Anex

Enermax EDT1250EWT

Lab ID#: 216
Receipt Date: -
Test Date: -

Report:
Report Date: Nov 14, 2018

DUT INFORMATION

Brand	Enermax
Manufacturer (OEM)	Channel Well Technology
Series	MaxTytan
Model Number	EDT1250EWT
Serial Number	
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	15-7
Rated Frequency (Hz)	47-63
Rated Power (W)	1250
Type	ATX12V
Cooling	140mm Magnetic Cyclone Bearing Fan (ED142512M-PA)
Semi-Passive Operation	✓
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	104	3	0.3
	Watts	100		1248	15	3.6
Total Max. Power (W)		1250				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	16-20AWG	No
4+4 pin EPS12V (700mm)	1	1	16AWG	No
8 pin EPS12V (700mm)	1	1	16AWG	No
6+2 pin PCIe (600mm)	8	8	16-18AWG	No
SATA (500mm+150mm+150mm+150mm)	4	16	18AWG	No
4 pin Molex (500mm+140mm+140mm+140mm)	2	8	18AWG	No
FDD Adapter (+100mm)	1	1	20AWG	No
Coolergenie - Power Supply Cable (+600mm)	1	1	22-24AWG	No
Coolergenie - 4 pin Fan Cable (+500mm)	1	1	26AWG	No
Coolergenie - 4 pin Fan Extension Cable (+500mm)	1	1	26AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

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General Data	
Manufacturer (OEM)	Channel Well Technology
Platform Model	CST
Primary Side	
Transient Filter	6x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Bypass Relay
Bridge Rectifier(s)	2x Vishay LVB1560 (600V, 15A @ 125°C)
APFC MOSFETS	2x Toshiba TK25N60X (600V, 25A @ 150°C, 0.105 Ohm)
APFC Boost Diode	2x SCS110AG (600V, 10A & 117°C)
Hold-up Cap(s)	1x Chemi-Con (420V, 560uF, 2000h @ 105°C, KMR) 1x Nichicon (400V, 680uF, 2000h @ 105°C, GG)
Main Switchers	4x Alpha & Omega AOTF29S50 (600V, 18A @ 100°C, 0.15 Ohm)
FET Drivers	2x Silicon Labs Si8230BD
Primary MCU	Texas Instruments UCD3138 (31.25MHz, 32-bit ARM7TDMI-S Processor, 32KB Flash, 3x Feedback loop control, 14bit DAC, up to 2MHz switching freq)
Secondary MCU	Microchip PIC32MX230F064D (40 MHz, 64KB Flash, 13x analog chanels, 10bit ADC, USB interface)
Topology	Primary side: Full-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	12x Alpha & Omega AON6240 (40V, 67A @ 100°C, 1.6 mOhm)
5V & 3.3V	DC-DC Converters: 6x Sinopower SM3117NSUC (30V, 85A @ 100°C, 7.2 mOhm @ Vgs=10V) PWM Controller: 1x Anpec APW7159C
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (105°C, KY, KZE) Polymers: Apaq, Nippon Chemi-Con
Supervisor IC	Infinno ST9S313-DAG(OVP, UVP) & LM358
Fan Model	Enermax ED142512M-PA (139mm, 12V, 0.30A, 1560 RPM, twister bearing)
5VSB Circuit	
Rectifier	1x M03N65D FET
Standby PWM Controller	On Bright OB5269CP & SPN5003 (N-Channel Enhancement Mode FET)

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	91.244
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	81.071
Standby Power Consumption (W) -115V	0.0495655
Standby Power Consumption (W) -230V	0.0716686
Average PF	0.995
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	23.12
Efficiency Rating (ETA)	TITANIUM
Noise Rating (LAMBDA)	A

TEST EQUIPMENT		
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, Chroma 61604	
Power Analyzers	N4L PPA1530, 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	

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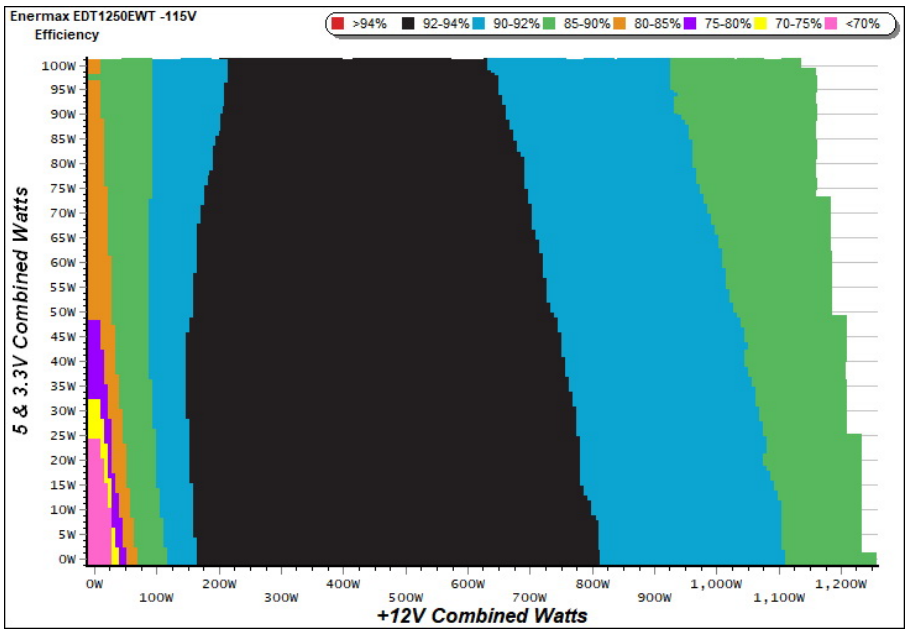
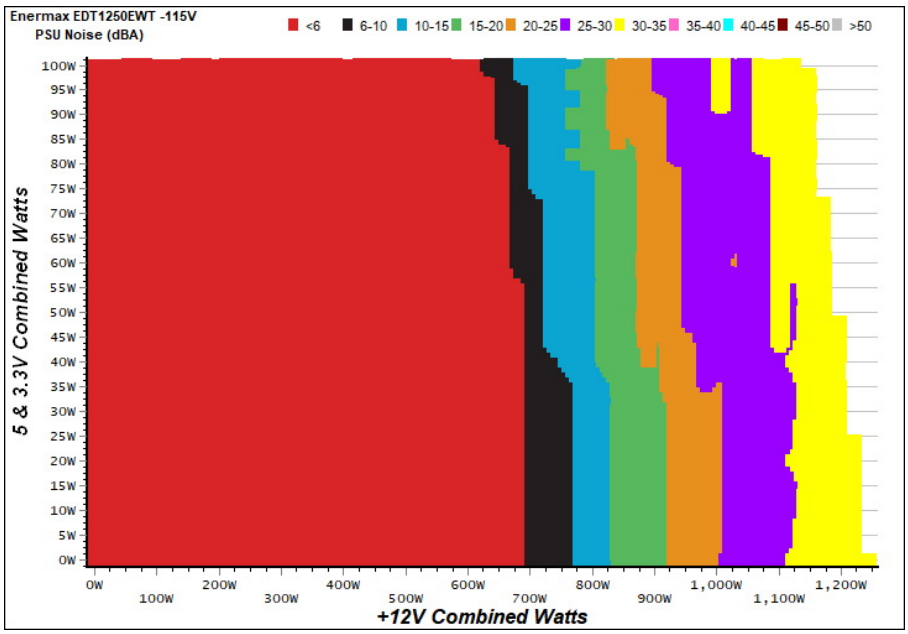
EFFICIENCY GRAPH



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



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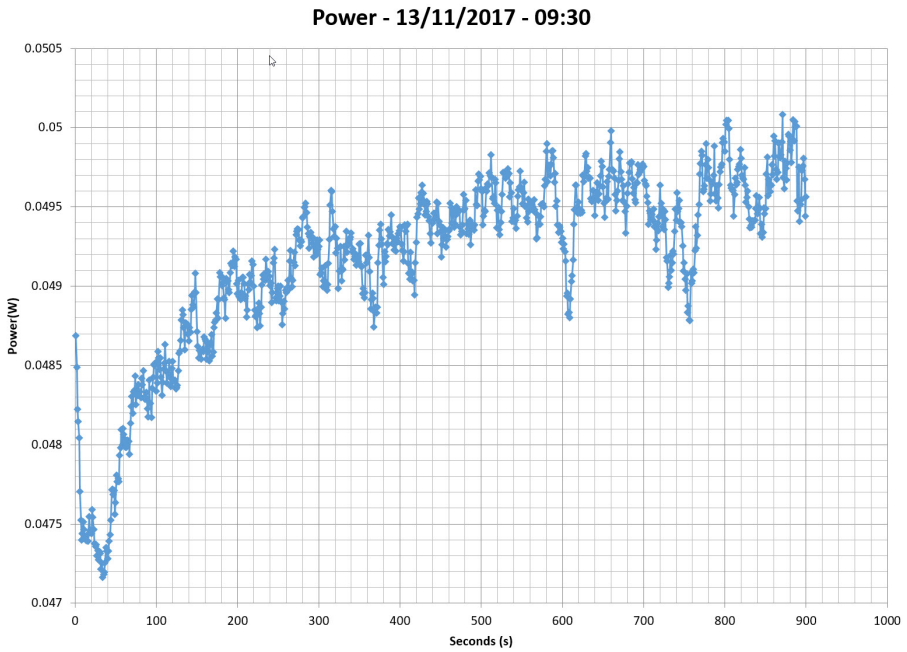
5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.209	64.308%	0.032
	5.016V	0.325		115.06V
2	0.088A	0.439	73.658%	0.059
	5.015V	0.596		115.06V
3	0.542A	2.716	81.586%	0.270
	5.008V	3.329		115.04V
4	1.002A	5.010	81.503%	0.389
	4.999V	6.147		115.05V
5	1.502A	7.493	81.313%	0.456
	4.990V	9.215		115.05V
6	3.001A	14.892	80.944%	0.529
	4.962V	18.398		115.05V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.209	61.834%	0.010
	5.015V	0.338		230.21V
2	0.087A	0.437	70.942%	0.018
	5.014V	0.616		230.21V
3	0.542A	2.715	80.660%	0.097
	5.006V	3.366		230.19V
4	1.002A	5.008	81.471%	0.166
	4.998V	6.147		230.20V
5	1.502A	7.491	81.878%	0.229
	4.988V	9.149		230.20V
6	3.001A	14.881	81.513%	0.350
	4.958V	18.256		230.20V

VAMPIRE POWER -115V



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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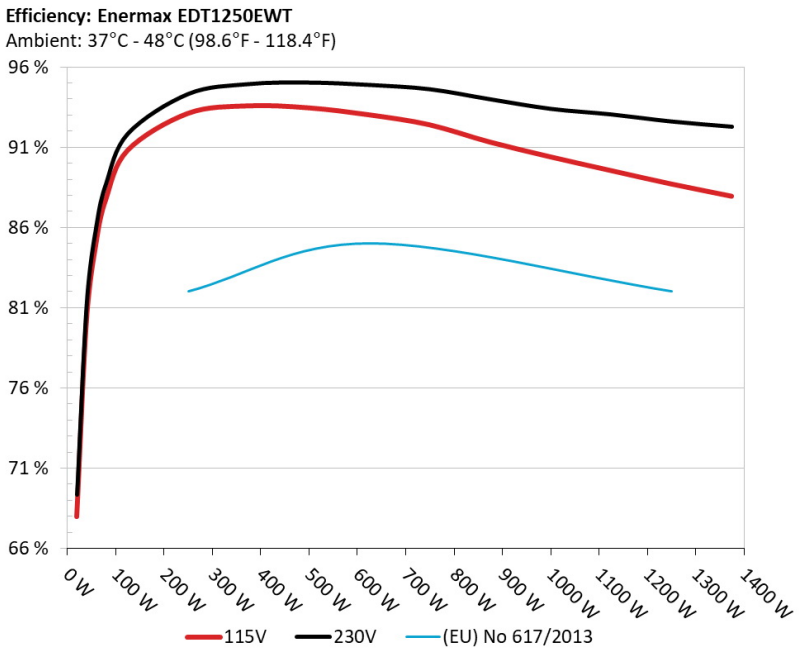
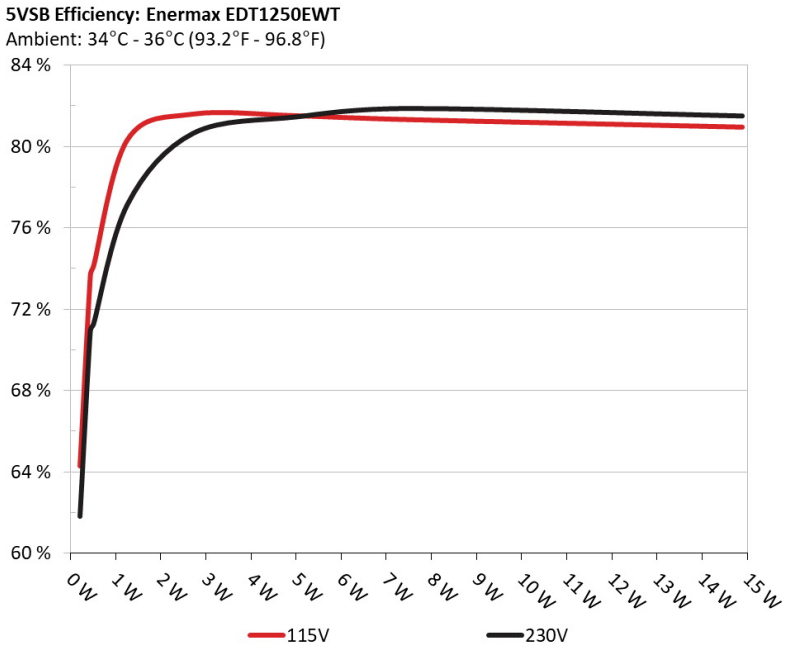
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

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10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	8.597A	1.974A	2.003A	0.991A	124.785	90.803%	0	<6.0	45.25°C	0.983
	12.004V	5.062V	3.293V	5.043V	137.424				38.07°C	115.10V
2	18.235A	2.959A	3.006A	1.190A	249.621	93.105%	0	<6.0	45.76°C	0.995
	11.997V	5.059V	3.290V	5.038V	268.107				38.41°C	115.10V
3	28.245A	3.464A	3.523A	1.391A	374.781	93.574%	0	<6.0	46.57°C	0.997
	11.991V	5.056V	3.287V	5.033V	400.518				38.77°C	115.11V
4	38.241A	3.953A	4.017A	1.591A	499.522	93.450%	0	<6.0	47.45°C	0.998
	11.986V	5.053V	3.284V	5.028V	534.533				39.30°C	115.10V
5	47.903A	4.953A	5.028A	1.791A	624.388	93.017%	0	<6.0	48.24°C	0.999
	11.980V	5.052V	3.280V	5.022V	671.263				39.75°C	115.10V
6	57.570A	5.943A	6.038A	1.990A	749.301	92.394%	505	7.7	41.67°C	0.999
	11.977V	5.049V	3.278V	5.018V	810.988				50.48°C	115.12V
7	67.251A	6.939A	7.052A	2.194A	874.081	91.322%	778	17.7	42.85°C	0.999
	11.970V	5.045V	3.274V	5.010V	957.138				52.11°C	115.13V
8	76.937A	7.930A	8.070A	2.396A	999.077	90.402%	979	25.1	44.37°C	0.999
	11.967V	5.042V	3.271V	5.005V	1105.151				54.38°C	115.13V
9	87.096A	8.443A	8.596A	2.395A	1124.191	89.549%	1144	29.0	45.19°C	0.999
	11.959V	5.039V	3.267V	5.003V	1255.396				55.53°C	115.14V
10	97.008A	8.940A	9.096A	3.006A	1249.039	88.713%	1357	33.9	46.71°C	0.998
	11.951V	5.035V	3.264V	4.988V	1407.947				57.34°C	115.13V
11	107.506A	8.946A	9.103A	3.005A	1373.966	87.951%	1411	35.6	47.71°C	0.998
	11.946V	5.033V	3.262V	4.985V	1562.199				58.45°C	115.14V
CL1	0.098A	12.011A	12.005A	0.004A	101.505	85.883%	0	<6.0	52.96°C	0.977
	12.006V	5.061V	3.292V	5.087V	118.190				46.72°C	115.14V
CL2	104.103A	1.002A	1.004A	1.002A	1258.954	89.096%	1410	35.6	47.10°C	0.998
	11.965V	5.039V	3.270V	5.019V	1413.035				56.61°C	115.13V

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20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.217A	0.490A	0.484A	0.195A	19.679	68.013%	0	<6.0	0.822
	12.010V	5.064V	3.295V	5.059V	28.934				115.10V
2	2.458A	0.979A	1.000A	0.396A	39.769	80.212%	0	<6.0	0.909
	12.009V	5.062V	3.294V	5.054V	49.580				115.10V
3	3.698A	1.476A	1.513A	0.590A	59.842	85.095%	0	<6.0	0.938
	12.008V	5.062V	3.294V	5.051V	70.324				115.10V
4	4.932A	1.973A	2.001A	0.790A	79.780	87.753%	0	<6.0	0.955
	12.006V	5.062V	3.294V	5.048V	90.914				115.10V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	15.1 mV	7.9 mV	5.9 mV	5.7 mV	Pass
20% Load	23.3 mV	8.3 mV	6.3 mV	7.1 mV	Pass
30% Load	31.5 mV	9.5 mV	7.0 mV	9.1 mV	Pass
40% Load	35.6 mV	10.5 mV	7.4 mV	10.8 mV	Pass
50% Load	41.0 mV	11.4 mV	8.3 mV	12.6 mV	Pass
60% Load	32.3 mV	12.4 mV	9.3 mV	13.8 mV	Pass
70% Load	33.5 mV	13.6 mV	10.3 mV	15.7 mV	Pass
80% Load	29.5 mV	15.1 mV	10.8 mV	16.0 mV	Pass
90% Load	27.9 mV	14.6 mV	11.3 mV	17.0 mV	Pass
100% Load	30.3 mV	17.5 mV	14.7 mV	21.4 mV	Pass
110% Load	32.0 mV	16.7 mV	12.4 mV	20.9 mV	Pass
Crossload 1	14.4 mV	13.2 mV	9.0 mV	4.9 mV	Pass
Crossload 2	29.1 mV	13.7 mV	12.0 mV	22.1 mV	Pass

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HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	20.39
AC Loss to PWR_OK Hold Up Time (ms)	16.34
PWR_OK Inactive to DC Loss Delay (ms)	4.05

Top side

Power specifications label

CERTIFICATIONS

CYBENETICS TITANIUM

CYBENETICS A