MODEL：MSP-300-48

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 250 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25℃	V1: 133 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 40.8 V~ 55.2 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	37.47 V~ 58.09 V/ 230 VAC 37.45 V~ 58.09 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 1 %~ -1 % (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25℃	V1: 0.1 %~ -0.1 %	P
4	LINE REGULATION	V1: 0.2%~ -0.2 % (Max)	I/P: 100 VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0.03 %~ -0.03 %	P
5	LOAD REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0.04 %~ -0.04 %	P
6	SET UP TIME	230VAC: 1000 ms (Max) 115 VAC: 2500 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 129 ms 115VAC/ 258 ms	P
7	RISE TIME	230VAC: 50 ms (Max) 115VAC: 50 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 9.5 ms 115VAC/ 9.5 ms	P
8	HOLD UP TIME	230VAC: 16 ms (TYP) 115VAC: 16 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 24 ms 115VAC/ 20 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: < 5 %	P
10	DYNAMIC LOAD	V1: 4800 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	1059 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	85VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25℃	70 V~264V	P
			I/P: LOW-LINE-3V= 97 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	47HZ ~63 HZ NO DAMAGE OSC	I/P: 100 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	P
3	POWER FACTOR	0.95 / 230 VAC(TYP) 0.99 / 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	PF= 0.977 / 230 VAC PF= 0.999 / 115 VAC	P
4	EFFICIENCY	89% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	89.3 %	P
5	INPUT CURRENT	230V/ 2.5 A (TYP) 115V/ 4.5 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 1.66 A/ 230 VAC I = 3.37 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 70 A (TYP) 115V/ 35 A(TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 70 A/ 230 VAC I = 35 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 450 uA / Earth < 100 uA/ Touch	I/P: 264 VAC O/P:Min LOAD Ta:25℃	L-FG 420 uA N-FG 420 uA L-V+ 94 uA L-V- 94 uA N-V+ 94 uA N-V- 94 uA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 %~ 135 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25℃	121 %/ 230 VAC 121 %/ 115 VAC Constant current limiting, recovers automatically after fault condition is removed	P
2	OVER VOLTAGE PROTECTION	CH1:57.6V~ 67.2V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	61.34 V/ 230 VAC 61.74 V/ 115 VAC Shut down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1: 90 ± 5℃ detect on heatsink of power transistor TSW2: 95 ± 5℃ detect on O/P CHOCK NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Shut down o/p voltage, recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD Ta:25℃	NO DAMAGE Constant current limiting, recovers automatically after fault condition is removed	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	DC OK SIGNAL	PSU turn on : 3.3 ~ 5.6V ; PSU turn off : 0 ~ 1V	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	PSU turn on : 5.174 V PSU turn off : 0 V	P
2	REMOTE CONTROL	Rc+ / Rc- 4 ~ 10V or open = power on 0 ~ 0.8V or short = power off	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	3V ~ 10 V POWER ON 0V ~ 2.8 V POWER OFF	P
3	REMOTE SENSE	>0.5V	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	>0.5	P
4	AUX POWER	4.75V~5.25V / 0.3A Ripple:50mV	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	4.902V/0.3A Ripple: 23.2 mV	P
5	No load power consumption	<0.5W	I/P: 240 VAC O/P:NO LOAD RC+&RC- SHORT Ta:25℃	0.24W	P
6	FAN ON/OFF control test	LOAD 35±15% OR RTH2 >= 50℃ FAN ON	I/P: 230 VAC O/P:TESTING Ta:25℃	> 34.6 %LOAD FAN ON < 34.5 %LOAD FAN OFF	P

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</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：MSP-300-24
1. ROOM AMBIENT BURN-IN：1 HRS
I/P: 230VAC O/P: FULL LOAD Ta= 31.8 ℃
2. HIGH AMBIENT BURN-IN： 5.5 HRS
I/P: 230VAC O/P: FULL LOAD Ta= 52.9 ℃

<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 31.8 ℃</th><th>HIGH AMBIENT Ta= 52.9 ℃</th></tr>
<tr><td>1</td><td>U1</td><td>FAN4801NY</td><td>54.1℃</td><td>76.8℃</td></tr>
<tr><td>2</td><td>C5</td><td>100u/400V 105℃ 18*25 KMG</td><td>38.8℃</td><td>62.0℃</td></tr>
<tr><td>3</td><td>Q1</td><td>IRFP460A 20A/500V</td><td>43.3℃</td><td>65.8℃</td></tr>
<tr><td>4</td><td>D1</td><td>BYC8-600 8A/600V</td><td>42.1℃</td><td>64.3℃</td></tr>
<tr><td>5</td><td>L3</td><td>TR838</td><td>40.1℃</td><td>63.7℃</td></tr>
<tr><td>6</td><td>BD1</td><td>10A/800V SILICON US10KB80R</td><td>41.9℃</td><td>63.7℃</td></tr>
<tr><td>7</td><td>Q101</td><td>FME-220B 20A/150V</td><td>51.6℃</td><td>74.0℃</td></tr>
<tr><td>8</td><td>Q105</td><td>FME-220B 20A/150V</td><td>46.7℃</td><td>67.4℃</td></tr>
<tr><td>9</td><td>T1 COIL</td><td>TF1871 130℃</td><td>79.8℃</td><td>103.9℃</td></tr>
<tr><td>10</td><td>L100</td><td>TR844 155℃</td><td>50.1℃</td><td>74.2℃</td></tr>
<tr><td>11</td><td>C106</td><td>1000u/35V UL10Kh 12.5*25 KY</td><td>34.1℃</td><td>57.0℃</td></tr>
<tr><td>12</td><td>TSW1</td><td>ST-22 90℃</td><td>44.2℃</td><td>66.4℃</td></tr>
<tr><td>13</td><td>TSW2</td><td>ST-22 95℃</td><td>54.3℃</td><td>76.4℃</td></tr>
<tr><td>14</td><td>D22</td><td>SBYV26C 1A/600V</td><td>56.9℃</td><td>80.9℃</td></tr>
<tr><td>15</td><td>U900</td><td>TNY275PN</td><td>56.1℃</td><td>80.2℃</td></tr>
<tr><td>16</td><td>C911</td><td>22u/50V UL10Kh 5*11 YXM</td><td>52.4℃</td><td>75.2℃</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: 230 VAC
O/P: 111 % LOAD
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= -30 ℃</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 49.9 ℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 49.9 ℃
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>± 0.017 %(0~50℃)</td><td>P</td></tr>
<tr><td>6</td><td>VIBRATION TEST</td><td colspan="2">1 Carton & 1 Set
(1) Waveform: Sine Wave
(2) Frequency:10~500Hz
(3) Sweep Time:10min/sweep cycle
(4) Acceleration:5G
(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	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 4 KVAC/min I/P-FG: 2 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 4.2KVAC/min I/P-FG: 2.4KVAC/min O/P-FG: 0.6 KVAC/min Ta:25℃	I/P-O/P: 2.581 mA I/P-FG: 1.991 mA O/P-FG: 0.947 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℃/70%RH	I/P-O/P: 30 GΩ I/P-FG: 19.1 GΩ O/P-FG: 30 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃ / 70%RH	13 mΩ	P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A CLASS D	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	PASS	P
2	CONDUCTION	EN55011 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab	P
3	RADIATION	EN55011 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 INDUSTRY AIR:8KV / Contact:6KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	MSP-300-24:SUPPOSE C 106 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 2632336.2 HRS I/P: 230VAC O/P:FULL LOAD Ta= 50 ℃ LIFE TIME= 410763.6 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 176K HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q4 Rated 2SK4106 : 12A/500V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25℃	(1) 434 V (2) 456 V	P
2	Diode Peak Voltage	Q101 Rated FMX-12SL : 10A/200V Q104 Rated SF20LC30 :20A/300V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25℃	(1) 197 V (2) 170 V (1) 292 V (2) 286 V	P
3	Input Capacitor Voltage	C5 Rated 100u/400V 105℃ PEAK 450V	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℃	(1) 390 V (2) 390 V (3) 414 V	P
4	Control IC Voltage Test	U1 Rated FAN4801NY:9.3V~ 30V	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℃	(1) 16.15 V (2) 12.977 V (3) 12.972 V	P
5	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated IRFP460A :20A/500V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25℃	(1) 436 V (2) 428 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2012/3/15	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023