

MODEL : RPT-160B

OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-----------------------------|--|--|---|---------|
| 1 | RIPPLE & NOISE | V1 : 60 mVp-p (Max) V2 : 100 mVp-p (Max) V3 : 100 mVp-p (Max) | I/P : 230VAC O/P : FULL LOAD Ta : 25°C | V1 : 30.2 mVp-p (Max) V2 : 67 mVp-p (Max) V3 : 37.2 mVp-p (Max) | P |
| 2 | OUTPUT VOLTAGE ADJUST RANGE | CH1 : 5 V~ 5.5 V | I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C | 4.794 V~ 5.616 V/ 230 VAC 4.798 V~ 5.622 V/ 115 VAC | P |
| 3 | OUTPUT VOLTAGE TOLERANCE | V1 : 2 %~ -2 % (Max) V2 : 5 %~ -5 % (Max) V3 : 5 %~ -4 % (Max) | I/P : 100 VAC / 264 VAC O/P : FULL/ MIN LOAD Ta : 25°C | V1 : 1.07 %~ -1.07 % V2 : 2.6 %~ -2.6 % V3 : 3.62 %~ -3.62 % | P |
| 4 | LINE REGULATION | V1 : 0.5 %~ -0.5 % (Max) V2 : 1 %~ -1 % (Max) V3 : 1 %~ -1 % (Max) | I/P : 100 VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C | V1 : 0 %~ 0 % V2 : 0.05 %~ -0.05 % V3 : 0.15 %~ -0.15 % | P |
| 5 | LOAD REGULATION | V1 : 1.5 %~ -1.5 % (Max) V2 : 3 %~ -3 % (Max) V3 : 5 %~ -4 % (Max) | I/P : 230 VAC O/P : FULL ~MIN LOAD Ta : 25°C | V1 : 1 %~ -1 % V2 : 1 %~ -1 % V3 : 3.1 %~ -3.1 % | P |
| 6 | CROSS REGULATION | V1 : 1.5 %~ -1.5 % (Max) V2 : 3 %~ -3 % (Max) V3 : 5 %~ -4 % (Max) | I/P : 230 VAC O/P : Testing O/P 60%LOAD Other O/P 40%LOAD Change Ta : 25°C | V1 : 0.24 %~ -0.24 % V2 : 2 %~ -2 % V3 : 4 %~ -2.3 % | P |
| 7 | SET UP TIME | 230VAC : 1200 ms (Max) 115 VAC : 2500 ms (Max) | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 515 ms 115VAC/ 1030 ms | P |
| 8 | RISE TIME | 230VAC : 30 ms (Max) 115VAC : 30 ms (Max) | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 5.9 ms 115VAC/ 5.8 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°C | 230VAC/ 34 ms 115VAC/ 25 ms | P |
| 10 | OVER/UNDERSHOOT TEST | < ±5% | I/P : 230 VAC O/P : FULL LOAD Ta : 25°C | TEST : < 5 % | P |
| 11 | DYNAMIC LOAD | V1 : 1000 mVp-p | I/P : 230 VAC O/P : FULL /Min LOAD 90%DUTY/1KHZ Ta : 25°C | 173 mVp-p | P |

INPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-----------------------|---|---|---|---------|
| 1 | INPUT VOLTAGE RANGE | 90VAC~264 VAC | I/P : TESTING O/P : FULL LOAD Ta : 25°C | 72V~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 | 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 | 0.93 / 230 VAC(TYP) 0.98 / 115 VAC(TYP) | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | PF= 0.951 / 230 VAC PF= 0.995 / 115 VAC | P |
| 4 | EFFICIENCY | 84% (TYP) | I/P : 230 VAC O/P : FULL LOAD Ta : 25°C | 84.1 % | P |
| 5 | INPUT CURRENT | 230V/ 0.9 A(TYP) 115V/ 1.8 A(TYP) | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I = 0.78 A/ 230 VAC I = 1.56 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 = 36 A/ 230 VAC I = 18 A/ 115 VAC | P |
| 7 | LEAKAGE CURRENT | < 160 uA/ 264 VAC for earth leakage current | I/P: 264 VAC O/P:Min LOAD Ta:25°C | L-FG: 150 uA N-FG: 150 uA | P |
| | | < 100 uA/264 VAC for touch leakage current | I/P: 264 VAC O/P:Min LOAD Ta:25°C | L-V+ : 80 uA L-V-: 80 uA N-V+: 80 uA N-V-: 80 uA | |

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 | 118 %/ 230 VAC 119 %/ 115 VAC Hiccup Mode | P |
| 2 | OVER VOLTAGE PROTECTION | CH1 : 5.75 V~ 6.75 V | I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C | 6.33 V/ 230 VAC 6.32 V/ 115 VAC Shut down Re- power ON | P |
| 3 | OVER TEMPERATURE PROTECTION | SPEC : TSW1 : 105 ± 5°C detect on heatsink of power transistor TSW2 : 90 ± 5°C detect on heatsink of power transistor Protection type : TSW1 : Shut down o/p voltage, recovers automatically after temperature goes down TSW2 : Shut down o/p voltage, re-power on to recover NO DAMAGE | I/P : 230 VAC O/P : FULL LOAD | O.T.P. Active TSW1 : Shut down o/p voltage, recovers automatically after temperature goes down TSW2 : Shut down o/p voltage, re-power on to recover | P |
| 4 | SHORT PROTECTION | SHORT EVERY OUTPUT 1 HOUR NO DAMAGE | I/P : 264 VAC O/P : FULL LOAD Ta : 25°C | NO DAMAGE Hiccup Mode | P |

CONTROL FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-------------------|--------------------|--|----------------------------------|---------|
| 1 | POWER GOOD SIGNAL | DELAY 10ms ~ 500ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 89 ms/ 230 VAC 91 ms/ 115 VAC | P |
| 2 | POWER FAIL SIGNAL | > 1ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 34 ms/ 230 VAC 25 ms/ 115 VAC | P |

ENVIRONMENT TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|---|---|--|-------------------|---------|
| 1 | TEMPERATURE RISE TEST | MODEL : RPT-160A WITH FAN 1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta= 26.7 °C 2. HIGH AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50.7 °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= -25 °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 : FULL LOAD | ± 0.008 %(0~50°C) | P |
| 6 | VIBRATION TEST | 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°C | | TEST : OK | P |

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: 1.5 KVAC/min | I/P-O/P: 4.2 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 1.8 KVAC/min Ta:25°C | I/P-O/P : 1.791 mA I/P-FG : 1.895 mA O/P-FG : 0.207 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 | 9 mΩ | P |
| 4 | APPROVAL | TUV : Certificate NO : UL : File NO : | | | N/A |

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|---|--|--|-------------------------------|---------|
| 1 | HARMONIC | EN61000-3-2,-3 CLASS A CLASS D | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | PASS | P |
| 2 | CONDUCTION | EN55022 EN55011 CLASS B | I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C | PASS Test by certified Lab | P |
| 3 | RADIATION | EN55022 EN55011 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 MEDICAL AIR : 8KV / Contact : 6KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A | P |
| 5 | E.F.T | EN61000-4-4 MEDICAL INPUT : 2KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A | P |
| 6 | SURGE | IEC61000-4-5 MEDICAL L-N : 1KV L,N-PE : 2KV | 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 | RPT-160A WITH FAN : SUPPOSE I/P : 230VAC O/P : FULL LOAD I/P : 230VAC O/P : FULL LOAD | C 105 IS THE MOST CRITICAL COMPONENT Ta= 25 °C LIFE TIME= 201640 HRS Ta= 50 °C LIFE TIME= 26809 HRS | | P |
| 2 | MTBF | MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 191.4KHRS | | | P |



COMPONENT STRESS TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|--|---|---|--|---------|
| 1 | Power Transistor (D to S) or (C to E) Peak Voltage | Q3 Rated 2SK3568 12A/500V | I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short Ta : 25°C | (1) 408 V (2) 414 V | P |
| 2 | Diode Peak Voltage | Q101 Rated IRL3103PbF 64A/30V D200 Rated STPS2045CT 20A/45V D300 Rated FME-220A 20A/100V | I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2)Output Short Ta : 25°C | (1) 26 V (2) 25.4 V (1) 38 V (2) 36.6 V (1) 66.8 V (2) 65.2 V | P |
| 3 | Input Capacitor Voltage | C5 Rated 120u/420V 105°C | 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) 384.7 V (2) 385 V (3) 385 V | P |
| 4 | Control IC Voltage Test | U 1 Rated FAN4801 : 12V~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) 14.213 V (2) 14.273 V (3) 14.278 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) 478 V (2) 414 V | P |

| DATE | SAMPLE | TEST RESULT | TESTER | APPROVAL |
|-----------|----------------------------|-------------|------------|---------------|
| 2009/1/10 | RD SAMPLE | PASS | SANFORD SU | VINCENT TSENG |
| 2009/6/16 | PRODUCT SAMPLE W0901A22 | PASS | SANFORD SU | VINCENT TSENG |

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