

Lab ID#: 494
Receipt Date: Jul 28, 2018
Test Date: Aug 8, 2018

Report:
Report Date: Aug 10, 2018

DUT INFORMATION	
Brand	Mistel
Manufacturer (OEM)	Shang Hung
Series	Vision
Model Number	MX650FL
Serial Number	MP18060100320
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	7.5
Rated Frequency (Hz)	50-60
Rated Power (W)	650
Type	ATX12V
Cooling	Fanless
Semi-Passive Operation	X
Cable Design	Fully Modular

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	

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6 (+-2°C / +- 3.6°F)
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓

115V

Average Efficiency	90.253%
Efficiency With 10W (≤500W) or 2% (>500W)	62.121
Average Efficiency 5VSB	76.774%
Standby Power Consumption (W)	0.0450987
Average PF	0.987
Avg Noise Output	- dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A++

230V

Average Efficiency	91.852%
Average Efficiency 5VSB	76.256%
Standby Power Consumption (W)	0.0741322
Average PF	0.946
Avg Noise Output	- dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A++

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	54.1	3	0.3
	Watts	100		649.2	15	3.6
Total Max. Power (W)		650				

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (700mm)	1	1	18-22AWG	No
4+4 pin EPS12V (750mm)	1	1	18AWG	No
6+2 pin PCIe (600mm+120mm)	2	4	18AWG	No
SATA (400mm+120mm+120mm+120mm)	2	8	18AWG	No
4-pin Molex (400mm+120mm+120mm) / FDD (+100mm)	1	3 / 1	18-22AWG	No
RGB Cable (+400mm)	1	1	24AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

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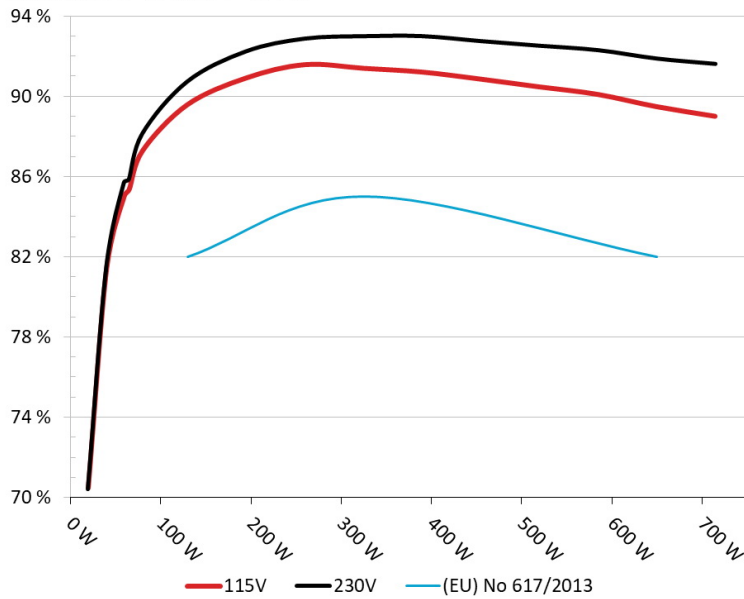
General Data	
Manufacturer (OEM)	Shang Hung (Taiwan)
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV (10D561K)
Bridge Rectifier(s)	2x GBJ2506 (600V, 25A @ 100°C)
Inrush Current Protection	NTC Thermistor & Relay
APFC Mosfets	2x Infineon IPA60R099P6 (650V, 24A @ 100°C, 0.099Ω @ 25°C)
APFC Boost Diode	1x G3S06510A (650V, 10A @ 150°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (450V, 560uF, 105°C, KMW series, 2000h @ 105°C).
Main Switchers	4x Wuxi NCE Power Semiconductor NCE65T180F (650V, 13.2A @ 100°C, 0.180Ω @ 25°C)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CM6901T6X
Topology	Primary side: Full Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V	4x Excelliance MOS EMP16N04HS (40V, 100A @ 100°C, 1.6mΩ)
5V & 3.3V	DC-DC Converters: Unknown number of FETs PWM Controllers: 1x UP3861
Filtering Capacitors	Electrolytics: Chemi-Con (1-5,000h @ 105 °C, KZE series), Chemi-Con (4-10,000h @ 105°C, KY series) Polymers: FPCAP, Chemi-Con
Supervisor IC	WT7527V (OVP, UVP, OCP, SCP, PG)
5VSB Circuit	
Rectifying Diode	1045 DGAL
Standby PWM Controller	Excelliance EM8569

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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Mistel MX650FL
Ambient: 32°C - 40°C (86°F - 104°F)

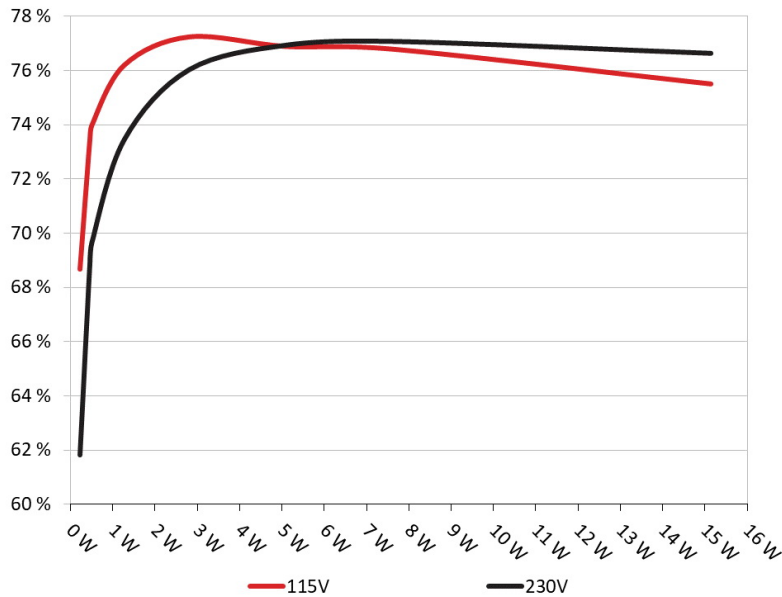


INFO

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: Mistel MX650FL
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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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	68.657%	0.055
	5.118V	0.335		115.09V
2	0.090A	0.461	73.408%	0.099
	5.117V	0.628		115.09V
3	0.550A	2.808	77.249%	0.335
	5.105V	3.635		115.10V
4	1.000A	5.095	76.894%	0.406
	5.095V	6.626		115.10V
5	1.500A	7.625	76.795%	0.443
	5.083V	9.929		115.10V
6	3.000A	15.134	75.511%	0.491
	5.044V	20.042		115.09V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.230	61.828%	0.019
	5.118V	0.372		230.24V
2	0.090A	0.461	68.806%	0.033
	5.117V	0.670		230.24V
3	0.550A	2.808	76.015%	0.159
	5.106V	3.694		230.22V
4	1.000A	5.096	76.921%	0.240
	5.095V	6.625		230.22V
5	1.500A	7.625	77.059%	0.296
	5.083V	9.895		230.23V
6	3.000A	15.142	76.622%	0.375
	5.047V	19.762		230.23V

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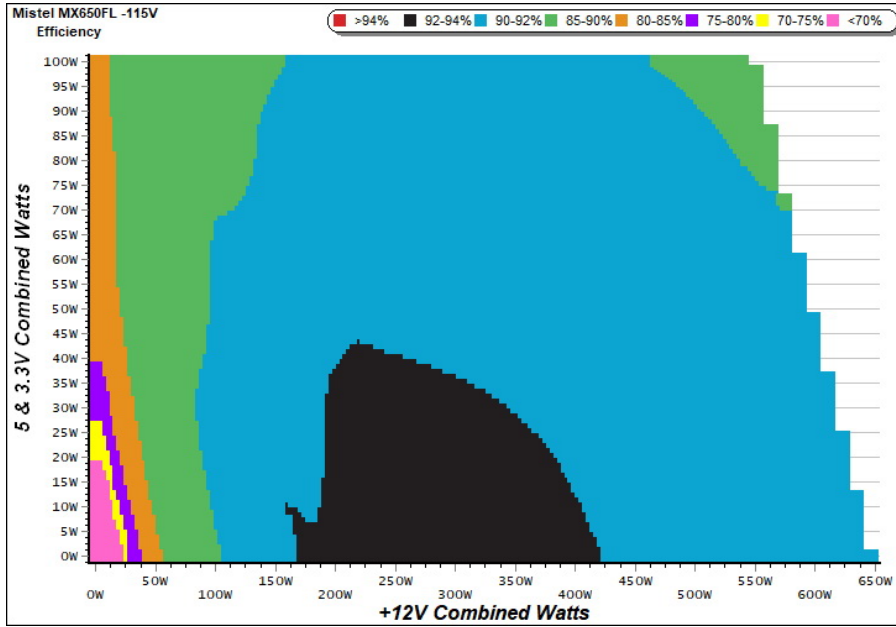
115V

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PAGE 7/14

EFFICIENCY GRAPH 115V



INFO

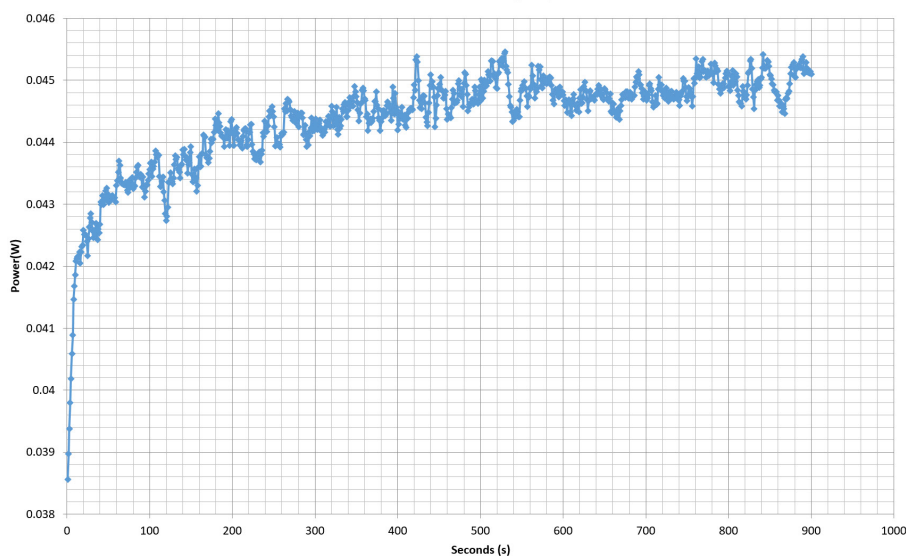
This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations

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VAMPIRE POWER -115V

Power - MP18060100320 - 26/09/2018 - 09:36



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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COMMISSION REGULATION (EU) NO 617/2013 TESTING 115V

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PAGE 10/14

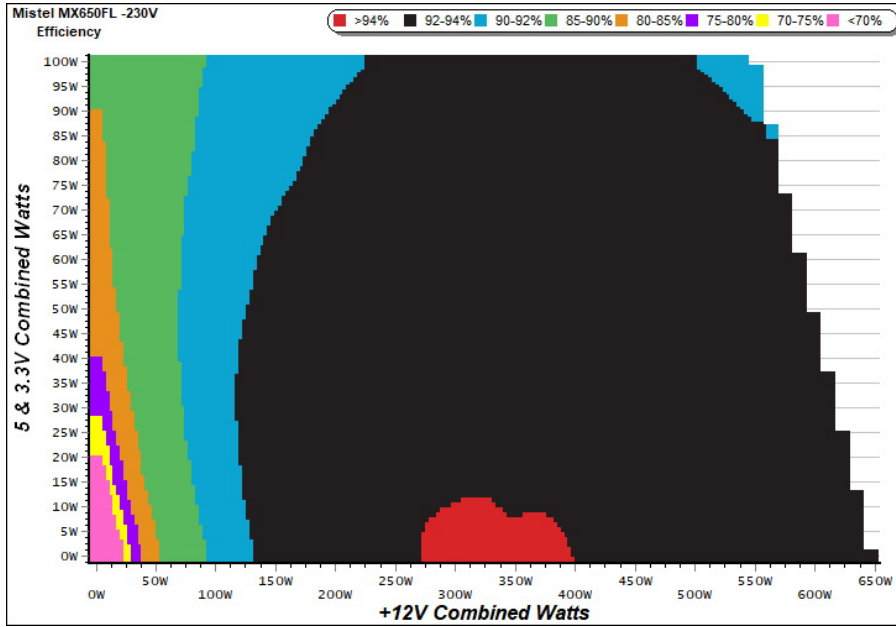
230V

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PAGE 11/14

EFFICIENCY GRAPH 230V



INFO

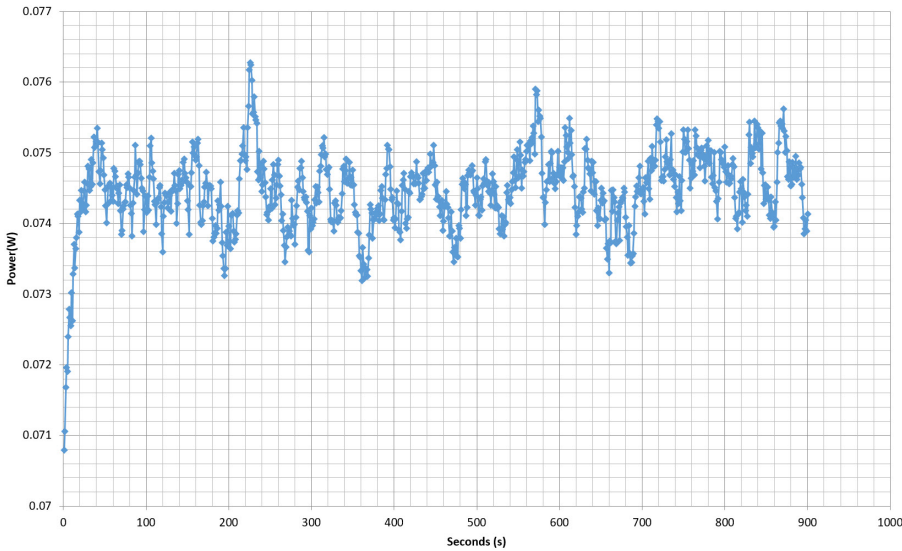
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PAGE 14/14

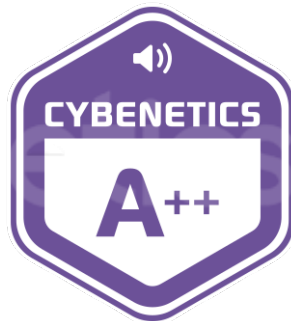
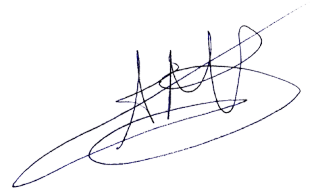


Top side



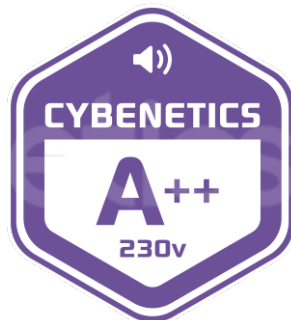
Power specifications label

CERTIFICATIONS 115V

Aris Mpitsiopoulos
Lab Director

CERTIFICATIONS 230V



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