19%), 12.047V 5V: 25.4A (141.11%), 4.947V 3.3V: 25.4A (141.11%), 3.268V 5VSB: 3.9A (130%), 4.942V
OCP (Hot @ 43°C)	12V: 79.2A (111.86%), 12.048V 5V: 25.4A (141.11%), 4.946V 3.3V: 25.4A (141.11%), 3.266V 5VSB: 3.9A (130%), 4.933V
OPP (Normal @ 27.1°C)	1007.59W (118.54%)
OPP (Hot @ 43.6°C)	932.54W (109.71%)
OTP	✓ (110°C @ Heat Sink)
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

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
10%	**5.240A**	**2A**	**1.977A**	**0.976A**	84.994	86.251%	980	25	40.06°C	0.833
	12.099V	5V	3.338V	5.121V	98.54				41.76°C	229.87V
20%	**11.499A**	**3.005A**	**2.974A**	**1.176A**	169.919	90.127%	977	24.9	40.57°C	0.938
	12.090V	4.991V	3.329V	5.102V	188.536				42.5°C	229.86V
30%	**18.116A**	**3.51A**	**3.477A**	**1.377A**	254.922	90.98%	1017	26.4	41.12°C	0.965
	12.082V	4.985V	3.322V	5.083V	280.196				43.92°C	229.85V
40%	**24.750A**	**4.017A**	**3.982A**	**1.58A**	340.005	90.802%	1551	38.5	41.57°C	0.975
	12.073V	4.978V	3.315V	5.064V	374.447				43.69°C	229.83V
50%	**31.024A**	**5.031A**	**4.992A**	**1.784A**	424.766	90.314%	1811	42.8	42.41°C	0.979
	12.063V	4.969V	3.305V	5.046V	470.314				43.5°C	229.81V
60%	**37.294A**	**6.049A**	**6.008A**	**1.99A**	509.321	89.727%	2066	46.4	42.54°C	0.982
	12.053V	4.96V	3.296V	5.026V	567.64				44.88°C	229.8V
70%	**43.637A**	**7.07A**	**7.03A**	**2.198A**	594.629	89.008%	2193	46.6	43.05°C	0.984
	12.043V	4.951V	3.286V	5.005V	668.063				45.94°C	229.78V
80%	**49.984A**	**8.093A**	**8.058A**	**2.304A**	679.449	88.236%	2197	46.7	43.54°C	0.985
	12.035V	4.941V	3.276V	4.991V	770.036				47.2°C	229.77V
90%	**56.751A**	**8.611A**	**8.566A**	**2.412A**	764.88	87.351%	2192	46.5	44.22°C	0.986
	12.024V	4.934V	3.269V	4.976V	875.635				49.09°C	229.75V
100%	**63.281A**	**9.131A**	**9.109A**	**3.045A**	849.709	86.275%	2191	46.5	45.36°C	0.987
	12.010V	4.927V	3.26V	4.926V	984.882				51.4°C	229.73V
110%	**69.673A**	**10.165A**	**10.244A**	**3.049A**	934.267	85.376%	2194	46.6	46.49°C	0.987
	11.999V	4.918V	3.251V	4.92V	1094.294				58.73°C	229.72V
CL1	**0.115A**	**12.148A**	**12.077A**	**0A**	101.283	80.681%	1304	33.2	40.56°C	0.887
	12.086V	4.954V	3.287V	5.167V	125.537				43.81°C	229.87V
CL2	**0.114A**	**18.118A**	**0A**	**0A**	91.357	80.166%	990	25.5	40.11°C	0.867
	12.094V	4.966V	3.317V	5.173V	113.961				43.31°C	229.87V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL3	**0.114A**	**0A**	**18.05A**	**0A**	60.789	74.057%	975	24.8	40.83°C	0.787
	12.093V	4.975V	3.291V	5.172V	82.083				43.61°C	229.87V
CL4	**70.636A**	**0A**	**0A**	**0A**	849.466	87.305%	2211	47.2	45.07°C	0.987
	12.026V	4.972V	3.309V	5.131V	972.986				50.67°C	229.74V

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])	Temps (In/Out)	PF/AC Volts
20W	**1.226A**	**0.499A**	**0.493A**	**0.193A**	19.992	69.533%	946	23.9	36.28°C	0.498
	12.108V	5.012V	3.35V	5.175V	28.701				37.88°C	229.9V
40W	**2.700A**	**0.699A**	**0.69A**	**0.29A**	39.991	76.082%	972	24.7	37.19°C	0.618
	12.106V	5.009V	3.347V	5.168V	50.538				38.73°C	229.89V
60W	**4.174A**	**0.899A**	**0.888A**	**0.387A**	59.989	83.745%	973	24.8	38.13°C	0.741
	12.104V	5.007V	3.345V	5.16V	71.63				39.68°C	229.88V
80W	**5.644A**	**1.099A**	**1.086A**	**0.485A**	79.928	86.307%	974	24.8	39.38°C	0.816
	12.101V	5.005V	3.343V	5.153V	92.61				40.86°C	229.88V

The results above are not used in the certification process

Ripple Measurements 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	15.70mV	12.72mV	14.99mV	10.18mV	Pass
20% Load	15.30mV	13.03mV	16.47mV	10.54mV	Pass
30% Load	16.47mV	13.28mV	17.60mV	10.69mV	Pass
40% Load	17.29mV	12.98mV	18.77mV	10.49mV	Pass
50% Load	19.24mV	14.81mV	20.67mV	11.51mV	Pass
60% Load	26.65mV	15.58mV	22.97mV	12.33mV	Pass
70% Load	34.02mV	17.93mV	24.86mV	13.71mV	Pass
80% Load	43.79mV	21.10mV	32.23mV	14.68mV	Pass
90% Load	52.69mV	23.14mV	35.15mV	17.39mV	Pass

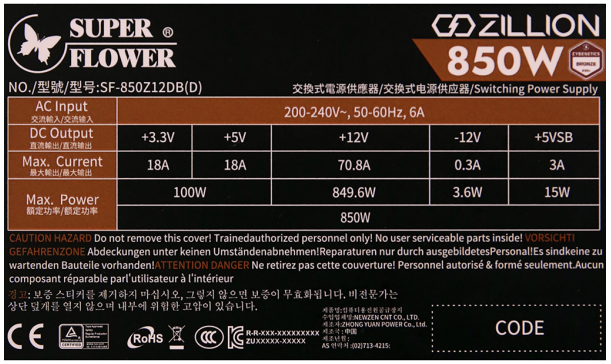
Test	12V	5V	3.3V	5VSB	Pass/Fail
100% Load	81.30mV	29.81mV	42.63mV	22.76mV	Pass
110% Load	92.29mV	32.91mV	51.24mV	23.40mV	Fail
Crossload1	20.12mV	18.49mV	28.00mV	18.16mV	Pass
Crossload2	19.54mV	20.59mV	16.27mV	18.62mV	Pass
Crossload3	17.40mV	14.20mV	30.28mV	16.73mV	Pass
Crossload4	76.92mV	23.03mV	33.77mV	24.82mV	Pass

The results above are not used in the certification process

Super Flower Zillion 850W (ATX v3.1)



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

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