

# Quality Engineering Test Report

**SERIES: SP-200 200 WATTS SIGLE OUTPUT SWITCHING POWER SUPPLY**

**SAMPLE: A.SP-200-3.3 3.3V / 40A D.SP-200-12 12V /16.7A G.SP-200-24 24V /8.4A**  
**B.SP-200-5 5V /40A E.SP-200-13.5 13.5V /14.9A H.SP-200-27 27V /7.5A**  
**C.SP-200-7.5 7.5V /26.7A F.SP-200-15 15V /13.4A I.SP-200-48 48V /4.2A**

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
1	AC INPUT VOLTAGE RANGE	I/P:TESTING SPEC:85-264VAC O/P:FULL LOAD	C: 66.2V~267VAC	P
2	LINE REGULATION	I/P:85-264VAC SPEC: O/P:FULL LOAD A: ±0.5% B: ±0.5% C:±0.5% D: ±0.5% E: ±0.5% G:±0.5% H: ±0.5% I: ±0.5%	A: -0.18% - -0.18% B: 0% - 0% C: -0.08% - +0.00% D: 0% - 0.04% E: 0% - -0.04% F: 0% - 0% G: 0% - 0% H: 0.02% - 0% I: 0% - 0.01%	P
3	LOAD REGULATION	I/P:230VAC SPEC: O/P:0% LOAD TO FULL LOAD A: ±1% B: ±1% C: ±1% D: ±0.5% E: ±0.5% F: ±0.5% G: ±0.5% H: ±0.5% I: ±0.5%	A: -0.39% - 0.935% B: -0.6% - 0.49% C: -0.33% - +0.24% D: 0.05% - 0.14% E: 0% - -0.08% F: 0% - 0% G: 0.03% - 0.05% H: -0.06% - 0.06% I: 0.06% - -0.08%	P
4	OUTPUT VOLTAGE TOLERANCE	I/P:85-264VAC SPEC: O/P:0% LOAD TO FULL LOAD A: ±2% B: ±2% C: ±2% D: ±2% E: ±2% F: ±2% G: ±1% H: ±1% I: ±1%	A: -0.927% - +0.209% B: -1.1% - 0% C: -0.16% - -0.67% D: 0.05% - 0.2% E: 0% - 0.08% F: 0.07% - 0% G: 0.08% - 0% H: -0.01% - 0.1% I: -0.07% - 0.06%	P
5	RIPPLE & NOISE	I/P:230VAC SPEC: O/P: FULL LOAD A:100mV B:100mV C:100mV D:100mV E:100mV F:100mV G:150mV H:150mV I:250mV	A: 43mV B: 62mV C: 76mV D: 49mV E: 47mV F: 43mV G: 57mV H: 74mV I: 63mV	P
6	AC INPUT CURRENT	I/P:230VAC SPEC: 1.4A(3.3V:1A) O/P:FULL LOAD	C:1.155A	P
7	MAX. INRUSH CURRENT	I/P:230VAC SPEC: 40A O/P:FULL LOAD	C:36.656A	P

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
8	O/P VOLTAGE ADJ.RANGE	I/P:230VAC O/P:MIN. LOAD SPEC: +10% - -5% A:3.1V~3.6V B:4.7V~5.5V C:7.12V~8.25V D:11.4V~13.2V E:12.8 V~14.8V F:14.2V~16.5V G:22.8V~26.4V H:25.6V~29.7V I:45.6V~52.8V	A:3.103V~3.795V B:4.5V~5.8V C:6.323V~8.984V D:10.4V~13.87V E:10.73V~14.88V F:12.29V~17.49V G:19.3V~27.34V H:20.2V~30.3V I:41.8V~54.3V	P
9	SET UP TIME	I/P:230VAC O/P:FULL LOAD SPEC:600ms	C:249.8mS	P
10	HOLD UP TIME	I/P:230VAC O/P:FULL LOAD SPEC:20mS	C:30.785mS	P
11	EFFICIENCY	I/P:230VAC O/P: FULL LOAD SPEC: A:65% B:71% C:76% D:79% E:80% F:81% G:83% H:83% I:84%	A: 65.8% B: 72.1% C: 77.08% D: 80.56% E: 82.7% F: 82.3% G: 84.8% H: 84.6% I: 84.8%	P
12	OVER LOAD PROTECTION	I/P:230VAC O/P:TESTING SPEC:105%~150%	A: 125% B: 132% C: 124% D: 125% E: 125% F: 127% G: 113% H: 111% I: 128%	P
13	OVER VOLTAGE PROTECTION	I/P:230VAC O/P: TESTING SPEC:110%~135% A:3.63~4.45 V B:5.5~6.75V C:8.25~10.12V D:13.2~16.2V E:14.8~18.2V F:16.5~20.2V G:26.4~32.4V H:29.7~36.4V I:52.8~64.8V	A: 4.09V B: 5.83V C: 9.2V D: 14.5V E: 16.6V F: 18.4V G: 28.6V H: 35.5V I: 58.2V	P
14	GROUND LEAKAGE CURRENT	I/P:240VAC SPEC: L-FG--<2mA N-FG--<2mA	A: L-FG:0.3mA N-FG:0.25mA	P
15	GROUNDING CONTINUITY	SPEC: FG--CHASSIS<0.1Ohms/2min	C: 65mOhms	P
16	INSULATION RESISTANCE	SPEC: O/P-FG 500VDC / 100MOhms MIN. I/P-O/P 500VDC / 100MOhms MIN. I/P-FG 500VDC / 100MOhms MIN.	C: O/P-FG >100MOhms I/P-O/P >100MOhms I/P-FG >100MOhms	P

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17	DIELECTRIC / WITHSTAND VOLTAGE	SPEC: I/P- O/P: 3000VAC/ 60 sec (10mA CUT-OFF) I/P - FG: 1500VAC/60 sec (10mA CUT-OFF) O/P - FG: 500VAC/60sec (10mA CUT-OFF)	C: I/P-O/P :4.38mA I/P-FG :3.87mA O/P- FG :3.26mA	P																																																												
18	BURN-IN TEST	I/P: 230VAC O/P:FULL LOAD TA:25.3°C BURN-IN DURATION : 2.0 hrs	B: NON BREAK	P																																																												
19	ENVIRONMENT TEST	1.LOW TEMPERATURE TEST I/P : 230 VAC O/P : 80% LOAD AMBIENT TEMPERATURE : -10.1°C	B: AFTER 6 hrs POWER ON OK	P																																																												
		2.HIGH AMBIENT TEMPERATURE FULL LOAD TEST I/P:230VAC O/P:FULL LOAD AMBIENT TEMPERATURE : 40.1°C with cooling FAN	B : AFTER 86 hrs NON BREAK																																																													
		3.HIGH HUMIDITY HIGH VOLTAGE ON/OFF TEST I/P : 272VAC O/P : FULL LOAD AMBIENT TEMPERATURE : 25°C AMBIENT HUMIDITY : 95%	B: AFTER14.5hrs POWER ON/OFFNON BREAK																																																													
20	TEMPERATURE RISE TEST Trise OF PARTS	B: I/P :230VAC AFTER 2 .5hrs BURN-IN O/P :FULL LOAD TA:23.3°C	<table border="1"> <thead> <tr> <th></th> <th>POSITION</th> <th>P/N</th> <th>TEMP</th> <th>Trise</th> </tr> </thead> <tbody> <tr> <td></td> <td>BD1</td> <td>BRIDGE DIODE</td> <td>40.3°C</td> <td>17°C</td> </tr> <tr> <td></td> <td>Q2</td> <td>MAIN TRANSISTOR</td> <td>50.8°C</td> <td>27.5°C</td> </tr> <tr> <td></td> <td>Q1</td> <td>PFC TRANSISTOR</td> <td>59.3°C</td> <td>36°C</td> </tr> <tr> <td></td> <td>T1</td> <td>MAIN TRANSFORMER COIL</td> <td>54.6°C</td> <td>31.3°C</td> </tr> <tr> <td></td> <td>T1</td> <td>MAIN TRANSFORMER CORE</td> <td>56.6°C</td> <td>33.3°C</td> </tr> <tr> <td></td> <td>D20</td> <td>O/P DIODE</td> <td>65.2°C</td> <td>41.9°C</td> </tr> <tr> <td></td> <td>C42</td> <td>O/P FILTER CAPACITOR</td> <td>50°C</td> <td>26.7°C</td> </tr> <tr> <td></td> <td>L2</td> <td>O/P CHOCK</td> <td>88.3°C</td> <td>65°C</td> </tr> <tr> <td></td> <td>C5</td> <td>I/P FILTER CAPACITOR</td> <td>42.3°C</td> <td>19°C</td> </tr> <tr> <td></td> <td>LF1</td> <td>LINE FILTER COIL</td> <td>43.7°C</td> <td>20.4°C</td> </tr> <tr> <td></td> <td>D2</td> <td>PFC DIODE</td> <td>41°C</td> <td>17.7°C</td> </tr> </tbody> </table>		POSITION	P/N	TEMP	Trise		BD1	BRIDGE DIODE	40.3°C	17°C		Q2	MAIN TRANSISTOR	50.8°C	27.5°C		Q1	PFC TRANSISTOR	59.3°C	36°C		T1	MAIN TRANSFORMER COIL	54.6°C	31.3°C		T1	MAIN TRANSFORMER CORE	56.6°C	33.3°C		D20	O/P DIODE	65.2°C	41.9°C		C42	O/P FILTER CAPACITOR	50°C	26.7°C		L2	O/P CHOCK	88.3°C	65°C		C5	I/P FILTER CAPACITOR	42.3°C	19°C		LF1	LINE FILTER COIL	43.7°C	20.4°C		D2	PFC DIODE	41°C	17.7°C	P
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21	LIFE CYCLE	SUPPOSE C42 IS THE MOST CRITICAL COMPONENT I/P:230VAC O/P:FULL LOAD Ta:25°C Tc42 : 51.7°C Life:229432hrs I/P:230VAC O/P:FULL LOAD Ta:40°C Tc42 : 74.5°C Life:64531hrs																																																														
22	CRITICAL COMPONENT RECORD ( FOR QC INSPECTION REFERENCE ONLY )	B : FUSE :4A/250V GFE/GNA BRIDGE DIODE : D10XB60 4A/800V GL LINE FILTER :TF-306 TRANSFOMER :TF-609 OUTPUT DIODE :SBL3040 30A/40V ESAD83-004 OUTPUT CAPACITOR :ELNA 2200uF/10V 105°C RJH INPUT CAPACITOR :HITACHI 1000uF/400V,85°C HP3/USC P.C.B :SP-200 CEM-3 20Z SS																																																														

DATE	SAMPLE	NOTE	TEST	APPROVAL
19990514	RD SAMPLE 5V,24V, 48V	PASS	H.C.LIOU	Max Lin
19990719	RD SAMPLE 5V,12V, 24V,48V	PASS	H.C.LIOU	Max Lin
19990719	PRODUCT SAMPLE 9911A33	PASS	C.C.CHEN	Max Lin
20000120	PRODUCT SAMPLE A001B04 5V,27V	PASS	C.C.CHEN	Max Lin
20000613	PRODUCT SAMPLE A006A21 3.3V	PASS	VINCENT	Max Lin
20000817	PRODUCT SAMPLE A006A21 3.3V	PASS	VINCENT	Max Lin
20010327	PRODUCT SAMPLE A103C03 3.3V	PASS	VINCENT	Max Lin
20010822	PRODUCT SAMPLE A107C07D 7.5V	PASS	VINCENT	Max Lin