

Anex

DeepCool DA500 (Sample #2)

Lab ID#: 545
Receipt Date: Nov 11, 2018
Test Date: Nov 16, 2018

Report:

Report Date: Nov 20, 2018

DUT INFORMATION

Brand	DeepCool
Manufacturer (OEM)	Channel Well Technology
Series	DA
Model Number	
Serial Number	DA500EU-2018-1806000398
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	4-8
Rated Frequency (Hz)	47-63
Rated Power (W)	500
Type	ATX12V
Cooling	120mm Rifle Bearing Fan (D12SM-12)
Semi-Passive Operation	X
Cable Design	Fixed cables

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	18	16	38	2.5	0.3
	Watts	110		456	12.5	3.6
Total Max. Power (W)		500				

CABLES AND CONNECTORS

Captive Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (470mm)	1	1	20AWG	No
4+4 pin EPS12V (580mm)	1	1	18AWG	No
6+2 pin PCIe (470mm+100mm)	1	2	18AWG	No
SATA (410mm+100mm+100mm)+4 pin Molex (+100mm)	1	4	18AWG	No
4 pin Molex (410mm+100mm)+SATA (+100mm+100mm)	2	2 / 2	18AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

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General Data	
Manufacturer (OEM)	CWT
Platform Model	GPT500S-A
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x DM chokes, 1x CAP004DG, 1x MOV
Inrush Protection	NTC Thermistor
Bridge Rectifier	GBU1006 (600V, 10A @ 100°C)
APFC MOSFET	Champion GP28S50G (500 V, 28 A @ 150 °C, 0.125 Ohm)
APFC Boost Diode	1x CREE C3D04060A (600V, 4A @ 155°C)
Hold-up Cap(s)	1x CapXon (400V, 270uF, 1000h @ 85 °C, LP)
Main Switchers	2x Silan SVF13N50F (500V, 10A @ 100°C, 0.52Ohm)
Combo APFC/PWM Controller	Champion CM6800TX & CM03X Green PFC controller
Topology	Primary side: Double Forward Secondary side: Passive Rectification & Group Regulation scheme
Secondary Side	
+12V MOSFETS	4x PFC PFR30L60CT (60V, 30A @ 50% Duty Cycle)
5V & 3.3V	5V: 1x PFC PFR30L45CT (45V, 30A @ 50% Duty Cycle) 3.3V: 1x PFC PFR30L30CT (30V, 30A @ 50% Duty Cycle)
Filtering Capacitors	Electrolytics: ChengX (2-4,000 @ 105°C, GR), 2x JunFu (2,000 @ 105°C, WG), 1x Nippon Chemi-Con in 5VSB circuit (16V, 1000uF, 4-10,000 @ 105°C, KY)
Supervisor IC	Infinno ST9S313A-DAG (OVP, UVP, SCP, PG)
Fan Model	Yate Loon D12SM-12 (120mm, 12V, 0.30A, 70.5CFM, 33 dBA, Sleeve Bearing)
5VSB Circuit	
Standby PWM Controller	Power Integrations TNY176PN

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	ErP Lot 6 2010: ✓, ErP Lot 6 2013: Partially ErP Lot 3 2014 & CEC: X
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	84.417%
Efficiency With 10W (≤500W) or 2% (>500W)	61.991
Average Efficiency 5VSB	73.949%
Standby Power Consumption (W)	0.0966131
Average PF	0.992
Avg Noise Output	27.02 dB(A)
Efficiency Rating (ETA)	BRONZE
Noise Rating (LAMBDA)	A-

TEST EQUIPMENT

Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Chroma 61604, Keysight AC6804B	
Power Analyzers	N4L PPA1530 x2, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 2015 THD 6.5 Digit	
Sound Analyzer	Bruel & Kjaer 2250-L G4	
Microphone	Bruel & Kjaer Type 4955-A, Bruel & Kjaer Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	12.20
AC Loss to PWR_OK Hold Up Time (ms)	8.30
PWR_OK Inactive to DC Loss Delay (ms)	3.90

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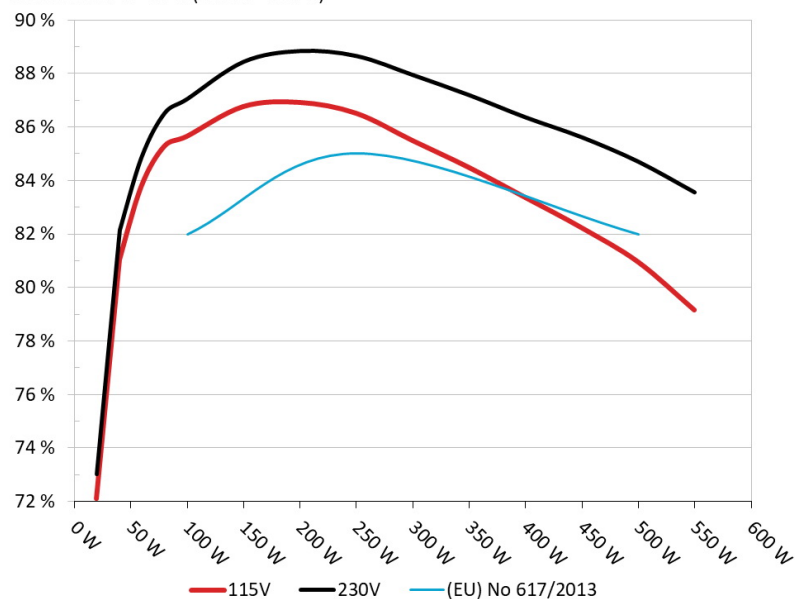
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: DeepCool DA500

Ambient: 34°C - 45°C (93.2°F - 113°F)



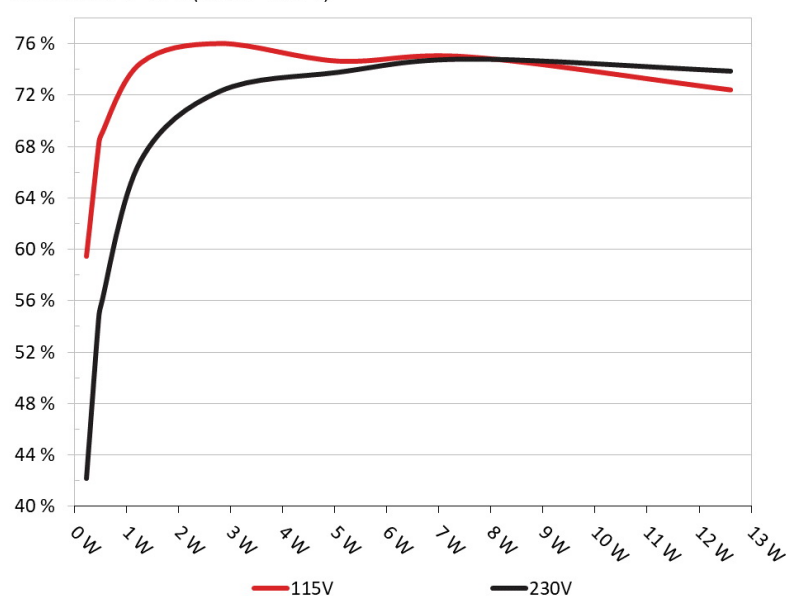
INFO

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

5VSB Efficiency: DeepCool DA500

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



INFO

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

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DeepCool DA500 (Sample #2)

5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229	59.481%	0.073
	5.094V	0.385		115.10V
2	0.090A	0.459	68.000%	0.120
	5.093V	0.675		115.10V
3	0.550A	2.796	76.040%	0.321
	5.083V	3.677		115.12V
4	1.000A	5.074	74.673%	0.371
	5.073V	6.795		115.11V
5	1.500A	7.595	74.998%	0.398
	5.063V	10.127		115.10V
6	2.500A	12.605	72.434%	0.429
	5.041V	17.402		115.10V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229	42.173%	0.032
	5.094V	0.543		230.26V
2	0.090A	0.459	54.448%	0.048
	5.093V	0.843		230.26V
3	0.550A	2.796	72.342%	0.181
	5.082V	3.865		230.25V
4	1.000A	5.073	73.821%	0.254
	5.073V	6.872		230.25V
5	1.500A	7.595	74.842%	0.297
	5.063V	10.148		230.25V
6	2.500A	12.604	73.906%	0.343
	5.041V	17.054		230.25V

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DeepCool DA500 (Sample #2)

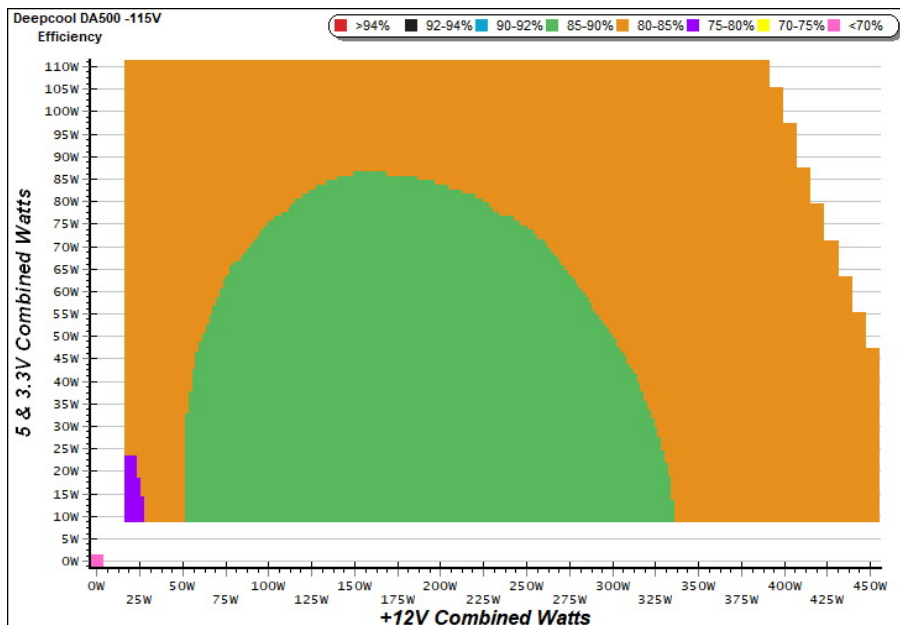
115V

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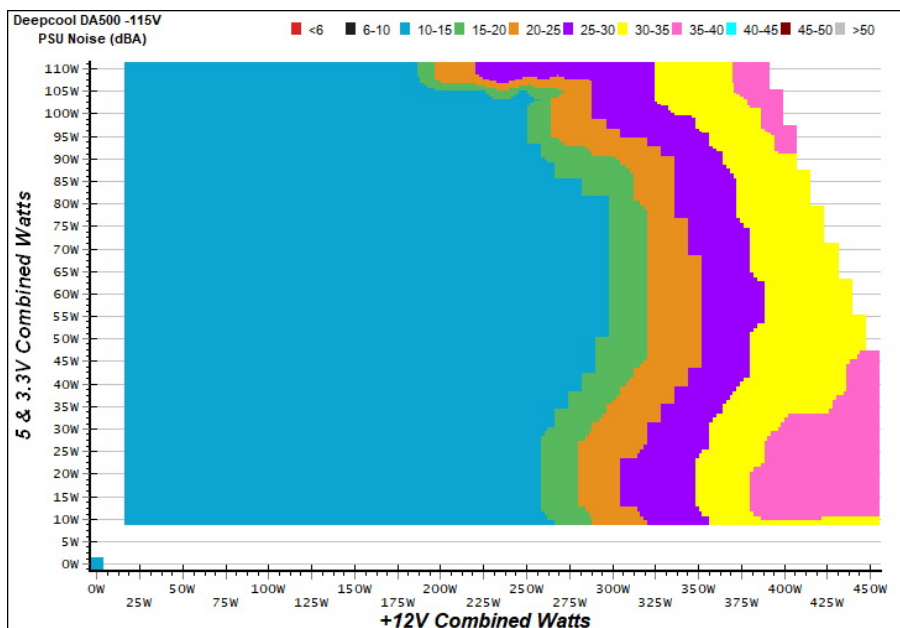
EFFICIENCY GRAPH 115V



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 115V



INFO

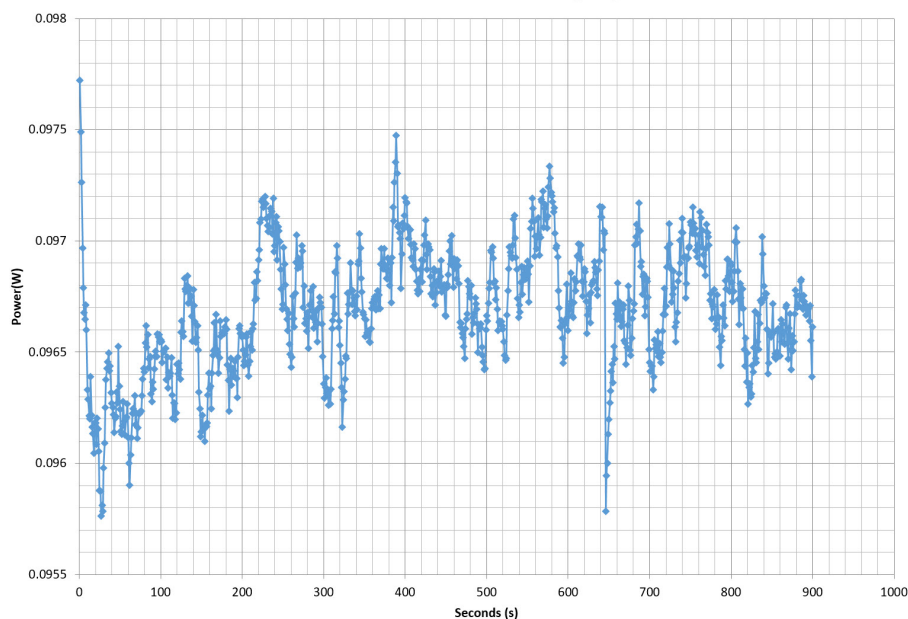
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - DA500EU-2018-1806000398 - 05/11/2018 - 11:09



INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

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DeepCool DA500 (Sample #2)

10-110% LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	2.346A	1.967A	1.946A	0.988A	49.575	81.046%	653	10.6	37.11°C	0.962
	11.927V	5.084V	3.388V	5.063V	61.169				40.15°C	115.34V
2	5.775A	2.956A	2.929A	1.188A	99.702	85.664%	648	10.5	37.91°C	0.975
	11.916V	5.072V	3.378V	5.051V	116.387				41.38°C	115.10V
3	9.560A	3.453A	3.409A	1.389A	149.600	86.777%	650	10.6	38.28°C	0.983
	11.883V	5.069V	3.372V	5.040V	172.395				43.06°C	115.11V
4	13.369A	3.948A	3.921A	1.591A	199.627	86.933%	650	10.6	38.92°C	0.989
	11.851V	5.066V	3.364V	5.028V	229.634				45.91°C	115.10V
5	16.822A	4.949A	4.917A	1.795A	249.743	86.527%	653	10.6	39.29°C	0.993
	11.844V	5.052V	3.355V	5.016V	288.630				47.15°C	115.11V
6	20.286A	5.953A	5.915A	1.999A	299.832	85.504%	900	18.5	39.90°C	0.995
	11.832V	5.040V	3.348V	5.003V	350.666				48.41°C	115.11V
7	23.764A	6.961A	6.918A	2.205A	349.962	84.494%	1205	28.2	40.41°C	0.996
	11.819V	5.027V	3.339V	4.990V	414.184				49.16°C	115.11V
8	27.239A	7.978A	7.929A	2.412A	400.066	83.367%	1730	34.9	41.48°C	0.996
	11.809V	5.014V	3.329V	4.976V	479.883				50.63°C	115.11V
9	31.193A	8.483A	8.428A	2.416A	449.778	82.240%	1920	38.5	42.26°C	0.996
	11.774V	5.011V	3.322V	4.969V	546.912				52.00°C	115.11V
10	35.186A	8.989A	8.962A	2.522A	500.110	80.950%	1915	38.4	43.74°C	0.997
	11.735V	5.007V	3.313V	4.958V	617.798				54.62°C	115.11V
11	39.633A	8.977A	8.981A	2.525A	549.723	79.159%	1905	38.3	44.51°C	0.997
	11.670V	5.013V	3.307V	4.952V	694.455				56.20°C	115.11V
CL1	0.138A	12.999A	12.999A	0.000A	108.178	77.986%	780	14.6	39.10°C	0.977
	12.620V	4.832V	3.356V	5.052V	138.714				47.11°C	115.11V
CL2	37.998A	1.002A	0.998A	1.000A	438.488	82.583%	1765	37.0	43.03°C	0.996
	11.183V	5.202V	3.338V	5.014V	530.969				54.21°C	115.12V

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20-80W LOAD TESTS 115V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.215A	0.487A	0.469A	0.197A	19.451	72.097%	650	10.6	0.912
	11.820V	5.125V	3.395V	5.087V	26.979				115.11V
2	2.495A	0.979A	0.970A	0.394A	39.892	80.791%	656	10.7	0.954
	11.864V	5.107V	3.391V	5.080V	49.377				115.11V
3	3.700A	1.471A	1.444A	0.592A	59.348	83.801%	650	10.6	0.970
	11.880V	5.097V	3.388V	5.072V	70.820				115.11V
4	4.981A	1.963A	1.949A	0.790A	79.795	85.298%	655	10.7	0.975
	11.887V	5.089V	3.384V	5.064V	93.548				115.11V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.0 mV	8.6 mV	11.4 mV	11.7 mV	Pass
20% Load	6.7 mV	9.3 mV	12.0 mV	13.4 mV	Pass
30% Load	7.2 mV	9.2 mV	12.9 mV	10.7 mV	Pass
40% Load	8.5 mV	9.9 mV	12.9 mV	11.6 mV	Pass
50% Load	10.5 mV	10.4 mV	15.0 mV	20.8 mV	Pass
60% Load	12.1 mV	11.3 mV	15.1 mV	14.4 mV	Pass
70% Load	14.4 mV	12.0 mV	16.5 mV	14.1 mV	Pass
80% Load	20.0 mV	12.6 mV	19.7 mV	20.4 mV	Pass
90% Load	28.5 mV	12.9 mV	21.8 mV	22.6 mV	Pass
100% Load	41.6 mV	17.6 mV	26.0 mV	23.7 mV	Pass
110% Load	50.6 mV	18.9 mV	27.9 mV	26.0 mV	Pass
Crossload 1	9.1 mV	18.4 mV	24.6 mV	11.8 mV	Pass
Crossload 2	55.6 mV	20.6 mV	21.9 mV	24.3 mV	Pass

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DeepCool DA500 (Sample #2)



Top side

 					
Switching Power Supply 电源供应器					
DA500					
Model No. 型号	DA500				
AC Input 交流输入	100-240Vac 4-8A 47-63Hz				
DC Output 直流输出	+3.3V	+5V	+12V	-12V	+5VSB
Max Output Current 最大输出电流	18A	16A	38A	0.3A	2.5A
Max Combined Wattage 最大输出功率	110W	456W	3.6W	12.5W	
Total Output 总功率	500W				
CAUTION: AS SEALED STICK WAS REMOVED, LOST OR DAMAGED, IT SHALL BE OUT OF WARRANTY VALIDITY! HAZARDOUS AREA. SAFETY INSTRUCTIONS: DO NOT REMOVE THE COVER. NO SERVICEABLE COMPONENTS INSIDE. REFER SERVING TO QUALIFIED SERVICE.					
          					

Power specifications label

CERTIFICATIONS 115V



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