

MODEL : SP-480-24

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 150 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1: 25 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 22 V~ 27.6 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	20.11V~ 30.88 V/230VAC 20.11V~ 30.88 V/115VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: +1 %~ -1 % (Max)	I/P: 264 VAC / 85 VAC O/P:FULL/ 0 % LOAD Ta:25°C	V1: 0.1 %~ -0.1%	P
4	LINE REGULATION	V1: +0.2 %~ -0.2 % (Max)	I/P: 264 VAC ~ 165 VAC O/P:FULL LOAD Ta:25°C	V1: 0.05 %~ -0.05 %	P
5	LOAD REGULATION	V1: +0.5 %~ -0.5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.1 %~ -0.1 %	P
6	SET UP TIME	230 VAC/ 1000 ms (Max) 115 VAC/ 2500 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 546 ms 115 VAC/ 656 ms	P
7	RISE TIME	230VAC/ 80 ms (Max) 115VAC/ 80 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 40 ms 115 VAC/ 40 ms	P
8	HOLD UP TIME	230 VAC/ 18 ms (TYP) 115 VAC/ 18 ms(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 25 ms 115 VAC/ 25 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: <5 %	P
10	DYNAMIC LOAD	V1: 2400 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	642 mVp-p	P

**INPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	264 VAC~ 85 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	67 V~ 264V	P
			I/P: LOW-LINE-3V= 82 V HIGH-LINE+15%= 300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN ( AC POWER ON/OFF NO DAMAGE )	TEST: OK	
2	INPUT FREQUENCY RANGE	47 HZ ~ 63 HZ NO DAMAGE OSC	I/P: 264 VAC ~ 165 VAC O/P:FULL-MIN LOAD Ta:25°C	TEST: OK	P
3	POWER FACTOR	0.95/ 230 VAC(TYP) 0.98/ 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	PF= 0.98 / 230 VAC PF= 0.99 / 115 VAC	P
4	EFFICIENCY	87 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	88.9 %	P
5	INPUT CURRENT	230 V/ 3.5 A(TYP) 115 V/ 6.5 A(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 2.5 A/ 230 VAC I = 5 A/ 115 VAC	P
6	INRUSH CURRENT	230 V/ 40 A(TYP) 115 V/ 25 A(TYP) COLD START	I/P: 230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25°C	I = 29 A/ 230 VAC I = 14 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P: 254 VAC O/P:Min LOAD Ta:25°C	L-FG: 1.4 mA N-FG: 1.4 mA	P

**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	23.1A ~ 29.7A	I/P: 230 VAC I/P: 165 VAC O/P: TESTING Ta: 25°C	27.7 A / 230 VAC 28.4 A / 115 VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1: 28.8 V ~ 33.6 V	I/P: 230 VAC I/P: 115 VAC O/P: MIN LOAD Ta: 25°C	32 V / 230 VAC 32 V / 115 VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1: 80°C TSW2: 90°C NO DAMAGE	I/P: 230 VAC O/P: FULL LOAD	O.T.P. Active NO DAMAGE Shunt down o/p voltage Recovery Automatically After temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 267 VAC O/P: 100% LOAD Ta: 25°C	NO DAMAGE Constant Current Limiting	P

**CONTROL FUNCTION TEST**

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	FAN SPEED CONTROL	-----	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	Fan Voltage = 11.95 V	P
2	REMOTE CONTROL	Rc+ / Rc- 0 V ~ 0.8 V POWER ON 4 V ~ 10 V POWER OFF	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	0V ~ 1.1 V POWER ON 1.2V ~ 10 V POWER OFF	P



**SAFETY TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.0 KVAC/min I/P-FG: 1.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min Ta:25°C	I/P-O/P: 12.5 mA I/P-FG: 9.6 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC Ta:25°C	I/P-O/P: 6 G Ω I/P-FG: 6 G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C	7 mΩ	P
4	APPROVAL	TUV: Certificate NO : R50039121 UL: File NO : E183223			P

**E.M.C TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				



## M.T.B.F &amp; LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 52 IS THE MOST CRITICAL COMPONENT I/P:230 VAC O/P:FULL LOAD Ta=25 °C LIFE TIME= 1332102HRS I/P:230 VAC O/P:FULL LOAD Ta=60 °C LIFE TIME= 106843HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 120.5KHRS			P

## COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) <b>Peak Voltage</b>	Q3 Rated IRFP450 : 500 V 14 A	I/P:High-Line +3V =267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 188 V (2) 424 V (3) 464 V	P
2	Diode <b>Peak Voltage</b>	D53Rated S20LC20U :200 V20 A	I/P:High-Line +3V =267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1)77.6V (2)110V (3)110V	P
3	Clamp Diode <b>Peak Voltage</b>	D9 Rated SF5408: 1K V 3 A	I/P:High-Line +3V =267V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25°C	(1)402V (2)416V	P
4	<b>Input Capacitor Voltage</b>	C5 Rated : 220 u / 400 V 85°C/HP3 Series	I/P:High-Line +3V =267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(1) 380V (2) 416V (3) 398V	P
5	<b>Control IC Voltage Test</b>	U 1 Rated 4800 : 16 V	I/P:High-Line +3V =267V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(1) 15.3 V (2) 15.3V (3) 15.4V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2003/10/28	RD SMAPLE	PASS	VINCENT TSENG	MAX LIN
2003/12/18	PRODUCT SAMPLE A311B18	PASS	VINCENT TSENG	MAX LIN
2004/8/16	PRODUCT SAMPLE A405A24	PASS	VINCENT TSENG	MAX LIN
2004/8/30	PRODUCT SAMPLE A408B27	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023