Anex

Kolink Enclave 500W (#2)

Lab ID#: KL50001613
Receipt Date: Jun 11, 2019
Test Date: Feb 28, 2020

Report: 20PS1613A
Report Date: Mar 4, 2020

DUT INFORMATION

Brand	Kolink
Manufacturer (OEM)	Kolink
Series	Enclave
Model Number	KL-G500FM
Serial Number	KOL-016-0619000002
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	
Rated Frequency (Hz)	50-60
Rated Power (W)	500
Type	ATX12V
Cooling	120mm Rifle Bearing Fan (EFS-12E12H)
Semi-Passive Operation	✗
Cable Design	Fully Modular

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	16	16	41	3	0.5
	Watts	100		492	15	6
Total Max. Power (W)		500				

CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (500mm)	1	1	18-22AWG	No
4+4 pin EPS12V (650mm)	1	1	18AWG	No
6+2 pin PCIe (600mm+100mm)	1	2	18AWG	No
SATA (450mm+120mm+120mm)	1	3	20AWG	No
SATA (450mm) / 4 pin Molex (+120mm+120mm)	2	2 / 4	18-20AWG	No

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General Data	
Manufacturer (OEM)	Kolink
PCB Type	Double Sided
Primary Side	
Transient Filter	5x Y caps, 3x X caps, 2x CM chokes
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x GBU1506 (600V, 15A @ 100°C)
APFC MOSFETS	2x Advanced Power AP65SL380AI (650V, 6.5A @ 100°C, 0.38Ohm)
APFC Boost Diode	1x Infineon IDH06G65C6 (650V, 6A @ 145°C)
Hold-up Cap(s)	1x Teapo (420V, 330uF, 2000h @ 105°C, LG)
Main Switchers	4x Great Power GPT10N50AD (500V, 9.7A, 0.7Ohm)
APFC Controller	On Semiconductor NCP1654
Resonant Controllers	Champion CM6901T6
Topology	Primary side: Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x Nexperia PSMN2R6-40YS (40V, 100A @ 100°C, 5.3mOhm @ 175°C)
5V & 3.3V	DC-DC Converters:4x Excelliance MOS EMB09N03HR (30V, 35A @ 100°C, 9.5mOhm) PWM Controllers: ANPEC APW7159
Filtering Capacitors	Electrolytics: 10x Teapo (1-3,000h @ 105°C, SC), 1x CapXon (2-5,000h @ 105°C, KF) Polymers: CapXon
Supervisor IC	IN1S313I-DAG & UTC393
Fan Model	DWPH EFS-12E12H (120mm, 12V, 0.50A, Rifle Bearing Fan)
5VSB Circuit	
Rectifier	1x MBR2045CT SBR (45V, 20A)
Standby PWM Controller	Infineon ICE2QR4765

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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: ✓ ErP Lot 3 2014 & CEC: Partially
(EU) No 617/2013 Compliance	✓

115V	
Average Efficiency	88.654%
Efficiency With 10W (≤500W) or 2% (>500W)	52.344
Average Efficiency 5VSB	79.434%
Standby Power Consumption (W)	0.0869220
Average PF	0.986
Avg Noise Output	28.05 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

230V	
Average Efficiency	90.577%
Average Efficiency 5VSB	77.636%
Standby Power Consumption (W)	0.1349660
Average PF	0.930
Avg Noise Output	29.70 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x4 Chroma 63600-2 x2 63640-80-80 x20 63610-80-20 x2
AC Sources	Chroma 6530, Keysight AC6804B
Power Analyzers	N4L PPA1530 x2
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2
Tachometer	UNI-T UT372 x2
Digital Multimeter	Keysight U1273AX, Fluke 289, Keithley 2015 - THD
UPS	CyberPower OLS3000E 3kVA x2

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

Hold-Up Time (ms)	18.5
AC Loss to PWR_OK Hold Up Time (ms)	14.7
PWR_OK Inactive to DC Loss Delay (ms)	3.8

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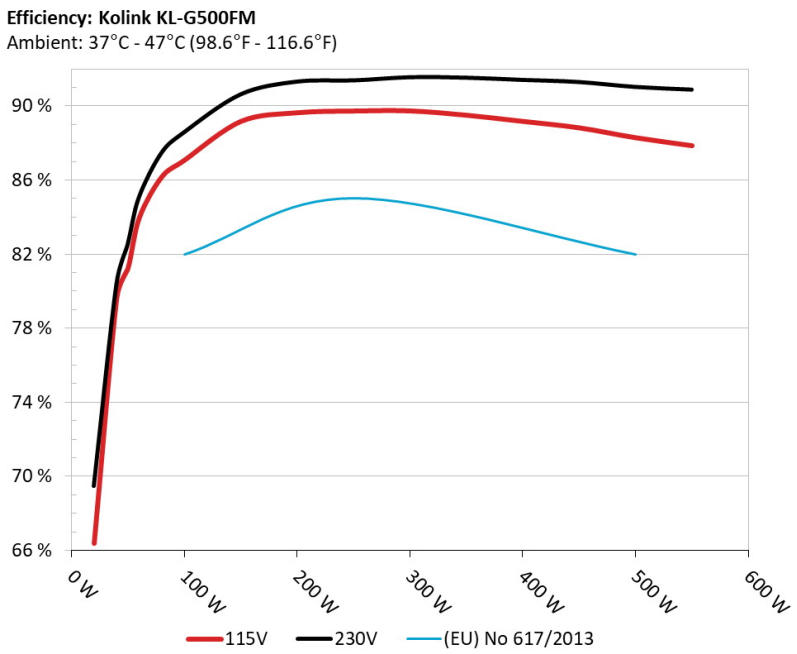
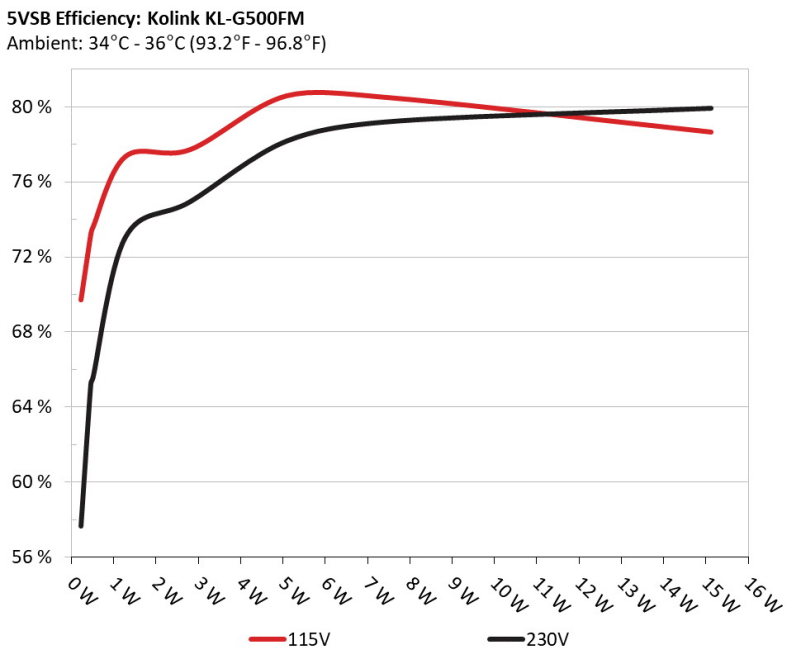
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	69.697%	0.043
	5.119V	0.330		115.14V
2	0.090A	0.461	73.175%	0.080
	5.117V	0.630		115.14V
3	0.550A	2.808	77.698%	0.312
	5.105V	3.614		115.14V
4	1.000A	5.094	80.563%	0.394
	5.093V	6.323		115.15V
5	1.500A	7.621	80.441%	0.441
	5.079V	9.474		115.15V
6	3.000A	15.117	78.632%	0.497
	5.039V	19.225		115.14V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	57.644%	0.016
	5.118V	0.399		230.33V
2	0.090A	0.461	65.205%	0.028
	5.117V	0.707		230.33V
3	0.550A	2.808	74.940%	0.134
	5.105V	3.747		230.36V
4	1.000A	5.094	78.177%	0.208
	5.093V	6.516		230.36V
5	1.500A	7.620	79.226%	0.268
	5.079V	9.618		230.35V
6	3.001A	15.117	79.921%	0.360
	5.038V	18.915		230.34V

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115V

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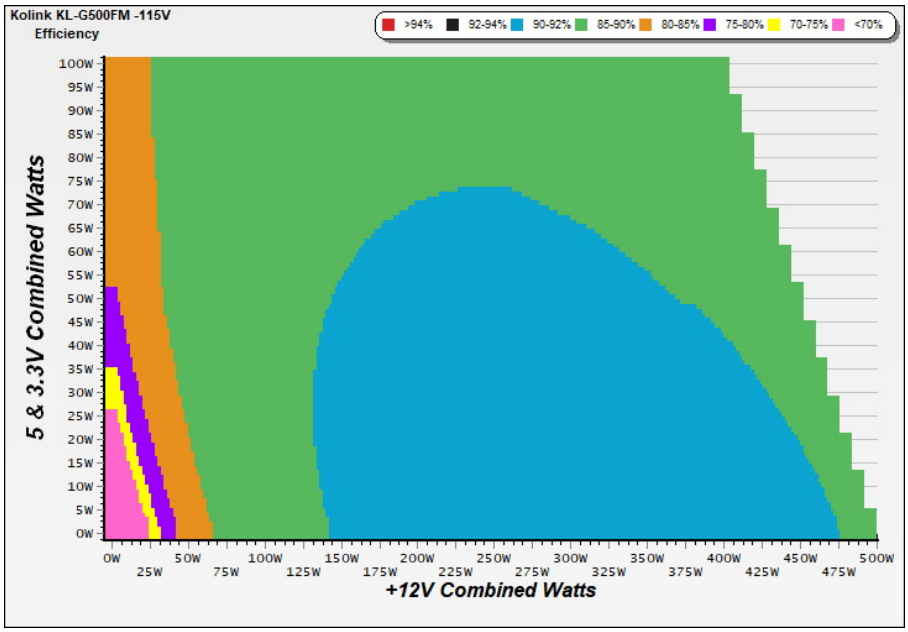
EFFICIENCY GRAPH 115V



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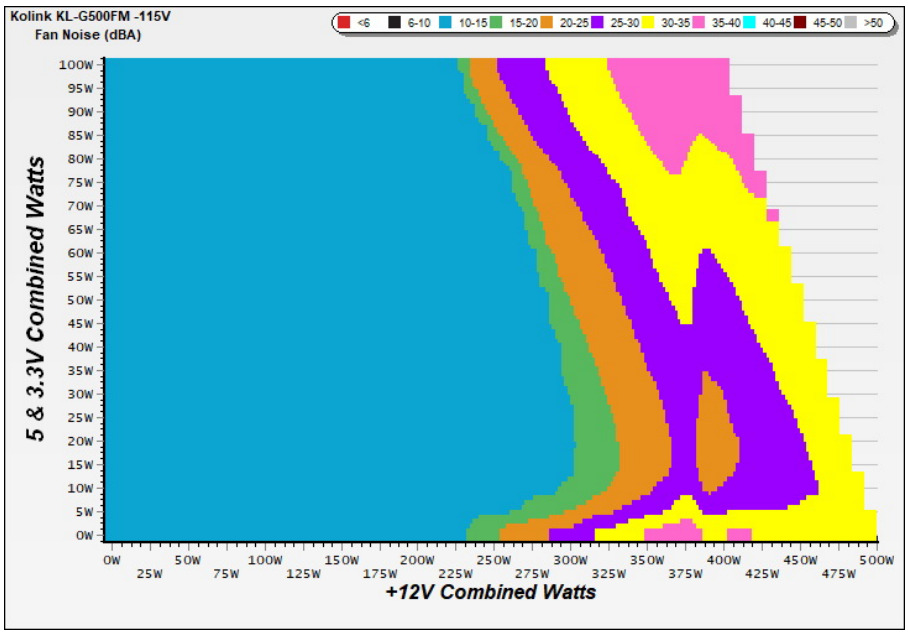
NOISE GRAPH 115V



INFO

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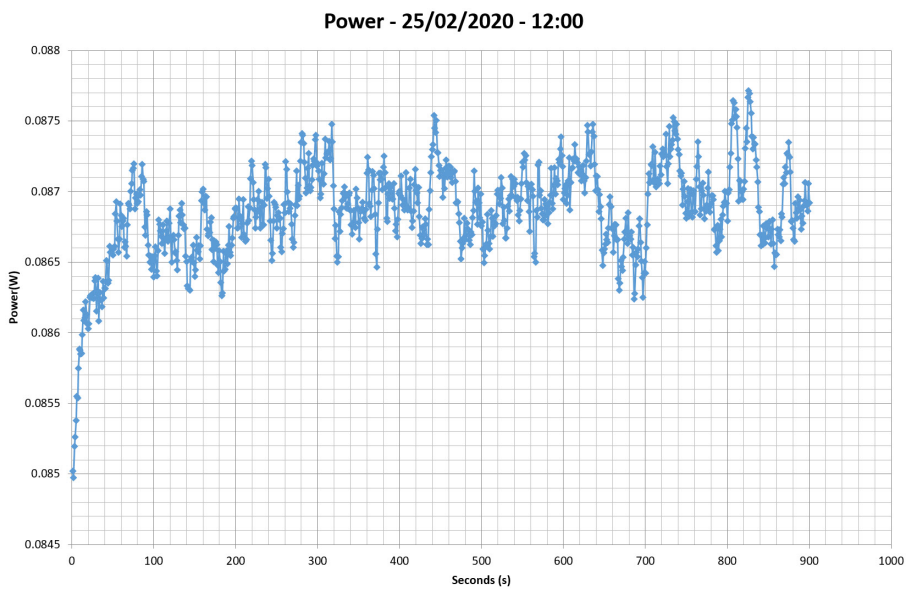
VAMPIRE POWER -115V



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Kolink Enclave 500W (#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	2.342A	1.993A	1.951A	0.984A	50.002	81.255%	773	14.8	40.10°C	0.952
	12.124V	5.021V	3.382V	5.083V	61.537				42.98°C	115.16V
2	5.706A	2.994A	2.936A	1.184A	100.027	87.087%	779	14.9	40.23°C	0.980
	12.113V	5.011V	3.373V	5.070V	114.859				43.97°C	115.16V
3	9.414A	3.498A	3.432A	1.384A	149.983	89.185%	784	15.1	41.07°C	0.987
	12.103V	5.002V	3.365V	5.058V	168.170				45.15°C	115.14V
4	13.133A	4.005A	3.933A	1.586A	200.024	89.652%	1446	33.1	41.74°C	0.985
	12.093V	4.994V	3.357V	5.046V	223.111				46.55°C	115.13V
5	16.516A	5.018A	4.927A	1.789A	250.054	89.746%	1798	40.0	42.39°C	0.987
	12.082V	4.984V	3.348V	5.032V	278.623				47.71°C	115.13V
6	19.898A	6.034A	5.931A	1.993A	300.007	89.751%	1808	40.0	42.43°C	0.990
	12.071V	4.974V	3.339V	5.018V	334.266				48.53°C	115.13V
7	23.298A	7.054A	6.936A	2.199A	350.083	89.519%	1820	40.0	43.21°C	0.992
	12.060V	4.963V	3.330V	5.004V	391.072				49.86°C	115.13V
8	26.702A	8.003A	7.950A	2.405A	399.748	89.187%	1823	40.0	43.70°C	0.993
	12.048V	4.953V	3.321V	4.990V	448.215				50.82°C	115.12V
9	30.512A	8.598A	8.451A	2.409A	449.815	88.837%	1824	40.0	44.65°C	0.994
	12.038V	4.944V	3.313V	4.983V	506.337				52.48°C	115.12V
10	34.099A	9.121A	8.989A	3.026A	499.832	88.303%	1832	39.9	45.35°C	0.995
	12.027V	4.935V	3.305V	4.958V	566.040				53.39°C	115.12V
11	38.291A	9.134A	9.007A	3.030A	549.855	87.872%	1833	39.9	46.63°C	0.995
	12.017V	4.927V	3.298V	4.952V	625.744				55.42°C	115.13V
CL1	0.117A	11.999A	12.000A	0.000A	101.443	82.277%	1811	40.0	42.30°C	0.985
	12.099V	4.986V	3.350V	5.082V	123.295				47.29°C	115.16V
CL2	41.009A	1.001A	1.000A	1.000A	507.030	89.391%	1824	40.0	45.92°C	0.995
	12.039V	4.959V	3.327V	5.032V	567.206				53.76°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	1.224A	0.497A	0.487A	0.196A	19.991	66.371%	751	13.8	0.863
	12.121V	5.032V	3.391V	5.112V	30.120				115.16V
2	2.448A	0.994A	0.973A	0.392A	39.981	79.639%	758	14.1	0.939
	12.128V	5.026V	3.386V	5.103V	50.203				115.16V
3	3.675A	1.494A	1.464A	0.589A	60.010	83.979%	769	14.6	0.967
	12.124V	5.021V	3.382V	5.094V	71.458				115.16V
4	4.898A	1.994A	1.953A	0.787A	79.959	86.191%	772	14.8	0.981
	12.119V	5.016V	3.378V	5.085V	92.770				115.16V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	20.50mV	4.00mV	12.60mV	6.40mV	Pass
20% Load	30.70mV	4.20mV	12.70mV	6.80mV	Pass
30% Load	41.30mV	4.40mV	12.40mV	6.40mV	Pass
40% Load	48.20mV	4.90mV	13.00mV	6.40mV	Pass
50% Load	50.20mV	5.20mV	15.10mV	7.10mV	Pass
60% Load	41.40mV	4.90mV	13.60mV	7.30mV	Pass
70% Load	37.50mV	5.10mV	13.70mV	7.50mV	Pass
80% Load	33.90mV	5.10mV	14.60mV	7.30mV	Pass
90% Load	33.60mV	6.00mV	17.00mV	8.10mV	Pass
100% Load	47.10mV	7.00mV	18.70mV	9.50mV	Pass
110% Load	48.80mV	7.30mV	18.90mV	9.70mV	Pass
Crossload1	39.00mV	5.90mV	17.50mV	7.40mV	Pass
Crossload2	45.30mV	6.10mV	14.30mV	8.70mV	Pass

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230V

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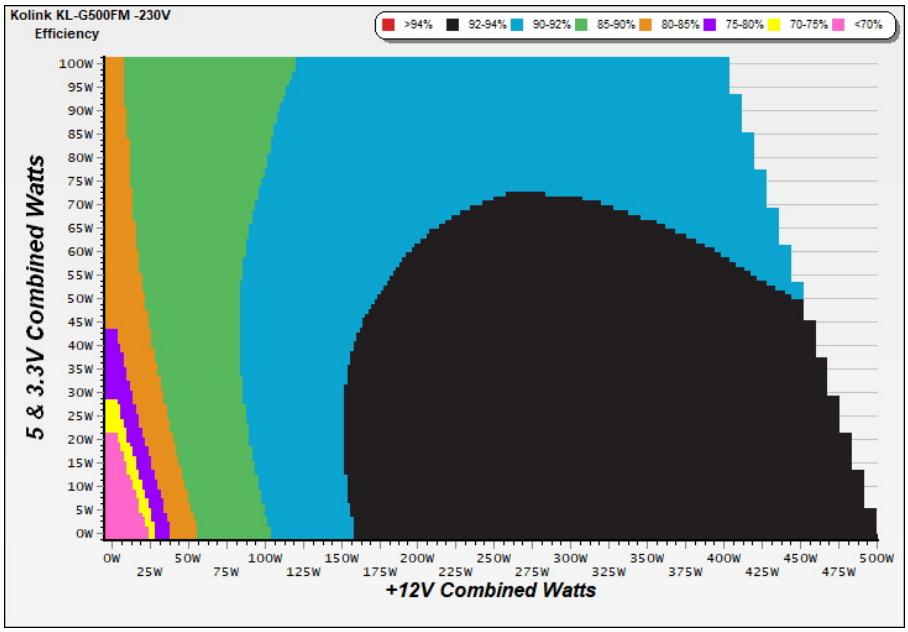
EFFICIENCY GRAPH 230V



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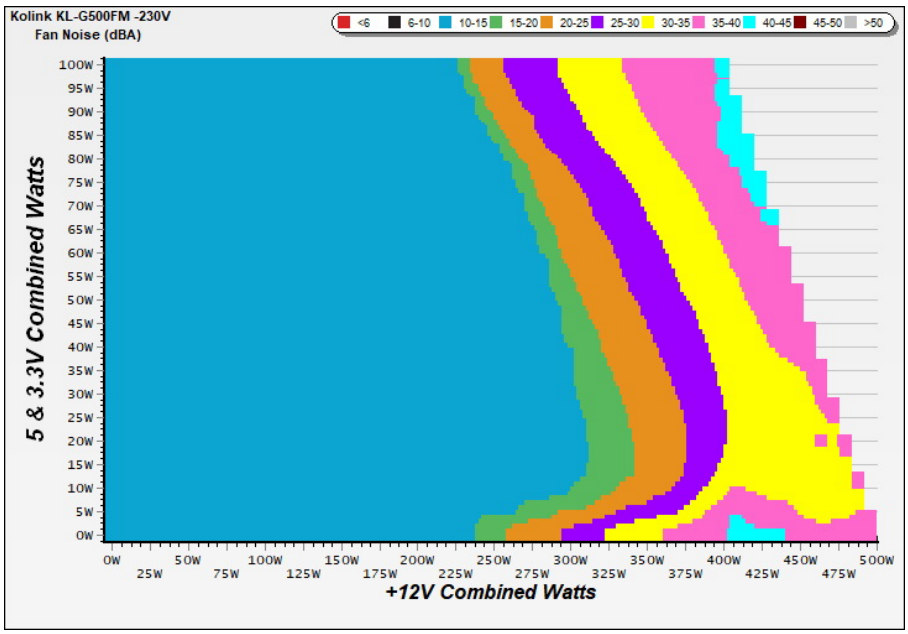
NOISE GRAPH 230V



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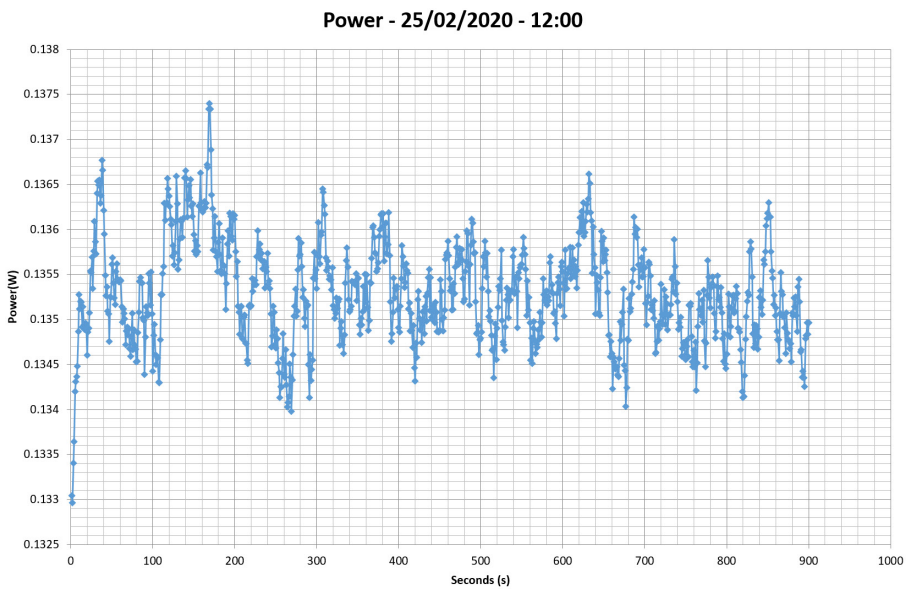

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10-110% LOAD TESTS 230V

est #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	2.342A	1.992A	1.952A	0.984A	49.996	82.543%	776	14.8	40.72°C	0.738
	12.123V	5.021V	3.382V	5.083V	60.570				44.32°C	230.29V
2	5.706A	2.994A	2.934A	1.184A	100.014	88.593%	782	15.0	40.85°C	0.857
	12.112V	5.011V	3.373V	5.070V	112.892				44.75°C	230.28V
3	9.414A	3.499A	3.432A	1.384A	149.970	90.634%	787	15.1	41.55°C	0.910
	12.101V	5.002V	3.365V	5.058V	165.467				45.89°C	230.30V
4	13.134A	4.005A	3.932A	1.586A	200.009	91.326%	1400	32.9	41.88°C	0.937
	12.091V	4.994V	3.358V	5.045V	219.006				46.80°C	230.30V
5	16.517A	5.018A	4.928A	1.789A	250.042	91.391%	1806	40.0	42.19°C	0.952
	12.080V	4.984V	3.349V	5.032V	273.595				47.63°C	230.31V
6	19.901A	6.034A	5.932A	1.993A	300.000	91.563%	1816	40.0	42.57°C	0.962
	12.069V	4.973V	3.339V	5.018V	327.644				48.61°C	230.31V
7	23.300A	7.055A	6.938A	2.199A	350.073	91.535%	1824	40.0	43.20°C	0.968
	12.058V	4.963V	3.330V	5.004V	382.448				49.81°C	230.32V
8	26.706A	8.001A	7.950A	2.405A	399.725	91.418%	1824	40.0	43.40°C	0.973
	12.046V	4.953V	3.320V	4.990V	437.250				50.40°C	230.32V
9	30.516A	8.598A	8.451A	2.409A	449.801	91.304%	1834	39.9	45.30°C	0.977
	12.036V	4.944V	3.313V	4.983V	492.641				52.82°C	230.32V
10	34.107A	9.120A	8.989A	3.026A	499.846	91.039%	1835	39.9	45.44°C	0.978
	12.025V	4.935V	3.304V	4.958V	549.045				53.70°C	230.32V
11	38.300A	9.134A	9.007A	3.030A	549.878	90.894%	1841	39.9	46.59°C	0.980
	12.015V	4.927V	3.297V	4.952V	604.963				55.35°C	230.33V
CL1	0.117A	12.000A	11.999A	0.000A	101.443	83.653%	1824	40.0	42.28°C	0.869
	12.098V	4.986V	3.350V	5.081V	121.267				47.80°C	230.34V
CL2	41.013A	1.000A	0.999A	1.000A	507.025	92.103%	1833	39.9	45.40°C	0.978
	12.038V	4.958V	3.326V	5.031V	550.495				53.64°C	230.34V

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Anex

Kolink Enclave 500W (#2)

20-80W LOAD TESTS 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.223A	0.496A	0.487A	0.196A	19.984	69.505%	744		

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	27.10mV	4.20mV	11.50mV	6.90mV	Pass
20% Load	40.80mV	4.10mV	12.40mV	7.30mV	Pass
30% Load	50.60mV	5.00mV	12.70mV	6.90mV	Pass
40% Load	56.60mV	5.00mV	13.00mV	7.30mV	Pass
50% Load	58.60mV	4.90mV	13.10mV	7.00mV	Pass
60% Load	49.20mV	4.90mV	12.70mV	7.50mV	Pass
70% Load	42.30mV	5.40mV	13.00mV	7.70mV	Pass
80% Load	39.10mV	5.70mV	15.90mV	8.30mV	Pass
90% Load	36.80mV	6.30mV	17.90mV	8.60mV	Pass
100% Load	49.40mV	7.00mV	17.20mV	10.10mV	Pass
110% Load	50.70mV	7.30mV	18.00mV	10.20mV	Pass
Crossload1	46.70mV	6.20mV	18.30mV	7.80mV	Pass
Crossload2	47.20mV	6.40mV	14.50mV	8.90mV	Pass

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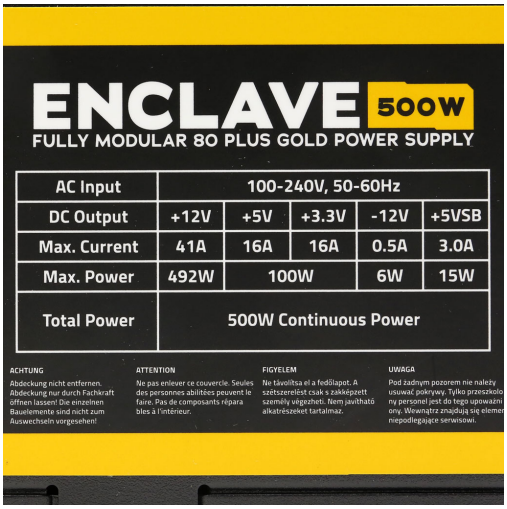
Anex

Kolink Enclave 500W (#2)

Top side



Power specifications label

CERTIFICATIONS 115V

CERTIFICATIONS 230V

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