OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 100mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	V1: 33 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 2.97V ~ 3.6 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	2.9V~3.78 V//230 VA 2.9V ~3.78 V/115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: -2% ~ +2% (Max)	I/P: 264 VAC / 90 VAC O/P:FULL/ 0 % LOAD Ta:25℃	V1: 0.2% ~-0.2 %	P
4	LINE REGULATION	V1: -0.5% ~ +0.5 % (Max)	I/P: 264 VAC ~ 90 VAC O/P:FULL LOAD Ta:25℃	V1:0% ~ -0.2%	P
5	LOAD REGULATION	V1: -1%~ +1% (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0% ~0 %	P
6	SET UP TIME	230 VAC/ 500 ms (Max) 115 VAC/ 1200 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC / 289 ms 115 VAC / 285 ms	P
7	RISE TIME	230VAC/ 30 ms (Max) 115VAC/ 30 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 13 ms 115 VAC/ 14 ms	P
8	HOLD UP TIME	230VAC/ 22 ms (TYP) 115VAC/ 22 ms(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 34ms 115 VAC/ 35 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: <±5 %	P
10	DYNAMIC LOAD	V1: 660mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	408mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	264VAC~ 90VAC	I/P:TESTING O/P:FULL LOAD Ta:25℃	54V ~ 264V	P
			I/P: LOW-LINE-3V= 87 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 ~ 90 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST:OK	P
3	POWER FACTOR	0.93 / 230 VAC(TYP) 0.97 / 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	PF=0.95 / 230VAC PF=0.98 / 115VAC	P
4	EFFICIENCY	72% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	72.82%	P
5	INPUT CURRENT	230 V / 1.1 A (TYP) 115 V / 2.2 A(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I =0.85A/ 230VAC I =1.67 A/ 115VAC	P
6	INRUSH CURRENT	230 V/ 30 A (TYP) 115 V/ 20 A(TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I =26A/ 230 VAC I =16A/ 115 VAC	P
7	LEAKAGE CURRENT	< 3.5 mA / 240 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25℃	L-FG: 1.02 mA N-FG: 1mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 %~ 150 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25℃	126%/ 230 VAC 126%/ 115 VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1: 3.6V~4.4 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	3.87V/ 230 VAC 3.87V/ 115 VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: >95℃±5 ℃ O.T.P. NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Shunt down o/p voltage recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264VAC O/P: FULL LOAD Ta:25℃	NO DAMAGE Constant Current Limiting	P

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL：USP-225-5V No Fan
1. ROOM AMBIENT BURN-IN： 3 HRS
I/P: 230 VAC O/P: 60% LOAD Ta= 28.1 ℃
2. HIGH AMBIENT BURN-IN： 13 HRS
I/P: 230 VAC O/P: 60% LOAD Ta= 44.5 ℃

<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 28.1℃</th><th>HIGH AMBIENT Ta= 44.5℃</th></tr>
<tr><td>1</td><td>D2</td><td>3A/600V SMP</td><td>74.3℃</td><td>88.2℃</td></tr>
<tr><td>2</td><td>LF2</td><td>TF096E</td><td>57.9℃</td><td>72.1℃</td></tr>
<tr><td>3</td><td>BD1</td><td>E15X1360 15A/600V</td><td>68.5℃</td><td>82.6℃</td></tr>
<tr><td>4</td><td>L1</td><td>TR268</td><td>76.8℃</td><td>90.9℃</td></tr>
<tr><td>5</td><td>U1</td><td>ML4800CP</td><td>59.7℃</td><td>74.6℃</td></tr>
<tr><td>6</td><td>Q1</td><td>IRFP460A 20A/500V</td><td>70.6℃</td><td>85.1℃</td></tr>
<tr><td>7</td><td>D3</td><td>BYC8-600 8A/600V</td><td>74.3℃</td><td>88.8℃</td></tr>
<tr><td>8</td><td>Q2</td><td>2SK3850 6A/800V</td><td>82.5℃</td><td>97.4℃</td></tr>
<tr><td>9</td><td>D101</td><td>SBL3040PT 30A/40V</td><td>91.7℃</td><td>106.2℃</td></tr>
<tr><td>10</td><td>T1core</td><td>TF929</td><td>85.2℃</td><td>98.3℃</td></tr>
<tr><td>11</td><td>T1coil</td><td>TF929</td><td>82.6℃</td><td>96.7℃</td></tr>
<tr><td>12</td><td>L2</td><td>TF363</td><td>79.0℃</td><td>94.1℃</td></tr>
<tr><td>13</td><td>C111</td><td>3300U/10V YXG</td><td>65.7℃</td><td>90.9℃</td></tr>
<tr><td>14</td><td>C5</td><td>100U/420V 105℃</td><td>80.1℃</td><td>93.8℃</td></tr>
<tr><td>15</td><td>Rth2</td><td>ST-22 95℃</td><td>74.8℃</td><td>89.7℃</td></tr>
</table>
</td><td>P</td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P: 230VAC
O/P: 107%
Ta:25℃</td><td>TEST： OK</td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P: 230 VAC
O/P: 100% LOAD
Ta= -20 ℃</td><td>TEST： OK</td><td>P</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 45 ℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 44.5℃
HUMIDITY= 95 %R.H</td><td>TEST： OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.03 %(0~50℃)</td><td>I/P: 230 VAC
O/P:FULL LOAD</td><td>± 0 %(0~50℃)</td><td>P</td></tr>
<tr><td>6</td><td>VIBRATION TEST</td><td colspan="2">1 Carton & 1 Set Operating at I/P: 230VAC NO LOAD
(1) Waveform: Sine Wave
(2) Frequency:10~500Hz
(3) Sweep Time:10min/sweep cycle
(4) Acceleration:3 G
(5) Test Time:1 hour in each axis (X.Y.Z)
(6) Ta:25℃</td><td>TEST：OK</td><td>P</td></tr>
</table>

SAFETY TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25℃	I/P-O/P: 5.23 mA I/P-FG: 4.15 mA O/P-FG: 4.64 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25℃	I/P-O/P: 11GΩ I/P-FG: 12GΩ O/P-FG: 6GΩ NO DAMAGE	P
3	APPROVAL	TUV: Certificate NO ：R50008514 UL: File NO ：E183223			P

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	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℃	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℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 230VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
7	Test By Certificate Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 111 IS THE MOST CRITICAL COMPONENT (NO FAN) I/P:230 VAC O/P:60% LOAD Ta= 25 ℃ LIFE TIME= 135966 HRS I/P: 230 VAC O/P:60% LOAD Ta= 40 ℃ LIFE TIME= 26114 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 220K HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) **Peak Voltage**	Q2 Rated 2SK2850 : 900 V 6 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 416 V (2) 756 V (3) 768 V	P
2	Diode Peak **Voltage**	D101 Rated SBL3040 : 40 V 30 A	I/P:High-Line +3V =267V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 13.6 V (2) 13.1 V (3) 13.6 V	P
3	Clamp Diode Peak **Voltage**	D 4 Rated BYV26E : 1K V 1 A	I/P:High-Line +3V =267V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25℃	(1) 748 V (2) 748 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2003/5/20	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2003/09/04	PRODUCT SAMPLE A306C24	PASS	VINCENT TSENG	MAX LIN
2004/12/24	PRODUCT SAMPLE A311C24	PASS	VINCENT TSENG	MAX LIN

2003/7/14 A50-F023