

MODEL : HRP-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°C | 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°C | 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°C | 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°C | V1: 0.08 %~ -0.08 % | P |
| 5 | LOAD REGULATION | V1: 1 %~ -1 % (Max) | I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C | 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°C | 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°C | 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°C | 230VAC/ 31 ms 115VAC/ 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: 750 mVp-p | I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C | 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°C | 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°C | 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°C | 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°C | 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°C | 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°C | 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°C | 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°C | 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°C | 10.3 V/ 230 VAC 10.2 V/ 115 VAC Shut down Re- power ON | P |
| 3 | OVER TEMPERATURE PROTECTION | SPEC: TSW1: 90 ± 5°C detect on heatsink of power transistor TSW2: 100 ± 5°C 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°C | 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°C | PSU turn on : 3.875 V PSU turn off : 0 V | P |
| 2 | REMOTE SENSE | >0.5V | I/P: 230 VAC O/P: FULL LOAD Ta: 25°C | >0.3V | P |
| 3 | FAN ON/OFF control test | --- | I/P: 230 VAC O/P: TESTING Ta: 25°C | > 26.8% LOAD FAN ON < 26.7% LOAD FAN OFF | P |

ENVIRONMENT TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|---|---|--|-----------|---------|
| 1 | TEMPERATURE RISE TEST | MODEL : HRP-300-5 1. ROOM AMBIENT BURN-IN : 1 HRS I/P: 230VAC O/P: FULL LOAD Ta= 31.8 °C 2. HIGH AMBIENT BURN-IN : 5.5 HRS I/P: 230VAC O/P: FULL LOAD Ta= 52.9 °C | | | P |
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| 2 | OVER LOAD BURN-IN TEST | NO DAMAGE 1 HOUR (MIN) | I/P: 230 VAC O/P: 120 % LOAD Ta: 25°C | TEST : OK | P |
| 3 | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 2 HOUR | I/P: 230 VAC O/P: 100 % LOAD Ta= -40 °C | TEST : OK | P |
| 4 | HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST | AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE | I/P: 272 VAC O/P: FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H | TEST : OK | P |
| 5 | TEMPERATURE COEFFICIENT | ± 0.03 % (0~50°C) | I/P: 230 VAC O/P: 120 % LOAD Ta: 25°C | TEST : OK | P |

| NO | Position | P/N | ROOM AMBIENT Ta= 31.8 °C | HIGH AMBIENT Ta= 52.9 °C |
|----|----------|-------------------------|-----------------------------|-----------------------------|
| 1 | U1 | FAN4801NY | 56.2°C | 81.6°C |
| 2 | C5 | 100u/400V 105°C KMG | 42.4°C | 65.9°C |
| 3 | Q1 | IRFP460A 20A/500V | 44.7°C | 67.2°C |
| 4 | D1 | BYC8-600 8A/600V | 42.0°C | 63.5°C |
| 5 | L3 | TR838 | 41.4°C | 63.9°C |
| 6 | BD1 | 10A/800V US10KB80R | 43.3°C | 65.9°C |
| 7 | Q101 | STP85N3LH5 80A/30V | 75.2°C | 103.0°C |
| 8 | T1 COIL | TF1867 | 83.1°C | 112.0°C |
| 9 | L100 | TR840 | 56.7°C | 83.6°C |
| 10 | C106 | 4700u/10V 10Kh ZLH | 41.1°C | 66.1°C |
| 11 | TSW1 | ST-22 90°C | 44.2°C | 66.5°C |
| 12 | TSW2 | ST-22 100°C | 70.0°C | 97.2°C |
| 13 | C152 | 47u/25V UL10Kh 5*11 YXM | 57.5°C | 84.1°C |
| 14 | D22 | SBYV26C 1A/600V | 68.2°C | 95.9°C |



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| 6 | VIBRATION TEST | 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°C | TEST : OK | P |
|---|----------------|--|-----------|---|

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°C | 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°C/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°C / 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,-3 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 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 INDUSTRY INPUT: 2KV | I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C | 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°C | 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 | HRP-300-5 :SUPPOSE C106 IS THE MOST CRITICAL COMPONENT | I/P: 230VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 917137 HRS I/P: 230VAC O/P:FULL LOAD Ta= 50 °C LIFE TIME= 157735 HRS I/P: 230VAC O/P:75% LOAD Ta= 50 °C LIFE TIME= 265188 HRS I/P: 230VAC O/P:50% LOAD Ta= 50 °C 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°C | (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°C | (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°C 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°C | (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°C | (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°C | (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 |

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