MODEL：IPC-300A

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1:50 mVp-p (Max) V2:50 mVp-p (Max) V3:120 mVp-p (Max) V4:100 mVp-p (Max) V5:120 mVp-p (Max) V6:50 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25℃	V1: 13 mVp-p (Max) V2: 10 mVp-p (Max) V3: 41 mVp-p (Max) V4: 13 mVp-p (Max) V5: 15 mVp-p (Max) V6: 15 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 3.14V~ 3.5V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	3.07 V~ 3.78 V/ 230 VAC 3.07 V~ 3.78 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 5 %~ -5 % (Max) V2: 5 %~ -5 % (Max) V3: 7 %~ -7 % (Max) V4: 8 %~ -8 % (Max) V5: 10 %~ -10 % (Max) V6: 5 %~ -5 % (Max)	I/P: 115 VAC / 264 VAC O/P:FULL/ 40% LOAD Ta:25℃	V1: 1.5 %~ -1.5 % V2: 1.8 %~ -1.8 % V3: 2 %~ -2 % V4: 0.7 %~ -0.7 % V5: 3.8 %~ -3.8 % V6: 0.9 %~ -0.9 %	P
4	LINE REGULATION	V1: 1 %~ -1 % (Max) V2: 1 %~ -1 % (Max) V3: 1 %~ -1 % (Max) V4: 2 %~ -2 % (Max) V5: 2 %~ -2 % (Max) V6: 1 %~ -1 % (Max)	I/P: 115 VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0.2 %~ -0.2 % V2: 0 %~ 0 % V3: 0.05 %~ -0.05 % V4: 0 %~ 0 % V5: 0.06 %~ -0.06 % V6: 0 %~ 0 %	P
5	LOAD REGULATION	V1: 5 %~ -5 % (Max) V2: 5 %~ -5 % (Max) V3: 7 %~ -7 % (Max) V4: 8 %~ -8 % (Max) V5: 10 %~ -10 % (Max) V6: 5 %~ -5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 1.4 %~ -1.4 % V2: 1.8 %~ -1.8 % V3: 1.4 %~ -1.4 % V4: 0.7 %~ -0.7 % V5: 1.5 %~ -1.5 % V6: 1.4 %~ -1.4 %	P
6	CROSS REGULATION	V1: 5 %~ -5 % (Max) V2: 5 %~ -5 % (Max) V3: 7 %~ -7 % (Max) V4: 8 %~ -8 % (Max) V5: 10 %~ -10 % (Max) V6: 5 %~ -5 % (Max)	I/P: 230 VAC O/P: Testing O/P 60%LOAD Other O/P 40%LOAD Change Ta:25℃	V1: 0.1 %~ -0.1 % V2: 0 %~ 0 % V3: 1.9 %~ -1.9 % V4: 0.7 %~ -0.7 % V5: 2.1 %~ -2.1 % V6: 0.7 %~ -0.7 %	P
7	SET UP TIME	230VAC: 800 ms (Max) 115 VAC: 2500 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 232 ms 115VAC/ 570 ms	P
8	RISE TIME	230VAC: 20 ms (Max) 115VAC: 20 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 14 ms 115VAC/ 12 ms	P
9	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/ 19 ms 115VAC/ 20 ms	P
10	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: <5 %	P
11	DYNAMIC LOAD	V1: 660 mVp-p	I/P: 230 VAC O/P:FULL /50% LOAD 90%DUTY/1KHZ Ta:25℃	509 mVp-p	p

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC)	I/P:TESTING O/P:FULL LOAD Ta:25℃	65 V~264V	P
			I/P: LOW-LINE-3V= 87V 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: 90VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	P
3	POWER FACTOR	0.95 / 230 VAC (TYP) 0.95 / 115 VAC (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	PF= 0.96 / 230 VAC PF= 0.99 / 115 VAC	P
4	EFFICIENCY	75% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	76.3 %	P
5	INPUT CURRENT	230V/ 2.3 A (TYP) 115V/ 4.6 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 1.76 A/ 230 VAC I = 3.6 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 80 A (TYP) 115V/ 40 A (TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 64 A/ 230 VAC I = 32 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 3 mA / 240 VAC	I/P: 254 VAC O/P:Min LOAD Ta:25℃	L-FG: 1.15 mA N-FG: 1.15 mA	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℃	125 %/ 230 VAC 129 %/ 115 VAC Shunt down Re-power ON	P
2	OVER VOLTAGE PROTECTION	+3V,+5V: 110%~140% of rated voltage +12V: 13.2V~16V	I/P: 230 VAC O/P:MIN LOAD Ta:25℃	121 %/ +3V 125 %/ +5V 15.1V/ +12V Shunt down Re- power ON	P
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD Ta:25℃	NO DAMAGE Shunt down Re-power ON	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	POWER GOOD SIGNAL	DELAY 100ms ~ 500ms	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	288 ms/ 230VAC 289 ms/ 115 VAC	P
2	POWER FAIL SIGNAL	>1ms	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	6 ms/ 230 VAC 6 ms/115 VAC	P
3	PS-ON INPUT SIGNAL	Power off :PS-ON="Hi" or ">2v" Power on :PS-ON="Low" or "<0.5v"	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	Power off : PS-ON="Hi" or 0.9V~5V Power on : PS-ON="Low" or 0V~0.8V	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：IPC-300A
1. ROOM AMBIENT BURN-IN：1 HRS
I/P: 230VAC O/P: FULL LOAD Ta= 31.9 ℃
2. HIGH AMBIENT BURN-IN：2 HRS
I/P: 230VAC O/P: FULL LOAD Ta= 48.7 ℃

<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 31.9 ℃</th><th>HIGH AMBIENT Ta= 48.7 ℃</th></tr>
<tr><td>1</td><td>Q2</td><td>16N50C3 16A/500V INF</td><td>60.5℃</td><td>77.5℃</td></tr>
<tr><td>2</td><td>U1</td><td>ML4800</td><td>45.5℃</td><td>62.0℃</td></tr>
<tr><td>3</td><td>BD1</td><td>KBJ608G 6A/800V LT</td><td>76.8℃</td><td>92.9℃</td></tr>
<tr><td>4</td><td>L1</td><td>TR-538</td><td>67.3℃</td><td>83.8℃</td></tr>
<tr><td>5</td><td>C5</td><td>180U/400V HP3 85℃</td><td>57.6℃</td><td>73.8℃</td></tr>
<tr><td>6</td><td>Q21</td><td>K2850 6A/900V FUJI</td><td>65.0℃</td><td>81.8℃</td></tr>
<tr><td>7</td><td>T1 COIL</td><td>TF-1187</td><td>93.9℃</td><td>108.9℃</td></tr>
<tr><td>8</td><td>U2</td><td>TOP224</td><td>62.2℃</td><td>79.0℃</td></tr>
<tr><td>9</td><td>D2</td><td>BYM26E 1A/1KV PH</td><td>83.4℃</td><td>101.4℃</td></tr>
<tr><td>10</td><td>D110</td><td>S60SC4M 60A/40V SHI</td><td>76.7℃</td><td>93.2℃</td></tr>
<tr><td>11</td><td>D101</td><td>MBR3060PT 30A/60V GI</td><td>53.0℃</td><td>68.4℃</td></tr>
<tr><td>12</td><td>D140</td><td>SBL3040PT 30A/40V LT</td><td>59.4℃</td><td>76.0℃</td></tr>
<tr><td>13</td><td>C113</td><td>3300U/6.3V NCC 105℃ KY</td><td>35.1℃</td><td>51.9℃</td></tr>
<tr><td>14</td><td>L101</td><td>TR-345</td><td>72.3℃</td><td>89.7℃</td></tr>
<tr><td>15</td><td>C142</td><td>3300U/6.3V NCC 105℃ KY</td><td>48.8℃</td><td>65.4℃</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: 115 % 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= -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 40 ℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 40℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.05 %(0~50℃)</td><td>I/P: 230 VAC
O/P:FULL LOAD</td><td>± 0.02 %(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:2G
(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: 1.5 KVAC/min I/P-FG: 1.5 KVAC/min	I/P-O/P: 1.8 KVAC/min I/P-FG: 1.8 KVAC/min Ta:25℃	I/P-O/P: 6.6 mA I/P-FG: 6.9 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: 16 GΩ I/P-FG: 15 GΩ O/P-FG: 20 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃	12 mΩ	P
4	APPROVAL	TUV: Certificate NO ：R50062279 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 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 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	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 142 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 945732 HRS I/P: 230VAC O/P:FULL LOAD Ta= 40 ℃ LIFE TIME= 339004 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 94.1K 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**	Q 21 Rated 2SK2082 : 900V 9A Q 22 Rated 2SK2082 : 900V 9A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 608 V (2) 784 V (3) 384 V (1) 602 V (2) 772 V (3) 376 V	P
2	Diode Peak **Voltage**	D101 Rated MBR3060PT : 60V 30A D110 Rated S60SC4M : 40V 60A D112 Rated 31DQ10 : 100V 3A D140 Rated S30C4M : 40V 30A D160 Rated YG802C04 : 40V 10A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 38 V (2) 36 V (3) 0 V (1) 28 V (2) 27 V (3) 0 V (1) 80 V (2) 72 V (3) 0 V (1) 30 V (2) 30 V (3) 0 V (1) 38 V (2) 38 V (3) 38 V	P
3	**Input Capacitor Voltage**	C 5 Rated : 150u / 400V/ 85℃	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) 392 V (2) 410 V (3) 392 V	P
4	**Control IC Voltage Test**	U1 Rated ML4800CP : 18V	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) 12.8 V (2) 14 V (3) 13.9 V	P
5	PFC Power Transistor (D to S) or (C to E) **Peak Voltage**	Q 1 Rated 16N50C3 : 500V 30A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 392 V (2) 394 V (3) 380 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2005/1/19	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2005/7/15	PRODUCT SAMPLE W0504B42	PASS	VINCENT TSENG	MAX LIN
2005/12/2	PRODUCT SAMPLE W0511A27	PASS	VINCENT TSENG	MAX LIN