Sharkoon Rebel P20 1200

Serial Number

Lab ID SK12002378

Certification ID 252378

Test Result Report ID: 24PS2378A

Certificate Issue Date: Mar 14, 2024

Scheme: ETA-EMI PSU

115V

230V

Scheme: LAMBDA PSU

115V

230V

Outside Validation Scope

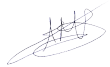
General Information

Test Equipment

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 Chroma 63640-80-80 x10 Chroma 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P, GW Instek ASR-3500
Power Analyzers	Rohde & Schwarz HMC8015 & NPA701
Oscilloscopes	Picoscope 4444, Siglent SDS2104X PLUS
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Temperature Logger	Picoscope TC-08
Tachometer	UNI-T UT372
Multimeters	Keysight 34465A
EMI Analyzer	TekBox TBMR-110M-EU
Isolation Transformer	4kVA
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Testing Methodology	Cybenetics PSU Test Protocol

DUT Information(Non-accredited measurements)

Product Identification Details	
Brand	Sharkoon
Model	Rebel P20 1200
OEM/ODM	Andyson
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	14-7

Rated Frequency (Hz)	50-60
Rated Power (W)	1200
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fully Modular
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225H12F-Z)
Semi-Passive Operation	✓ (selectable)
Cybenetics Testing Information	
Lab ID	SK12002378
Date of receipt	Feb 12, 2024
Testing Date	Mar 5, 2024
Report Issued Date	Mar 14, 2024
DUT Notes	Applicable to both black and white color models.
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	18AWG	No
4+4 pin EPS12V (700mm)	2	2	18AWG	No
6+2 pin PCIe (550mm+150mm)	2	4	18AWG	No
12+4 pin PCIe (600mm) (600W)	1	1	16-26AWG	No
SATA (500mm+150mm+150mm)	1	3	18AWG	No
SATA (500mm+150mm+150mm+150mm)	2	8	18AWG	No

4-pin Molex Adapter (+150mm)	1	1	18AWG	No
AC Power Cord (1360mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	100	3	0.3
	Watts	100		1200	15	3.6
Total Max. Power (W)		1200				

Parts Description

General Data	
Manufacturer (OEM)	Andyson
PCB Type	Double-Sided
Primary Side	
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor SCK205R0 (5 Ohm @ 25°C) & Relay
Bridge Rectifier(s)	2x GBJ2510 (700V, 25A @ 100°C)
APFC MOSFETs	2x Wayon WML53N60C4 (600V,26A @ 100°C, Rds(on): 0.07Ohm)
APFC Boost Diode	1x CREE C3D10060A (600V, 10A @ 152°C)
Bulk Cap(s)	2x Nippon Chemi-Con (420V, 560uF each or 1120uf combined, 2000h @ 105°C,KMR)
Main Switchers	4x Wayon WML28N65F2 (650V, 13A @ 100°C, Rds(on): 0.19Ohm)
APFC Controller	Champion CM6500UNX
Resonant Controller	Champion CU6901VPA
Topology	Primary side: APFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	8x Infineon BSC014N04LS (40V, 125A @ 100°C, Rds(on): 1.4mOhm)
5V & 3.3V	DC-DC Converters: 6x Nexperia PSMN4R0-30YLD (30V, 95A @ 25°C, Rds(on): 4mOhm) PWM Controller(s): ANPEC APW7159C
Filtering Capacitors	Electrolytic: 7x Nippon Chemi-Con (2-5,000 @ 105°C, KZE), 1x Nippon Chemi-Con (10,000 @ 105°C, LE) 4x Rubycon (6-10000 @ 105°C, ZLH), 1x Teapo (3-5,000 @ 105°C, TX) Polymer: 26x Polycap, 5x FPCAP 1x Nichicon HE
Supervisor IC	Weltrend WT7527 (OCP, OTP, OVP, UVP, SCP, PG)
Fan Controller / Micro Controller	Weltrend WT51F104
Fan Model	Hong Hua HA1225H12F-Z (120mm, 12V, 0.58A, Fluid Dynamic Bearing)

5VSB/12VSB Circuit	
Rectifier	PJ335M
Standby PWM Controller	Excelliance MOS EM8569C

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.1 PSU Power Excursion	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	89.006%
Average Noise Output (>1450 Load Combinations)	32.59dBA
Average PF (>1450 Load Combinations)	0.981
Efficiency With 10W (≤500W) or 2% (>500W) Load	67.083%
Standby Power Consumption	0.0710W
Non-Accredited	
12V Ripple (Full Load)	16.29mV
5V Ripple (Full Load)	12.51mV
3.3V Ripple (Full Load)	17.03mV
5VSB Ripple (Full Load)	20.17mV
12V Load Regulation	0.40%
5V Load Regulation	0.84%
3.3V Load Regulation	1.15%
5VSB Load Regulation	5.37%

Inrush Current	34.060A

230V

Accredited		
Average Efficiency (>1450 load combinations)		91.164%
Average Noise Output (>1450 Load Combinations)		32.54dBA
Average PF (>1450 Load Combinations)		0.943
Efficiency With 10W (≤500W) or 2% (>500W) Load		66.008%
Standby Power Consumption		0.1397W
Non-Accredited		
12V Ripple (Full Load)		16.15mV
5V Ripple (Full Load)		13.08mV
3.3V Ripple (Full Load)		17.00mV
5VSB Ripple (Full Load)		22.17mV
12V Load Regulation		0.50%
5V Load Regulation		0.78%
3.3V Load Regulation		1.09%
5VSB Load Regulation		5.11%
Inrush Current		66.390A
12V Transient Response (200%)		11.41V
5V Transient Response (200%)		4.875V
3.3V Transient Response (200%)		3.207V
5VSB Transient Response (200%)		4.929V
Hold-Up Time & PWR_OK Signal		22.20ms
AC Loss to PWR_OK Hold Up Time		17.80ms
PWR_OK Inactive to DC Loss Delay		4.40ms
PSU Timings: T1 (20% / 100%)	89.0ms	89.0ms
PSU Timings: T3 (20% / 100%)	119.0ms	121.0ms
OPP (29.21°C / 42.94°C)	138.93%	108.58%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	22.2
AC Loss to PWR_OK Hold Up Time (ms)	17.8
PWR_OK Inactive to DC Loss Delay (ms)	4.4

Stromverbrauch im Ruhezustand

Tables

115V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.91 V	114.87 V	113.85 V	114.95 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.416	1.340	1.417	1.490	PASS
Mains Voltage THD:	0.15 %	0.12 %	N/A	0.21 %	2.00 %	PASS
Real Power:	0.071 W	0.059 W	N/A	0.086 W	N/A	N/A
Apparent Power:	7.679 W	7.661 W	N/A	7.696 W	N/A	N/A
Power Factor:	0.009	N/A	N/A	N/A	N/A	N/A

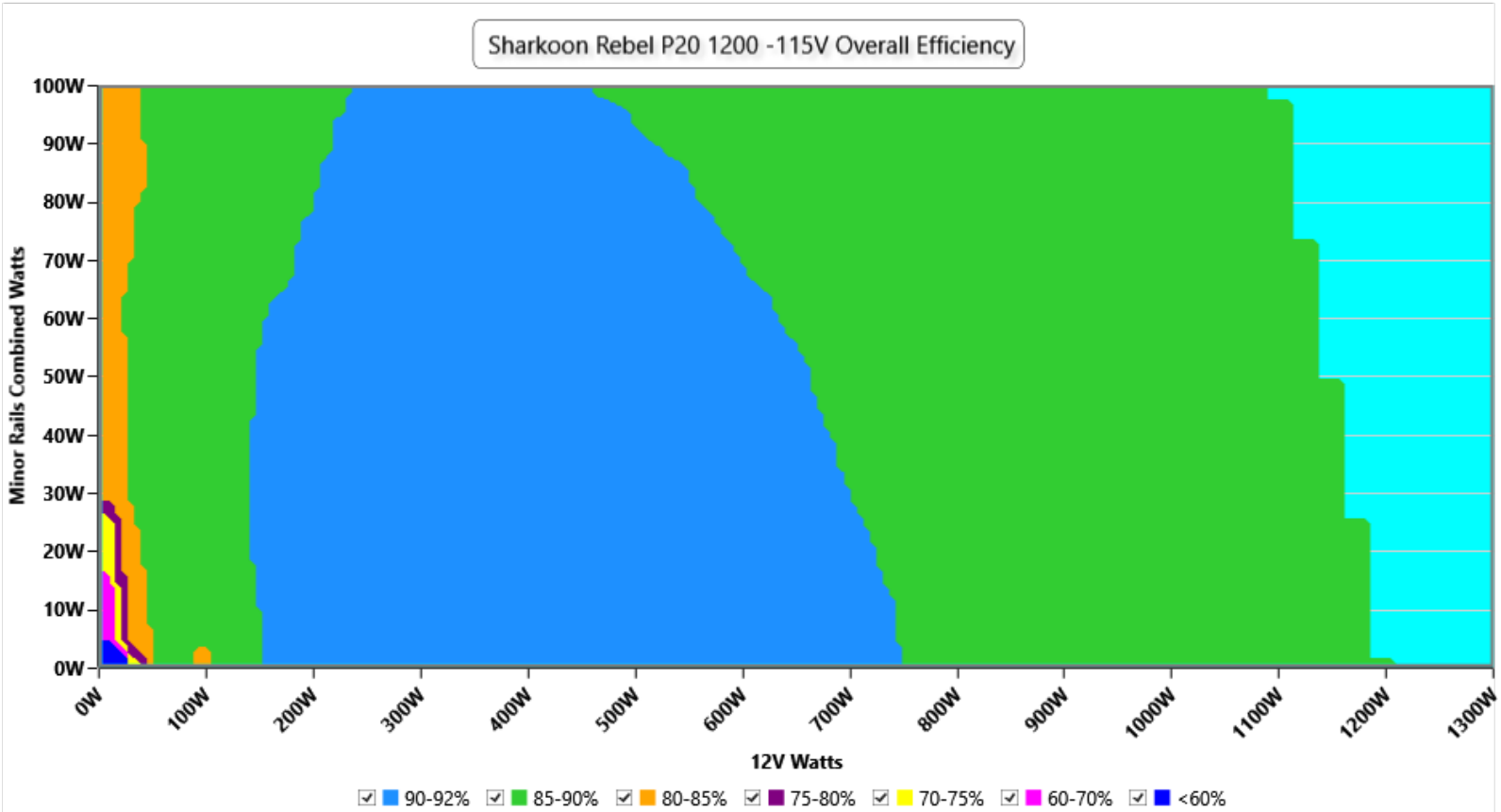
230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.92 V	229.79 V	227.70 V	230.02 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.18 %	0.14 %	N/A	0.24 %	2.00 %	PASS
Real Power:	0.140 W	0.112 W	N/A	0.218 W	N/A	N/A
Apparent Power:	26.162 W	26.082 W	N/A	26.233 W	N/A	N/A

Power Factor:	0.005	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

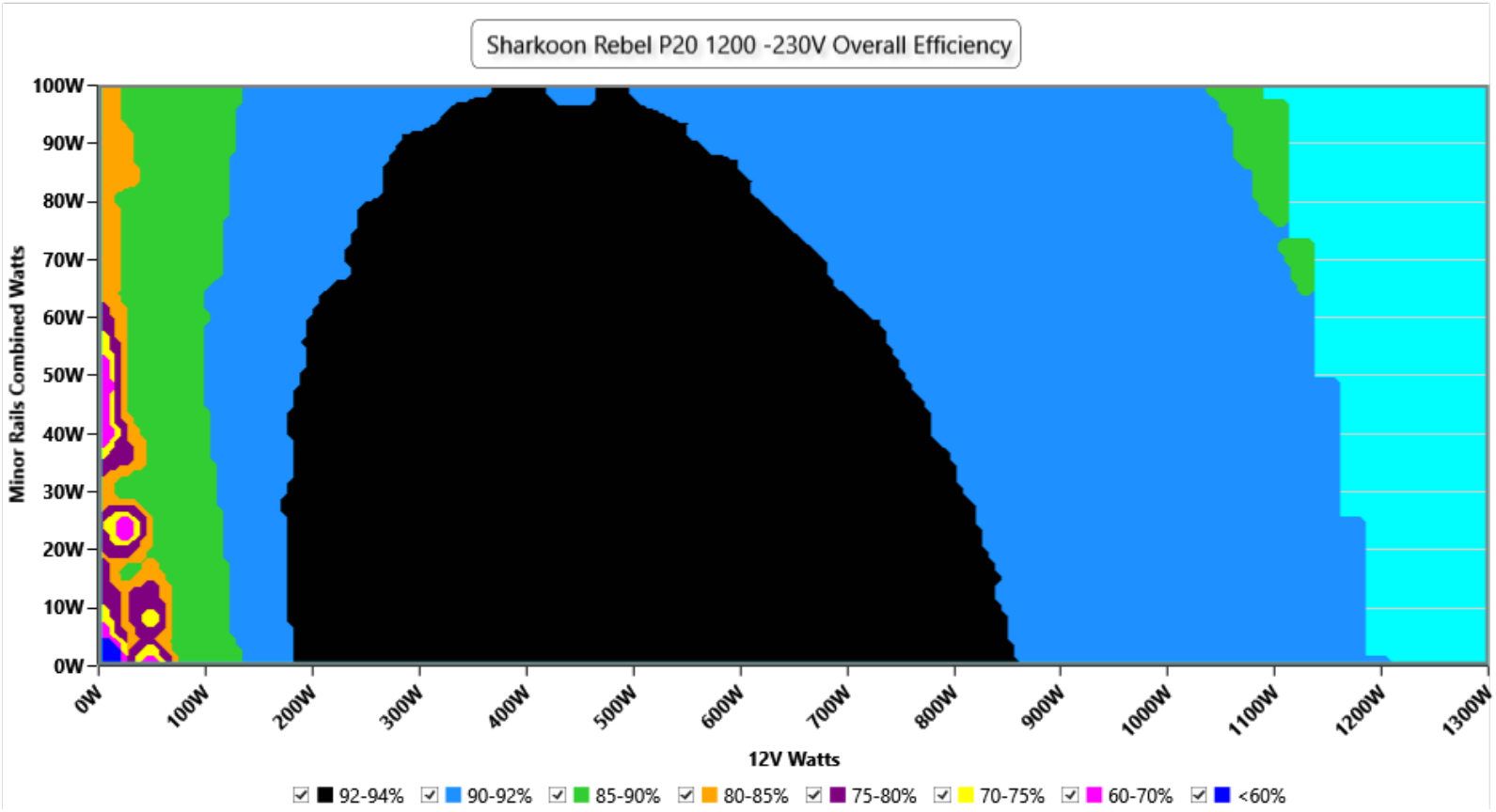
115V



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

230V



INFO

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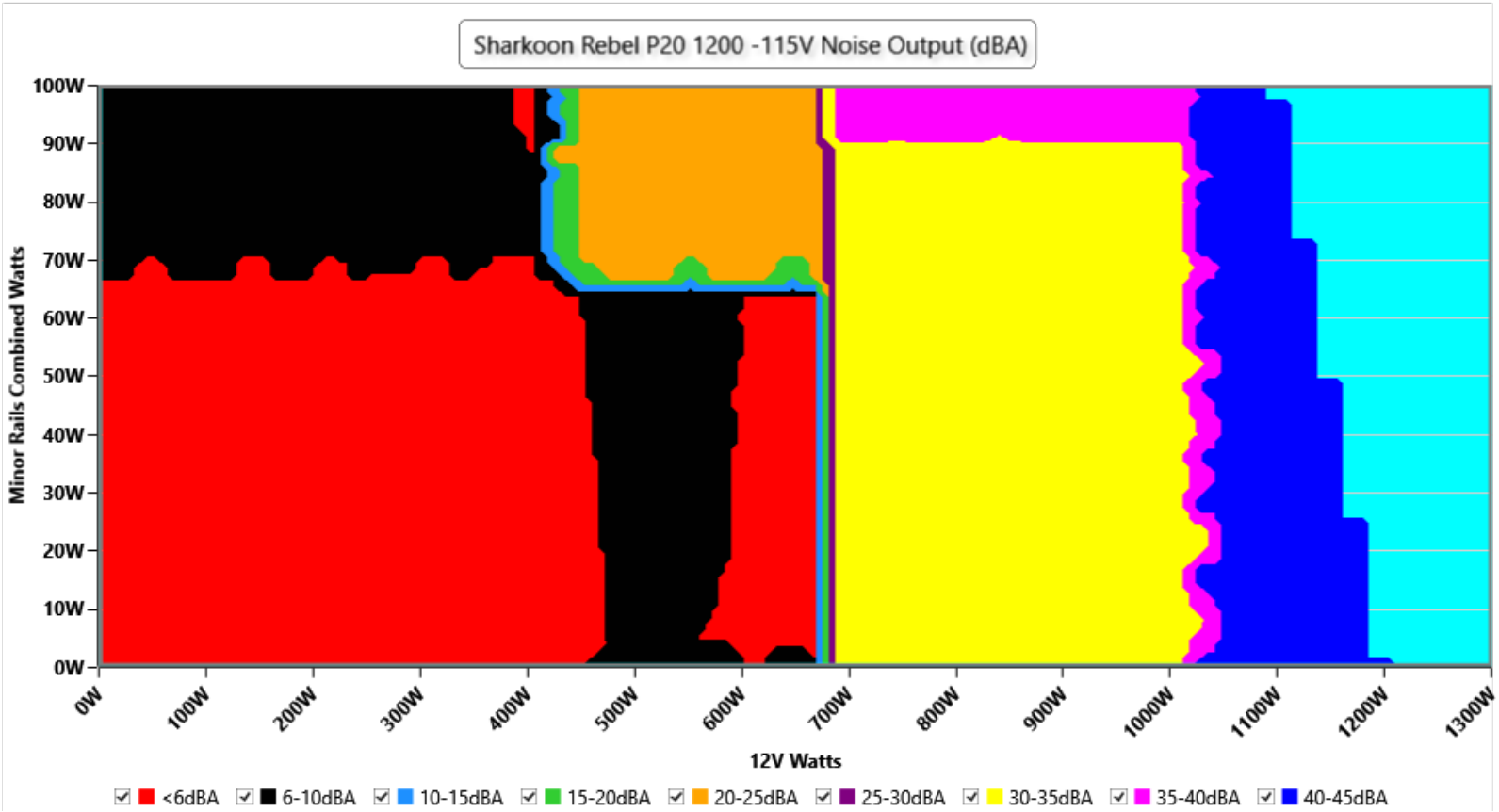
Noise Graph

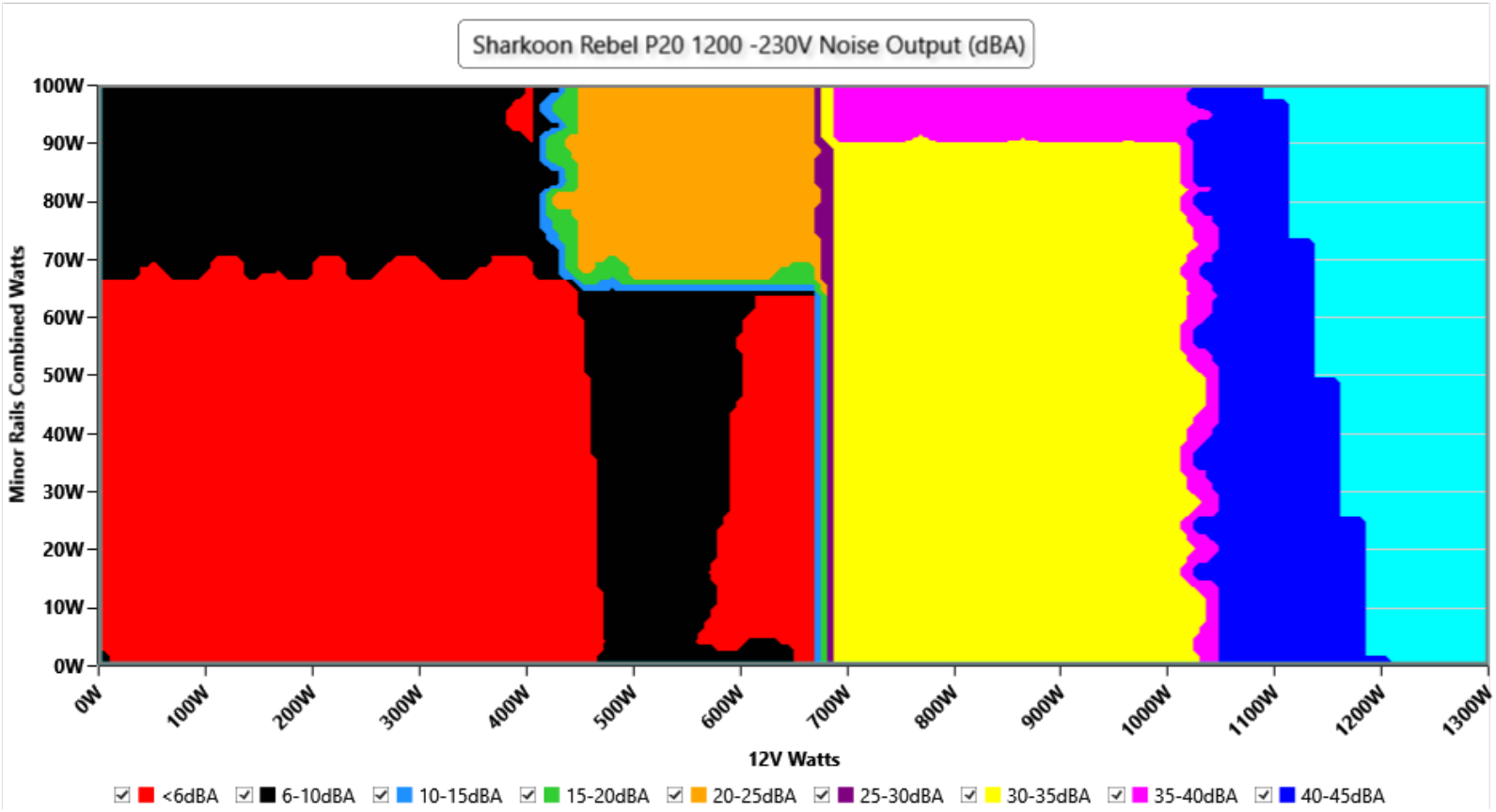
115V



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

230V



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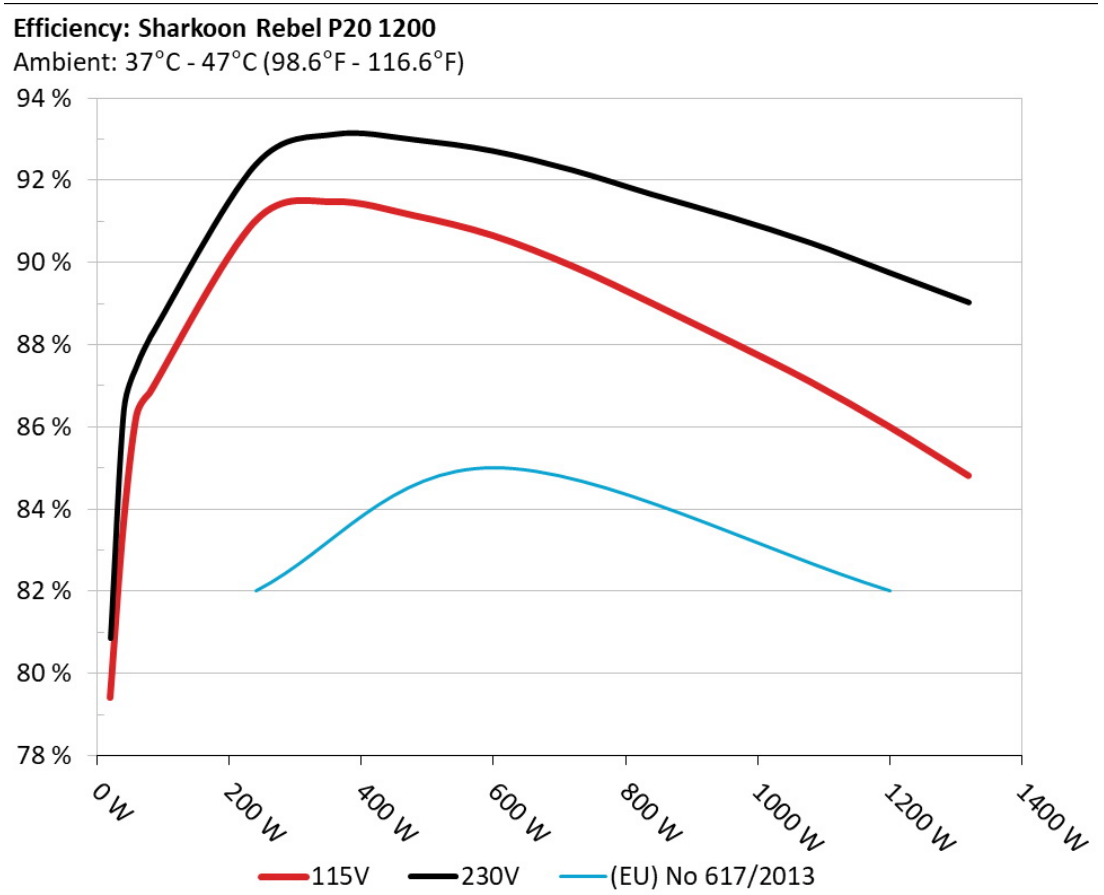
The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

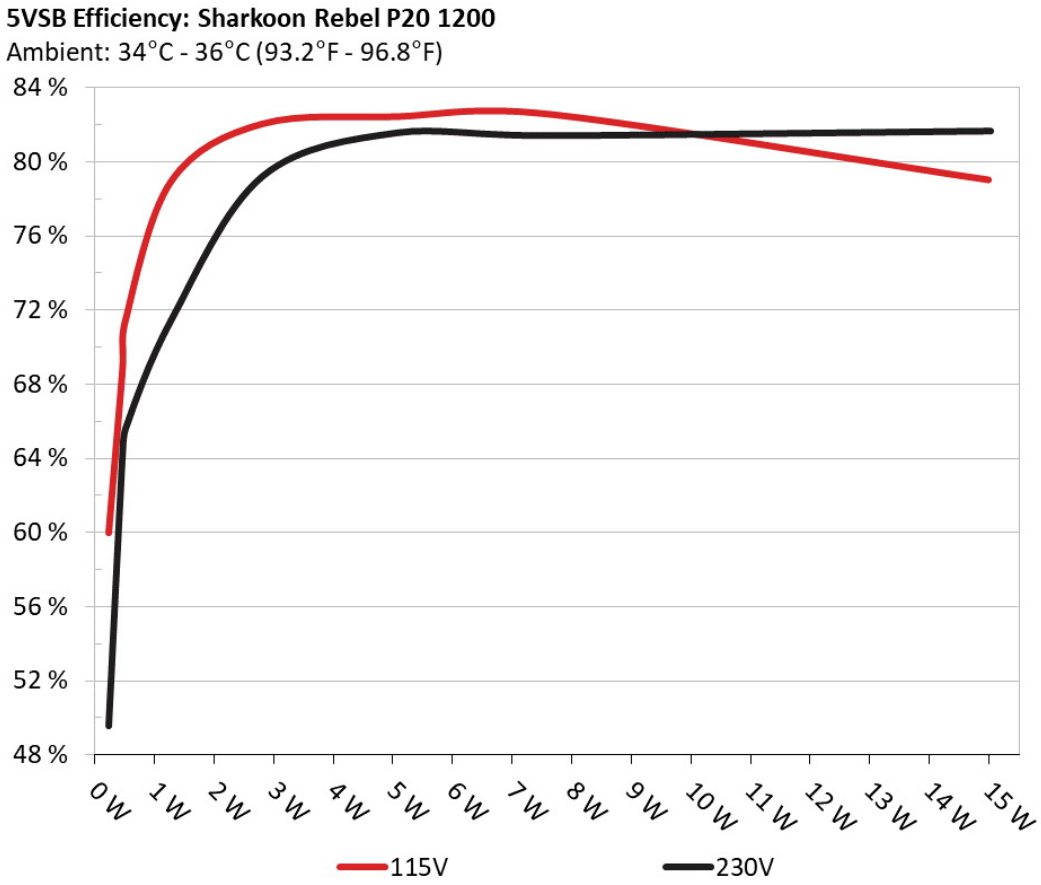
Efficiency under high ambient temperature



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

5VSB Efficiency (ERP LOT 3/6 & CEC)

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	60.466%	0.049
	5.127V	0.382W		114.91V
2	0.09A	0.461W	69.27%	0.084
	5.125V	0.666W		114.91V
3	0.55A	2.807W	82.537%	0.303
	5.104V	3.401W		114.91V
4	1A	5.083W	82.928%	0.391
	5.083V	6.13W		114.91V
5	1.5A	7.59W	83.068%	0.432
	5.059V	9.137W		114.91V
6	3A	14.987W	79.515%	0.497
	4.996V	18.849W		114.9V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	50.044%	0.018
	5.129V	0.463W		229.89V
2	0.09A	0.461W	64.606%	0.027
	5.126V	0.715W		229.89V
3	0.55A	2.809W	79.673%	0.126
	5.107V	3.528W		229.89V
4	1A	5.089W	82.035%	0.2
	5.089V	6.205W		229.89V
5	1.5A	7.603W	81.875%	0.263
	5.068V	9.286W		229.89V
6	3A	15.033W	82.121%	0.357
	5.011V	18.307W		229.89V

Supplementary Tests (For Reference)

Typical 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
10%	8.078A	1.982A	1.978A	0.984A	119.999	86.839%	0	<6.0	44.29°C	0.971
	12.182V	5.045V	3.336V	5.08V	138.186				40.23°C	114.87V
20%	17.187A	2.975A	2.971A	1.187A	239.958	91.027%	0	<6.0	45.27°C	0.976
	12.163V	5.042V	3.332V	5.057V	263.611				40.94°C	114.83V
30%	26.580A	3.473A	3.469A	1.391A	359.215	91.494%	0	<6.0	46.3°C	0.978
	12.158V	5.04V	3.33V	5.035V	392.61				41.49°C	114.8V
40%	36.081A	3.973A	3.969A	1.596A	479.567	91.159%	975	22.7	41.79°C	0.982
	12.149V	5.035V	3.326V	5.012V	526.073				46.85°C	114.75V
50%	45.205A	4.972A	4.969A	1.805A	599.325	90.671%	970	22.5	42.39°C	0.985
	12.141V	5.029V	3.321V	4.988V	660.985				47.89°C	114.71V
60%	54.368A	5.972A	5.969A	2A	719.764	89.928%	963	22.3	42.51°C	0.987
	12.140V	5.024V	3.318V	4.964V	800.375				48.56°C	114.66V
70%	63.475A	6.975A	6.973A	2.227A	839.594	89.028%	1641	38.2	43.42°C	0.988
	12.138V	5.019V	3.313V	4.939V	943.045				50.47°C	114.62V
80%	72.625A	7.975A	7.977A	2.338A	959.571	88.088%	1639	38.1	43.89°C	0.989
	12.141V	5.015V	3.31V	4.919V	1089.333				51.98°C	114.57V
90%	82.099A	8.477A	8.467A	2.45A	1079.367	87.116%	1636	38	44.79°C	0.99
	12.142V	5.013V	3.307V	4.899V	1239.004				54.01°C	114.5V
100%	91.406A	8.983A	8.992A	3.086A	1199.385	86.02%	2149	45.1	44.84°C	0.991
	12.140V	5.009V	3.303V	4.861V	1394.316				54.94°C	114.46V
110%	100.587A	9.988A	10.093A	3.096A	1319.997	84.82%	2155	45.1	46.55°C	0.991
	12.146V	5.005V	3.299V	4.845V	1556.238				57.53°C	114.4V
CL1	0.115A	11.978A	11.959A	0A	101.297	82.854%	992	23.5	40.08°C	0.97
	12.163V	5.025V	3.32V	5.103V	122.262				45.55°C	114.86V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.114A	19.913A	0A	0A	101.348	79.112%	1657	38.5	40.66°C	0.971
	12.189V	5.02V	3.328V	5.107V	128.108				47.69°C	114.87V
CL3	0.114A	0A	19.892A	0A	67.399	76.619%	1660	38.6	39.71°C	0.948
	12.133V	5.039V	3.318V	5.107V	87.967				48.79°C	114.88V
CL4	99.013A	0A	0A	0A	1199.999	86.733%	2149	45.1	45.59°C	0.99
	12.120V	5.028V	3.318V	4.988V	1383.571				56.57°C	114.47V

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
10%	8.094A	1.983A	1.979A	0.984A	119.986	88.196%	0	<6.0	44.24°C	0.833
	12.155V	5.042V	3.334V	5.082V	136.043				40.19°C	229.87V
20%	17.220A	2.977A	2.972A	1.186A	239.941	92.403%	0	<6.0	44.95°C	0.929
	12.139V	5.039V	3.331V	5.06V	259.664				40.55°C	229.85V
30%	26.622A	3.474A	3.47A	1.389A	359.139	93.133%	0	<6.0	45.96°C	0.952
	12.136V	5.037V	3.328V	5.039V	385.62				41.14°C	229.83V
40%	36.121A	3.974A	3.97A	1.595A	479.516	93.001%	971	22.6	41.93°C	0.962
	12.135V	5.033V	3.325V	5.017V	515.604				47.01°C	229.81V
50%	45.231A	4.973A	4.97A	1.802A	599.291	92.725%	969	22.5	42.05°C	0.967
	12.133V	5.028V	3.32V	4.994V	646.366				47.57°C	229.79V
60%	54.398A	5.972A	5.97A	2A	719.732	92.258%	961	22.3	42.79°C	0.97
	12.132V	5.024V	3.317V	4.971V	780.13				49.01°C	229.76V
70%	63.501A	6.975A	6.974A	2.223A	839.543	91.671%	1643	38.2	43.17°C	0.973
	12.133V	5.018V	3.313V	4.947V	915.818				50.3°C	229.74V
80%	72.665A	7.976A	7.978A	2.334A	959.522	91.112%	1641	38.2	43.82°C	0.975
	12.133V	5.014V	3.309V	4.927V	1053.128				51.89°C	229.72V
90%	82.144A	8.479A	8.47A	2.445A	1079.335	90.495%	1637	38	44.37°C	0.976
	12.135V	5.011V	3.306V	4.908V	1192.699				53.42°C	229.7V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	91.443A	8.984A	8.994A	3.079A	1199.374	89.766%	2150	45.1	45.08°C	0.978
	12.135V	5.008V	3.302V	4.872V	1336.104				55.12°C	229.67V
110%	100.651A	9.991A	10.095A	3.09A	1319.983	89.04%	2155	45.1	46.65°C	0.979
	12.138V	5.004V	3.299V	4.855V	1482.465				57.59°C	229.65V
CL1	0.115A	11.977A	11.957A	0A	101.3	83.928%	985	23.1	42.66°C	0.807
	12.180V	5.026V	3.321V	5.103V	120.698				48.09°C	229.87V
CL2	0.114A	19.91A	0A	0A	101.346	80.287%	1660	38.6	42.06°C	0.817
	12.193V	5.02V	3.328V	5.108V	126.233				49.14°C	229.87V
CL3	0.114A	0A	19.889A	0A	67.397	77.559%	1661	38.6	40.37°C	0.717
	12.132V	5.04V	3.319V	5.108V	86.889				49.39°C	229.88V
CL4	99.111A	0A	0A	0A	1199.931	90.428%	2142	45.1	44.03°C	0.977
	12.107V	5.028V	3.318V	4.991V	1326.956				55.01°C	229.68V

The results above are not used in the certification process

Light 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
20W	1.224A	0.495A	0.494A	0.195A	20.002	79.414%	0	<6.0	39.72°C	0.677
	12.135V	5.051V	3.341V	5.122V	25.187				36.67°C	114.91V
40W	2.694A	0.693A	0.692A	0.293A	39.999	83.603%	0	<6.0	41.32°C	0.866
	12.133V	5.051V	3.34V	5.116V	47.844				37.99°C	114.9V
60W	4.164A	0.891A	0.889A	0.391A	59.999	86.297%	0	<6.0	42.5°C	0.929
	12.135V	5.05V	3.339V	5.11V	69.526				38.72°C	114.9V
80W	5.629A	1.089A	1.087A	0.49A	79.945	87.301%	0	<6.0	43.21°C	0.95
	12.138V	5.049V	3.338V	5.103V	91.574				39.23°C	114.89V

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20W	1.228A	0.495A	0.494A	0.195A	19.991	80.868%	0	<6.0	39.6°C	0.393
	12.095V	5.047V	3.338V	5.121V	24.722				36.56°C	229.9V
40W	2.702A	0.694A	0.692A	0.293A	39.992	86.423%	0	<6.0	40.66°C	0.539
	12.096V	5.046V	3.337V	5.115V	46.65				37.3°C	229.89V
60W	4.175A	0.892A	0.89A	0.391A	59.992	87.509%	0	<6.0	41.72°C	0.662
	12.102V	5.046V	3.337V	5.109V	68.555				38.2°C	229.88V
80W	5.642A	1.09A	1.088A	0.49A	79.934	88.532%	0	<6.0	43.01°C	0.728
	12.107V	5.045V	3.336V	5.104V	90.291				39.16°C	229.88V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	15.66mV	10.57mV	11.46mV	16.01mV	Pass
20% Load	12.48mV	11.55mV	12.63mV	16.93mV	Pass
30% Load	11.72mV	12.72mV	13.10mV	16.72mV	Pass
40% Load	12.02mV	11.39mV	12.69mV	16.83mV	Pass
50% Load	12.02mV	10.93mV	13.97mV	19.39mV	Pass
60% Load	13.10mV	11.60mV	13.56mV	20.31mV	Pass
70% Load	10.85mV	10.37mV	13.20mV	18.72mV	Pass
80% Load	9.92mV	10.01mV	13.71mV	18.16mV	Pass
90% Load	12.74mV	12.01mV	15.19mV	21.74mV	Pass
100% Load	16.29mV	12.51mV	17.03mV	20.17mV	Pass
110% Load	16.88mV	14.05mV	17.19mV	20.82mV	Pass
Crossload1	25.88mV	11.80mV	13.78mV	14.18mV	Pass
Crossload2	23.63mV	14.87mV	12.13mV	13.40mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	26.29mV	11.44mV	14.32mV	13.30mV	Pass
Crossload4	12.69mV	11.24mV	14.73mV	14.47mV	Pass

The results above are not used in the certification process

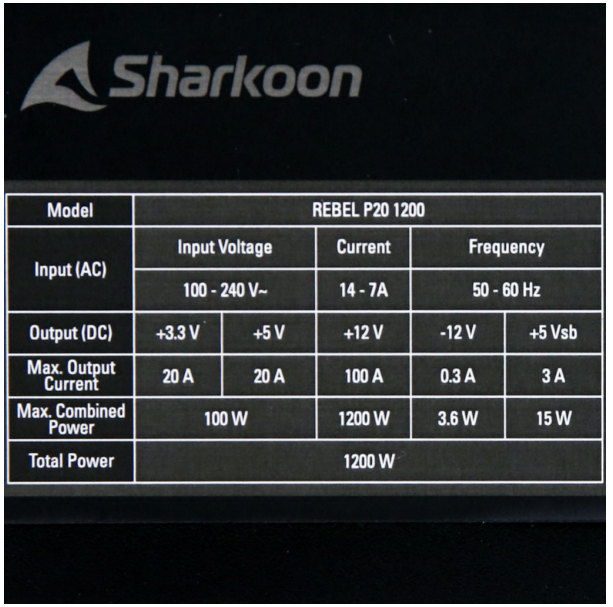
230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	15.86mV	10.37mV	11.66mV	16.78mV	Pass
20% Load	11.46mV	11.75mV	11.92mV	17.19mV	Pass
30% Load	11.41mV	12.57mV	12.99mV	16.73mV	Pass
40% Load	12.33mV	10.73mV	12.53mV	16.88mV	Pass
50% Load	10.69mV	9.40mV	11.87mV	15.91mV	Pass
60% Load	11.97mV	10.88mV	13.56mV	17.85mV	Pass
70% Load	12.38mV	11.29mV	13.66mV	17.80mV	Pass
80% Load	12.74mV	13.39mV	15.09mV	18.72mV	Pass
90% Load	12.84mV	11.95mV	16.78mV	19.28mV	Pass
100% Load	16.15mV	13.08mV	17.00mV	22.17mV	Pass
110% Load	16.62mV	13.15mV	17.60mV	26.70mV	Pass
Crossload1	26.03mV	11.89mV	13.79mV	14.93mV	Pass
Crossload2	41.01mV	14.87mV	12.02mV	14.63mV	Pass
Crossload3	25.63mV	10.58mV	13.56mV	12.38mV	Pass
Crossload4	16.79mV	12.12mV	15.54mV	16.08mV	Pass

The results above are not used in the certification process

Sharkoon Rebel P20 1200

Top side



Model	REBEL P20 1200				
Input (AC)	Input Voltage		Current	Frequency	
	100 - 240 V~		14 - 7A	50 - 60 Hz	
Output (DC)	+3.3 V	+5 V	+12 V	-12 V	+5 Vsb
Max. Output Current	20 A	20 A	100 A	0.3 A	3 A
Max. Combined Power	100 W		1200 W	3.6 W	15 W
Total Power	1200 W				

Power specifications label

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CYBENETICS LTD Syrou 6, Latsia, 2231, Nicosia Cyprus

www.cybenetics.com - info@cybenetics.com