MODEL：HRPG-300-7. 5

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 100 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25℃	V1: 70 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 6.8 V~ 9 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	6.19 V~ 9.74 V/ 230 VAC 6.19 V~ 9.74 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 2 %~ -2 % (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25℃	V1: 2.5 %~ -2.5 %	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 100 VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0.08 %~ -0.08 %	P
5	LOAD REGULATION	V1: 1 %~ -1 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0.2 %~ -0.2 %	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/ 123 ms 115VAC/ 246 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/ 6 ms 115VAC/ 7 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/ 31 ms 115VAC/ 25 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: < 5 %	P
10	DYNAMIC LOAD	V1: 750 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	301 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℃	70V~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= 0.978 / 230 VAC PF= 0.998 / 115 VAC	P
4	EFFICIENCY	86% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	86.3%	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 = 1.53 A/ 230 VAC I = 3.10 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 = 63 A/ 230 VAC I = 32 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 1.2 mA / 240 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25℃	L-FG: 0.3 mA N-FG: 0.27 mA	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℃	117%/ 230 VAC 117%/115 VAC Constant current limiting, recovers automatically after fault condition is removed	P
2	OVER VOLTAGE PROTECTION	CH1: 9.4V~ 10.9 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	10.3 V/ 230 VAC 10.2 V/ 115 VAC Shut down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1: 90 ± 5℃ detect on heatsink of power transistor TSW2: 100 ± 5℃ detect on heatsink of power doide 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 : 3.875 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℃	3.2V ~ 10 V POWER ON 0V ~ 2.9 V POWER OFF	P
3	REMOTE SENSE	>0.5V	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	>0.3V	P
4	AUX POWER	4.75V~5.25V / 0.3A Ripple:50mV	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	4.889V/0.3A Ripple: 12.5 mV	P
5	No load power consumption	<0.5W	I/P: 240 VAC O/P:NO LOAD RC+&RC- SHORT Ta:25℃	0.26W	P
6	FAN ON/OFF control test	LOAD 35±15% OR RTH2 >= 50℃ FAN ON	I/P: 230 VAC O/P:TESTING Ta:25℃	> 26.8%LOAD FAN ON < 26.7%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：HRPG-300-5
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>56.2℃</td><td>81.6℃</td></tr>
<tr><td>2</td><td>C5</td><td>100u/400V 105℃ KMG</td><td>42.4℃</td><td>65.9℃</td></tr>
<tr><td>3</td><td>Q1</td><td>IRFP460A 20A/500V</td><td>44.7℃</td><td>67.2℃</td></tr>
<tr><td>4</td><td>D1</td><td>BYC8-600 8A/600V</td><td>42.0℃</td><td>63.5℃</td></tr>
<tr><td>5</td><td>L3</td><td>TR838</td><td>41.4℃</td><td>63.9℃</td></tr>
<tr><td>6</td><td>BD1</td><td>10A/800V US10KB80R</td><td>43.3℃</td><td>65.9℃</td></tr>
<tr><td>7</td><td>Q101</td><td>STP85N3LH5 80A/30V</td><td>75.2℃</td><td>103.0℃</td></tr>
<tr><td>8</td><td>T1 COIL</td><td>TF1867</td><td>83.1℃</td><td>112.0℃</td></tr>
<tr><td>9</td><td>L100</td><td>TR840</td><td>56.7℃</td><td>83.6℃</td></tr>
<tr><td>10</td><td>C106</td><td>4700u/10V 10Kh ZLH</td><td>41.1℃</td><td>66.1℃</td></tr>
<tr><td>11</td><td>TSW1</td><td>ST-22 90℃</td><td>44.2℃</td><td>66.5℃</td></tr>
<tr><td>12</td><td>TSW2</td><td>ST-22 100℃</td><td>70.0℃</td><td>97.2℃</td></tr>
<tr><td>13</td><td>C152</td><td>47u/25V UL10Kh 5*11 YXM</td><td>57.5℃</td><td>84.1℃</td></tr>
<tr><td>14</td><td>D22</td><td>SBYV26C 1A/600V</td><td>68.2℃</td><td>95.9℃</td></tr>
<tr><td>15</td><td>U900</td><td>TNY275PN</td><td>66.7℃</td><td>94.7℃</td></tr>
<tr><td>16</td><td>C911</td><td>22u/50V UL10Kh 5*11 YXM</td><td>68.5℃</td><td>95.1℃</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: 120 % 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= -40 ℃</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 50 ℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 50 ℃
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: 120 % LOAD
Ta:25℃</td><td>TEST：OK</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: 3 KVAC/min I/P-FG: 2 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25℃	I/P-O/P: 6.71 mA I/P-FG: 5.92 mA O/P-FG: 4.33 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: 30 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	2 mΩ	P
4	APPROVAL	TUV: Certificate NO ：R 50156798 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℃	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	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	HRPG-300-5 :SUPPOSE C106 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 917137 HRS I/P: 230VAC O/P:FULL LOAD Ta= 50 ℃ LIFE TIME= 157735 HRS I/P: 230VAC O/P:75% LOAD Ta= 50 ℃ LIFE TIME= 265188 HRS I/P: 230VAC O/P:50% LOAD Ta= 50 ℃ LIFE TIME= 404784HRS			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) 442 V	P
2	Diode Peak Voltage	Q101 Rated STP60N55F3 : 80A/55V Q103 Rated STP60N55F3 : 80A/55V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25℃	(1) 53.6 V (2) 49.6 V (1) 52.8 V (2) 46.8 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) 378.4 V (2) 376.1 V (3) 376.1 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) 16.806 V (2) 15.675 V (3) 15.652 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) 440 V (2) 414 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2009/4/29	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2009/6/12	PRODUCT SAMPLE W0905B34	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023