

Lab ID#: CM19650039
Receipt Date: Jul 5, 2019
Test Date: May 21, 2019

Report: 20PS726A

Report Date: Jun 21, 2019

DUT INFORMATION

Brand	Cooler Master
Manufacturer (OEM)	Gospower
Series	MWE Bronze
Model Number	
Serial Number	MPE6501ACAAB1191400013
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	10-5
Rated Frequency (Hz)	50-60
Rated Power (W)	650
Type	ATX12V
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225H12F-Z)
Semi-Passive Operation	✓
Cable Design	Fixed cables

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
UPS	CyberPower OLS3000E 3kVA x2
Transformer	3kVA 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	86.077%
Efficiency With 10W (≤500W) or 2% (>500W)	72.353
Average Efficiency 5VSB	78.233%
Standby Power Consumption (W)	0.0804244
Average PF	0.976
Avg Noise Output	38.27 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	Standard+

230V

Average Efficiency	88.392%
Average Efficiency 5VSB	77.298%
Standby Power Consumption (W)	0.2063370
Average PF	0.905
Avg Noise Output	38.95 dB(A)
Efficiency Rating (ETA)	
Noise Rating (LAMBDA)	Standard+

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	54	3	0.3
	Watts	120		648	15	3.6
Total Max. Power (W)		650				

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CABLES AND CONNECTORS

Captive Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (610mm)	1	1	18-20AWG	No
8 pin EPS12V (630mm) / 4+4 pin EPS12V (120mm)	1	1 / 1	18AWG	No
6+2 pin PCIe (530mm+120mm)	2	4	16-18AWG	No
SATA (530mm+120mm+120mm+120mm)	2	8	18AWG	No
4-pin Molex (520mm+120mm+120mm+120mm)	1	4	18AWG	No
AC Power Cord (1400mm) - C13 coupler	1	1	18AWG	-

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General Data	
Manufacturer (OEM)	Gospower
PCB Type	Single Sided
Primary Side	
Transient Filter	3x Y caps, 2x X caps, 2x CM chokes
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	1x GBU2508 (800V, 25A @ 100°C)
APFC MOSFETS	2x Sanrise Tech SRC60R140B (630V, 11.2A @ 125°C, 0.14Ohm)
APFC Boost Diode	1x Jilin Sino Microelectronics 15F60UHF (600V, 15A @ 100°C)
Hold-up Cap(s)	1x Elite (420V, 560uF, 2000h @ 85°C, GM)
Main Switchers	2x Jilin Sino Microelectronics JCS18N50FH (500V, 11A @ 100°C, 0.27Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controllers	Champion CU6901V
Topology	Primary side: Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x Nce Power NCEP40T11K (40V, 85A @ 100°C, 2.8mOhm)
5V & 3.3V	DC-DC Converters: 4x IPS FTD05N03NA (30V, 75A @ 100°C, 6mOhm) PWM Controllers: ANPEC APW7159C
Filtering Capacitors	Electrolytics: 6x Elite (2-5,000h @ 105°C, ED), 4x Elite (2,000h @ 105°C, EL), 1x CapXon (2-5,000h @ 105°C, KF), 1x CapXon (3-10,000h @ 105°C, GH) Polymers: CapXon
Supervisor IC	IN1S313I-SAG
Fan Model	Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, Fluid Dynamic Bearing Fan)
5VSB Circuit	
Rectifier	-
Standby PWM Controller	On-Bright OB2365SP

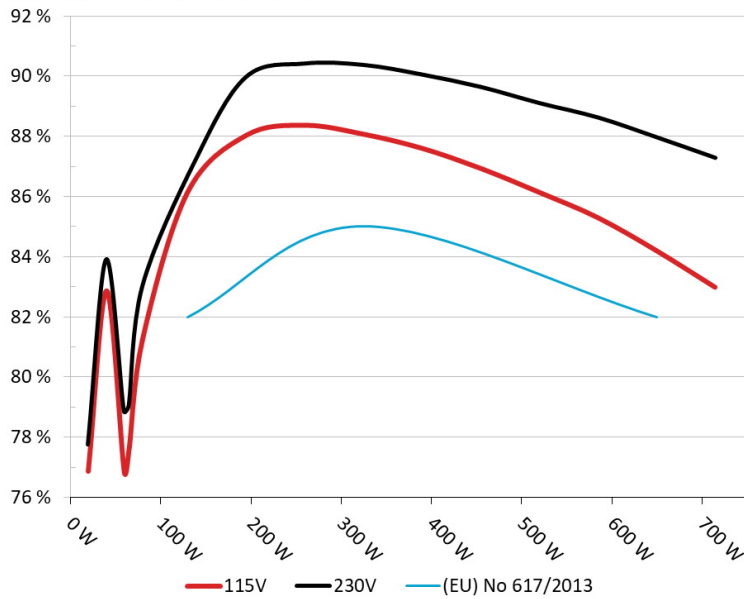
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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Cooler Master MWE Bronze 650

Ambient: 32°C - 40°C (89.6°F - 104°F)



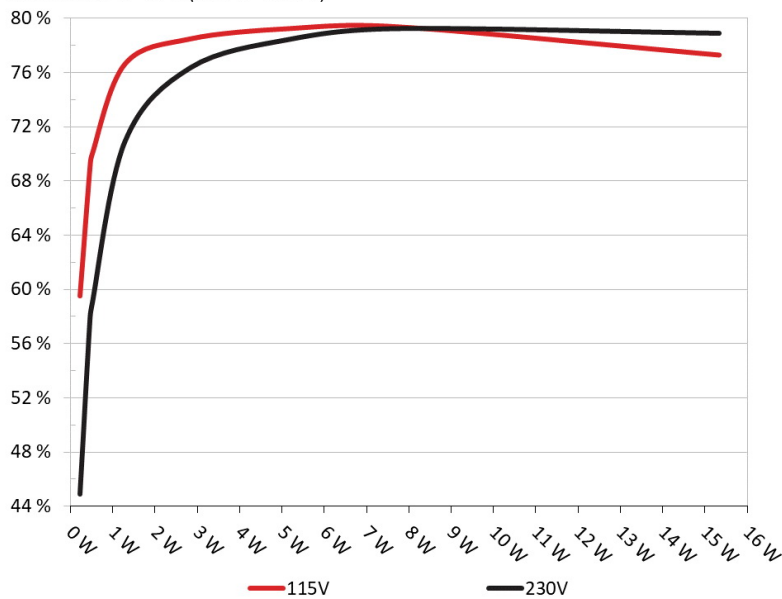
INFO

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: Cooler Master MWE Bronze 650

Ambient: 28°C - 32°C (82.4°F - 89.6°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	0.234	59.542%	0.025
	5.188V	0.393		115.15V
2	0.090A	0.468	68.925%	0.043
	5.187V	0.679		115.15V
3	0.550A	2.848	78.457%	0.203
	5.176V	3.630		115.15V
4	1.000A	5.166	79.209%	0.305
	5.165V	6.522		115.15V
5	1.500A	7.730	79.347%	0.372
	5.152V	9.742		115.16V
6	3.000A	15.343	77.267%	0.453
	5.114V	19.857		115.16V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.234	44.914%	0.010
	5.188V	0.521		230.29V
2	0.090A	0.468	57.707%	0.015
	5.187V	0.811		230.29V
3	0.550A	2.848	76.354%	0.069
	5.176V	3.730		230.33V
4	1.000A	5.166	78.427%	0.117
	5.165V	6.587		230.32V
5	1.500A	7.729	79.231%	0.165
	5.152V	9.755		230.33V
6	3.000A	15.343	78.888%	0.272
	5.114V	19.449		230.30V

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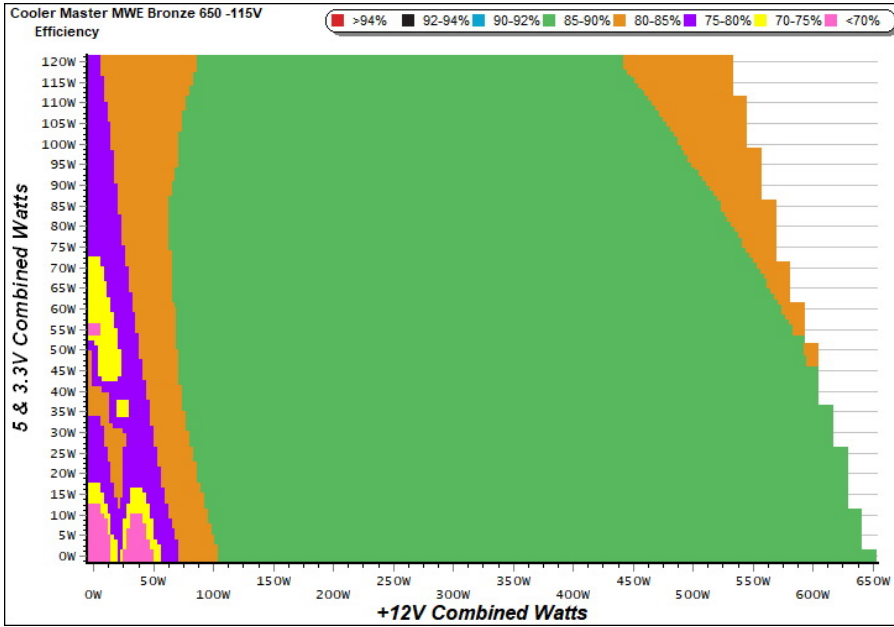
115V

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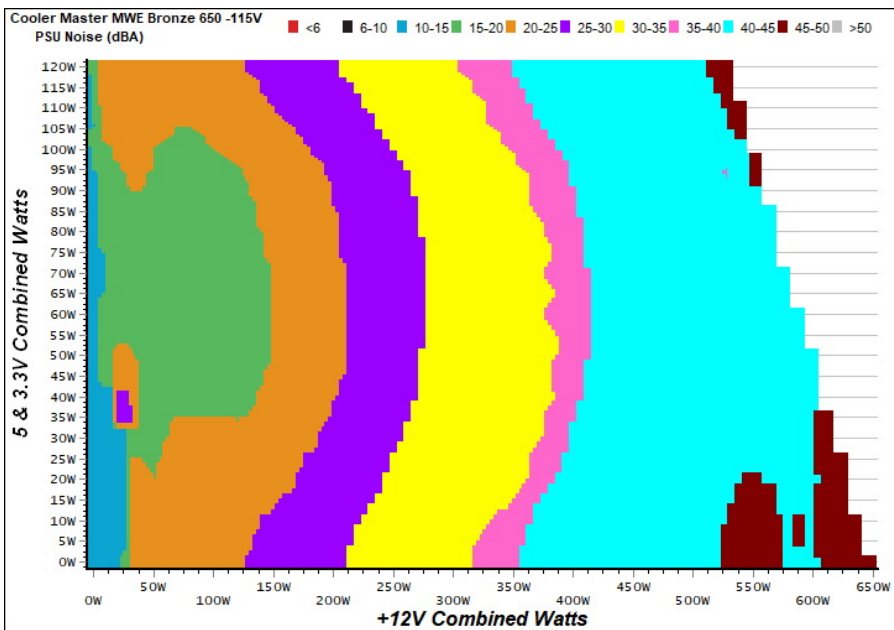
EFFICIENCY GRAPH 115V



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

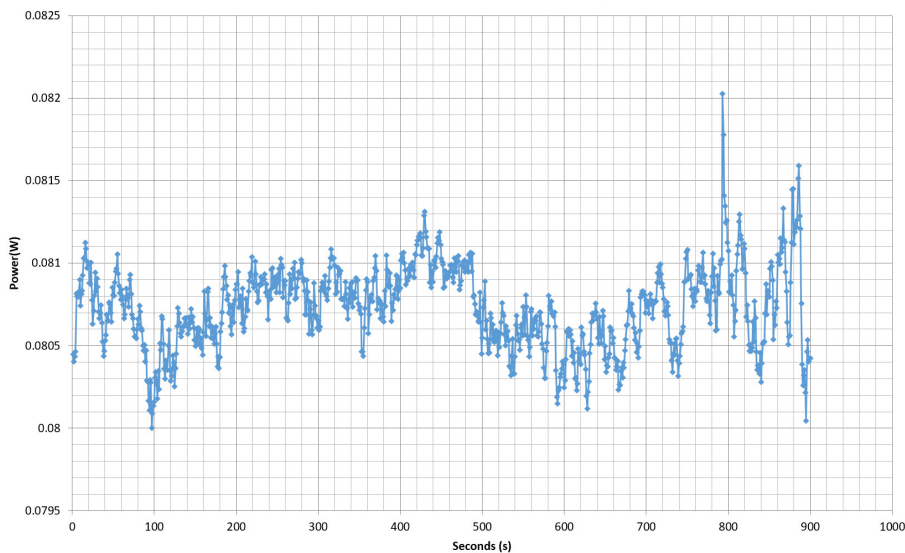
The PSU's noise in its entire operational range and under 30-32 °C (+-2 °C) ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Power - MPE6501ACAAB1191400013 - 20/05/2019 - 10:29



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

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
2	8.126A	3.012A	2.939A	1.166A	129.381	86.115%	1225	27.2	35.86°C	0.958
	12.120V	4.981V	3.366V	5.145V	150.242				42.13°C	115.12V
5	22.742A	5.046A	4.932A	1.762A	324.972	88.067%	1887	38.4	37.40°C	0.983
	12.069V	4.954V	3.345V	5.110V	369.005				45.28°C	115.11V
10	46.624A	9.172A	8.977A	2.976A	649.858	84.194%	2453	45.9	39.85°C	0.993
	12.014V	4.907V	3.309V	5.042V	771.858				50.78°C	115.10V

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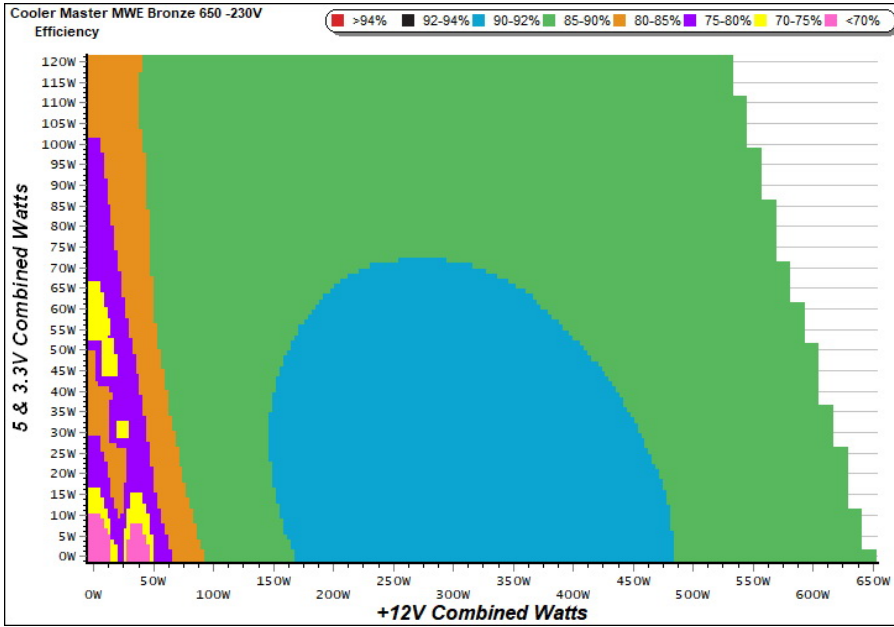
230V

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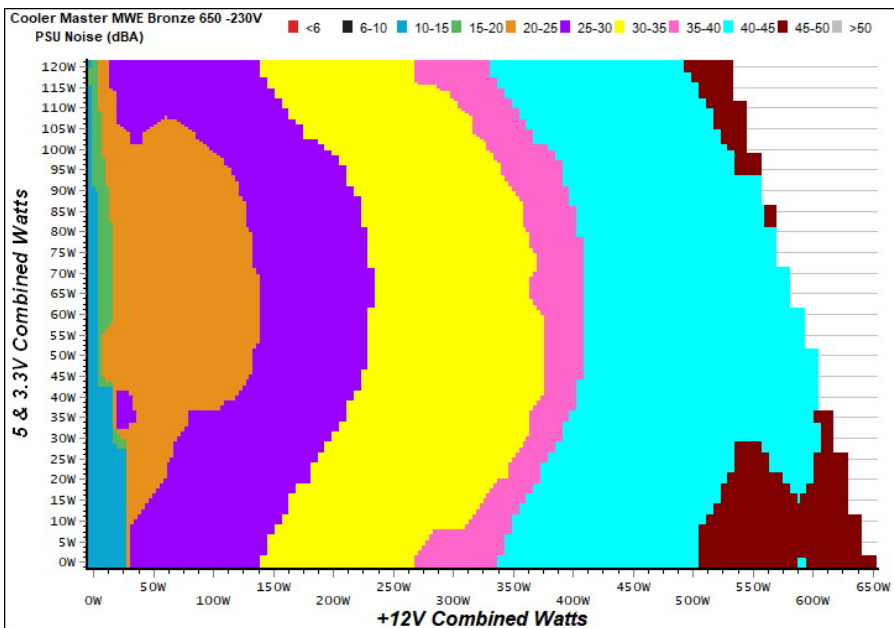
EFFICIENCY GRAPH 230V



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

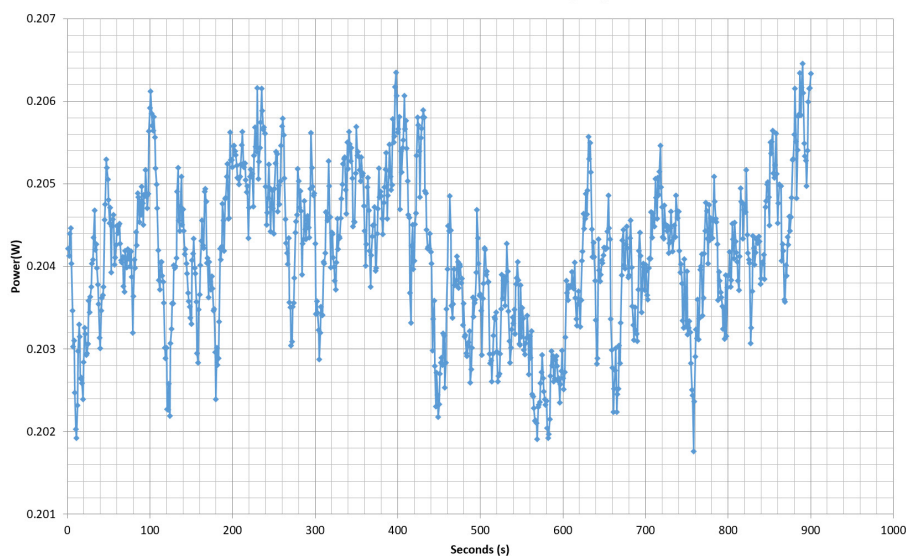
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VAMPIRE POWER -230V

Power - MPE6501ACAAB1191400013 - 20/05/2019 - 10:29



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COMMISSION REGULATION (EU) NO 617/2013 TESTING 230V

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
2	8.122A	3.014A	2.943A	2.942A	138.335	87.198%	1064	22.8	34.41°C	0.832
	12.119V	4.978V	3.363V	5.100V	158.645				40.49°C	230.24V
5	22.742A	5.048A	4.931A	1.761A	324.951	90.386%	1609	33.1	36.04°C	0.935
	12.068V	4.954V	3.345V	5.110V	359.515				43.82°C	230.25V
10	46.628A	9.175A	8.977A	2.975A	649.854	87.979%	2452	45.9	39.66°C	0.967
	12.013V	4.906V	3.308V	5.043V	738.646				50.82°C	230.26V

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EFFICIENCY AND NOISE REPORT IN ACCORDANCE WITH
CYBENETICS ETA AND CYBENETICS LAMBDA PROCEDURE

Cooler Master MWE Bronze 650

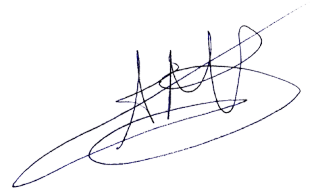


Top side

650W		MODEL / 型			
		Switching Power S			
AC INPUT 交流輸入/交流輸入	100-240V~, 10-5A, 50-60Hz				
DC OUTPUT 直流輸出/直流輸出	+5V	+3.3V	+12V	-12V	+5VSB
	20A	20A	54A	0.3A	3A
TOTAL POWER 總功率/總功率	120W		648W		3.6W 15W
	650W				

Power specifications label

CERTIFICATIONS 115V

Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



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