



Test Report: LPF-90D-20

90W Single Output Switching Power Supply

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

DESIGN VERIFY TEST
OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|--------------------------|--|---|--|---------|
| 1 | RIPPLE & NOISE | V1 : 150 mVp-p (Max) | I/P : 230VAC O/P : FULL LOAD Ta : 25°C | V1 : 14.3 mVp-p (Max) | P |
| 2 | CONSTANT CURRENT REGION | V1= 12V~20V | I/P : 230VAC O/P : CV MODE Ta : 25°C | O/P= 19V/ 4.691 A O/P= 12V/ 4.698 A | P |
| 3 | OUTPUT VOLTAGE TOLERANCE | V1 : 4 %~ -4 % (Max) | I/P : 100 VAC / 305 VAC O/P : FULL/ MIN LOAD Ta : 25°C | V1 : 0.4 %~ -0.4 % | P |
| 4 | LINE REGULATION | V1 : 0.5 %~ -0.5 % (Max) | I/P : 100 VAC ~ 305 VAC O/P : FULL LOAD Ta : 25°C | V1 : 0 %~ 0 % | P |
| 5 | LOAD REGULATION | V1 : 1.0 %~ -1.0 % (Max) | I/P : 230 VAC O/P : FULL ~MIN LOAD Ta : 25°C | V1 : 0.2 %~ -0.2 % | P |
| 6 | SET UP TIME | 230VAC : 500 ms (Max) 115VAC : 1200 ms(Max) | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 276 ms 115VAC/ 280 ms | P |
| 7 | RISE TIME | 230VAC : 200 ms (Max) 115VAC : 200 ms (Max) | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 26.896 ms 115VAC/ 23.348 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/ 76.518 ms 115VAC/ 32.798 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 : 1500 mVp-p | I/P : 230 VAC (1).O/P : FULL /Min LOAD 90%DUTY/ 1KHZ (2).O/P : FULL /Min LOAD 50%DUTY/ 120HZ Ta : 25°C | (1)223 mVp-p (2)546 mVp-p | P |

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|----|------------------|---|--------|--------|--------|--------|--------|--------|--------|--------|---------|------|
| 11 | DIMMER TEST | SPEC: | | | | | | | | | | |
| | | *Reference resistance value for output current adjustment (Typical) | | | | | | | | | | |
| | | Resistance value | 10K | 20K | 30K | 40K | 50K | 60K | 70K | 80K | 90K | 100K |
| | | Output current | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
| | | *1 ~ 10V dimming function for output current adjustment (Typical) | | | | | | | | | | |
| | | Dimming value | 1V | 2V | 3V | 4V | 5V | 6V | 7V | 8V | 9V | 10V |
| | | Output current | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
| | | *10V PWM signal for output current adjustment (Typical) | | | | | | | | | | |
| | | Duty value | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
| | | Output current | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
| | | TEST RESULT: I/P : 230 VAC ; Ta : 25°C | | | | | | | | | | |
| 1 | Resistance value | 10K | 20K | 30K | 40K | 50K | 60K | 70K | 80K | 90K | 100K | |
| | Output current | 0.502A | 0.943A | 1.378A | 1.835A | 2.288A | 2.755A | 3.183A | 3.633A | 4.131A | 4.584A | |
| | % | 11.16% | 20.96% | 30.62% | 40.78% | 50.84% | 61.22% | 70.73% | 80.73% | 91.80% | 101.87% | |
| 2 | Dimming value | 1V | 2V | 3V | 4V | 5V | 6V | 7V | 8V | 9V | 10V | |
| | Output current | 0.503A | 0.955A | 1.380A | 1.834A | 2.282A | 2.728A | 3.177A | 3.623A | 4.070A | 4.507A | |
| | % | 11.18% | 21.22% | 30.67% | 40.76% | 50.71% | 60.62% | 70.60% | 80.51% | 90.44% | 100.16% | |
| 3 | Duty value | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | |
| | Output current | 0.525A | 0.972A | 1.417A | 1.853A | 2.299A | 2.748A | 3.197A | 3.645A | 4.093A | 4.536A | |
| | % | 11.67% | 21.60% | 31.49% | 41.18% | 51.09% | 61.07% | 71.04% | 81.00% | 90.96% | 100.80% | |

P

INPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-----------------------|---|--|---|---------|
| 1 | INPUT VOLTAGE RANGE | 100VAC~305 VAC | I/P : TESTING O/P : FULL LOAD Ta : 25°C I/P : LOW-LINE-3V=97 V HIGH-LINE=305 V O/P : FULL/MIN LOAD ON : 30 Sec. OFF : 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE) | 79.41V~305V TEST : OK | P |
| 2 | INPUT FREQUENCY RANGE | 47HZ ~63 HZ NO DAMAGE OSC | I/P : 100 VAC ~ 305 VAC O/P : FULL-MIN LOAD Ta : 25°C | TEST : OK | P |
| 3 | POWER FACTOR | 0.96 / 230 VAC(TYP) 0.97 / 115 VAC(TYP) 0.95 / 277 VAC(TYP) | I/P : 230 VAC I/P : 115 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C | PF= 0.9892 / 100% PF= 0.9966 / 100% PF= 0.9842 / 100% | P |
| 4 | EFFICIENCY | 89.5% (TYP) | I/P : 230 VAC O/P : FULL LOAD Ta : 25°C | 89.642 % | P |
| 5 | INPUT CURRENT | 230V/ 0.5 A (TYP) 115V/ 0.95 A (TYP) 277V/ 0.4 A (TYP) | I/P : 230 VAC I/P : 115 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C | I = 0.4346 A/ 230 VAC I = 0.8975 A/ 115 VAC I = 0.3667 A/ 277 VAC | P |
| 6 | INRUSH CURRENT | 230V/ 55 A (TYP) COLD START | I/P : 230 VAC O/P : FULL LOAD Ta : 25°C | I = 60.195 A/ 230 VAC | P |
| 7 | LEAKAGE CURRENT | < 0.75 mA / 277 VAC | I/P : 277 VAC O/P : Min LOAD Ta : 25°C | L-CASE : 0.01 mA N-CASE : 0.01 mA | P |

PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-----------------------------|---|---|---|---------|
| 1 | OVER LOAD PROTECTION | 95 % ~ 108 % | I/P : 230 VAC I/P : 115 VAC O/P : TESTING Ta : 25°C | 104.48%/ 230 VAC 104.35%/ 115 VAC Constant Current Limiting ,recovers automatically after fault condition is removed. | P |
| 2 | OVER VOLTAGE PROTECTION | CH1 : 23 V ~ 27 V | I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C | 25.2V/ 230 VAC 25.2V/ 115 VAC Shut down o/p voltage, re-power on to recover | P |
| 3 | OVER TEMPERATURE PROTECTION | SPEC : RTH2 : 90± 10°C O.T.P. NO DAMAGE | I/P : 230 VAC O/P : FULL LOAD | O.T.P. Active Shut down o/p voltage, re-power on to recover | P |
| 4 | SHORT PROTECTION | SHORT EVERY OUTPUT 1 HOUR NO DAMAGE | I/P : 305 VAC O/P : FULL LOAD Ta : 25°C | NO DAMAGE Hiccup mode, recovers automatically after fault condition is removed. | P |

COMPONENT STRESS TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|--|-------------------------------------|--|--|---------|
| 1 | Power Transistor (D to S) or (C to E) Peak Voltage | Q 2 Rated : TK10A60D 10A/600V | I/P : High-Line +3V = 308 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C | (1) 436 V (2) 432 V (3) 436 V | P |
| 2 | Diode Peak Voltage | Q101 Rated : STP40NF12 40A/120V | I/P : High-Line +3V = 308 V O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue Ta : 25°C | (1) 83.2 V (2) 64 V (3) 84 V | P |
| 3 | Input Capacitor Voltage | C5 Rated : 82u/450V 105°C | I/P : High-Line +3V = 308 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) 444 V (2) 444 V (3) 440 V | P |
| 4 | Control IC Voltage Test | U 1 Rated : TEA1752T 17V~30V | I/P : High-Line +3V = 308 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) 22.2 V (2) 21.6 V (3) 21.8 V | P |
| 5 | Power Transistor (D to S) or (C to E) Peak Voltage | Q1 Rated : 2SK3677-01MR 12A/700V | I/P : High-Line +3V = 308 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C | (1) 640 V (2) 528 V (3) 644 V | P |

SAFETY & E.M.C. TEST
SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|----------------------|-------------------------|---------------------------------------|--------------------------------|---------|
| 1 | WITHSTAND VOLTAGE | I/P-O/P : 3.75 KVAC/min | I/P-O/P : 4 KVAC/min Ta : 25°C | I/P-O/P : 3.70 mA NO DAMAGE | P |
| 2 | ISOLATION RESISTANCE | I/P-O/P : 500VDC>100MΩ | I/P-O/P : 500 VDC Ta : 25°C/70% RH | I/P-O/P : 30 GΩ NO DAMAGE | P |

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERICT |
|----|---|---------------------------------------|---|-------------------------------|--------|
| 1 | HARMONIC | EN61000-3-2 CLASS C | I/P:230VAC/240VAC/220VAC50HZ O/P:100%,75%,60%LOAD CLASS C ≥60% Ta:25°C | PASS | P |
| 2 | CONDUCTION | EN55022 CLASS B | I/P: 230 VAC (50HZ)/115V[60HZ] O/P:FULL/60% LOAD Ta:25°C | PASS Test by certified Lab | P |
| 3 | RADIATION | EN55022 CLASS B | I/P: 230 VAC (50HZ)/115V[60HZ] O/P:FULL LOAD Ta:25°C | PASS Test by certified Lab | P |
| 4 | E.S.D | AIR:8KV / Contact:6KV INDUSTRY | 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 | I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C | CRITERIA A | P |
| 7 | Test by certified Lab & Test Report Prepare | | | | |

RELIABILITY TEST
ENVIRONMENT TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|---|---|---|----------------------------|---------|-----|---------------------------|----------------------------|---|-----|--------|--------|--------|---|-----|---------|--------|--------|---|----|--------|--------|--------|---|-----|----------|--------|--------|---|----|--------|--------|--------|---|----|----------|--------|--------|---|----|---------|--------|--------|---|----|---------|--------|--------|---|----|--------------|--------|--------|----|-----|-------|--------|--------|----|----|---------|--------|--------|----|----|----------|--------|--------|----|-----|-------------|--------|--------|----|-----|-------------|--------|--------|----|------|--------------|--------|--------|----|------|--------------|--------|--------|----|------|-------------|--------|--------|----|------|---------------|--------|--------|----|------|---------------|--------|--------|----|------|--------|--------|--------|----|------|--------------|--------|--------|----|------|----------|--------|--------|----|------|-------------|--------|--------|--|--|
| 1 | TEMPERATURE RISE TEST | MODEL : LPF-90-15 1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : 95% LOAD Ta=37.5 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : 95% LOAD Ta=51.6°C | | | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>P/N</th> <th>ROOM AMBIENT Ta=37.5°C</th> <th>HIGH AMBIENT Ta= 51.6°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>TR-990</td><td>57.1°C</td><td>70.1°C</td></tr> <tr><td>2</td><td>LF2</td><td>TR-910B</td><td>63.5°C</td><td>76.5°C</td></tr> <tr><td>3</td><td>L1</td><td>TR-995</td><td>63.7°C</td><td>76.6°C</td></tr> <tr><td>4</td><td>C11</td><td>564/450V</td><td>65.3°C</td><td>78.4°C</td></tr> <tr><td>5</td><td>D6</td><td>MUR460</td><td>67.1°C</td><td>79.8°C</td></tr> <tr><td>6</td><td>Q2</td><td>TK10A60D</td><td>68.2°C</td><td>81.4°C</td></tr> <tr><td>7</td><td>L3</td><td>TF-2157</td><td>64.1°C</td><td>77.0°C</td></tr> <tr><td>8</td><td>Q1</td><td>2SK3677</td><td>71.5°C</td><td>84.9°C</td></tr> <tr><td>9</td><td>C5</td><td>82u/450V KXG</td><td>68.8°C</td><td>81.6°C</td></tr> <tr><td>10</td><td>D12</td><td>GP20K</td><td>72.7°C</td><td>86.0°C</td></tr> <tr><td>11</td><td>T1</td><td>TF-2159</td><td>72.8°C</td><td>85.8°C</td></tr> <tr><td>12</td><td>U1</td><td>TEA1752T</td><td>67.9°C</td><td>80.8°C</td></tr> <tr><td>13</td><td>C22</td><td>33u/50V YXM</td><td>62.8°C</td><td>76.3°C</td></tr> <tr><td>14</td><td>C18</td><td>33u/50V YXM</td><td>61.3°C</td><td>78.4°C</td></tr> <tr><td>15</td><td>C152</td><td>47uF/50V YXM</td><td>69.5°C</td><td>82.3°C</td></tr> <tr><td>16</td><td>C153</td><td>47uF/50V YXM</td><td>69.5°C</td><td>82.9°C</td></tr> <tr><td>17</td><td>Q101</td><td>IRFB3607PBF</td><td>68.5°C</td><td>82.3°C</td></tr> <tr><td>18</td><td>C106</td><td>1500u/25V ZLH</td><td>66.7°C</td><td>80.2°C</td></tr> <tr><td>19</td><td>C107</td><td>1500u/25V ZLH</td><td>64.8°C</td><td>77.9°C</td></tr> <tr><td>20</td><td>L100</td><td>TR-884</td><td>64.3°C</td><td>77.8°C</td></tr> <tr><td>21</td><td>C111</td><td>220u/35V ZLH</td><td>61.1°C</td><td>74.6°C</td></tr> <tr><td>22</td><td>U101</td><td>TEA1791T</td><td>72.8°C</td><td>85.9°C</td></tr> <tr><td>23</td><td>RTH2</td><td>100KΩ 3Φ 1%</td><td>64.7°C</td><td>77.4°C</td></tr> </tbody> </table> | NO | Position | | P/N | ROOM AMBIENT Ta=37.5°C | HIGH AMBIENT Ta= 51.6°C | 1 | LF1 | TR-990 | 57.1°C | 70.1°C | 2 | LF2 | TR-910B | 63.5°C | 76.5°C | 3 | L1 | TR-995 | 63.7°C | 76.6°C | 4 | C11 | 564/450V | 65.3°C | 78.4°C | 5 | D6 | MUR460 | 67.1°C | 79.8°C | 6 | Q2 | TK10A60D | 68.2°C | 81.4°C | 7 | L3 | TF-2157 | 64.1°C | 77.0°C | 8 | Q1 | 2SK3677 | 71.5°C | 84.9°C | 9 | C5 | 82u/450V KXG | 68.8°C | 81.6°C | 10 | D12 | GP20K | 72.7°C | 86.0°C | 11 | T1 | TF-2159 | 72.8°C | 85.8°C | 12 | U1 | TEA1752T | 67.9°C | 80.8°C | 13 | C22 | 33u/50V YXM | 62.8°C | 76.3°C | 14 | C18 | 33u/50V YXM | 61.3°C | 78.4°C | 15 | C152 | 47uF/50V YXM | 69.5°C | 82.3°C | 16 | C153 | 47uF/50V YXM | 69.5°C | 82.9°C | 17 | Q101 | IRFB3607PBF | 68.5°C | 82.3°C | 18 | C106 | 1500u/25V ZLH | 66.7°C | 80.2°C | 19 | C107 | 1500u/25V ZLH | 64.8°C | 77.9°C | 20 | L100 | TR-884 | 64.3°C | 77.8°C | 21 | C111 | 220u/35V ZLH | 61.1°C | 74.6°C | 22 | U101 | TEA1791T | 72.8°C | 85.9°C | 23 | RTH2 | 100KΩ 3Φ 1% | 64.7°C | 77.4°C | | |
| NO | Position | P/N | ROOM AMBIENT Ta=37.5°C | HIGH AMBIENT Ta= 51.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | LF1 | TR-990 | 57.1°C | 70.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | LF2 | TR-910B | 63.5°C | 76.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | L1 | TR-995 | 63.7°C | 76.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | C11 | 564/450V | 65.3°C | 78.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | D6 | MUR460 | 67.1°C | 79.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Q2 | TK10A60D | 68.2°C | 81.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | L3 | TF-2157 | 64.1°C | 77.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Q1 | 2SK3677 | 71.5°C | 84.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | C5 | 82u/450V KXG | 68.8°C | 81.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | D12 | GP20K | 72.7°C | 86.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | T1 | TF-2159 | 72.8°C | 85.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | U1 | TEA1752T | 67.9°C | 80.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | C22 | 33u/50V YXM | 62.8°C | 76.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | C18 | 33u/50V YXM | 61.3°C | 78.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | C152 | 47uF/50V YXM | 69.5°C | 82.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | C153 | 47uF/50V YXM | 69.5°C | 82.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | Q101 | IRFB3607PBF | 68.5°C | 82.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | C106 | 1500u/25V ZLH | 66.7°C | 80.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | C107 | 1500u/25V ZLH | 64.8°C | 77.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | L100 | TR-884 | 64.3°C | 77.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | C111 | 220u/35V ZLH | 61.1°C | 74.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | U101 | TEA1791T | 72.8°C | 85.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | RTH2 | 100KΩ 3Φ 1% | 64.7°C | 77.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 2 HOUR | I/P : 305VAC/100VAC O/P : 95 % LOAD Ta= -40 °C / -25°C | TEST : OK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST | AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE | I/P : 305 VAC O/P : 95% LOAD Ta= 50 °C HUMIDITY= 95 %R.H | TEST : OK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | TEMPERATURE COEFFICIENT | ± 0.03 %(0~50°C) | I/P : 230 VAC O/P : 95% LOAD | ± 0.01%(0~50°C) | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | STORAGE TEMPERATURE TEST | 1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC | | OK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| 6 | THERMAL SHOCK TEST | 1. Thermal shock Temperature : -45°C ~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : 230VAC/Full Load AC ON/OFF TEST turn on 58sec ; turn off 2sec | OK | P |
| 7 | VIBRATION TEST | 1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 5G (5) Test Time : 72min in each axis (X.Y.Z) (6) Ta : 25°C | TEST : OK | P |
| 8 | CAPACITOR LIFE CYCLE | SUPPOSE C106 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta=25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta=50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME | (1) 375402 HRS (2) 69153 HRS (3) 96459 HRS (4) 133644 HRS | P |
| 9 | MTBF | Conducted by Parts Stress Analysis Prediction 3110.7K hrs min. Telcordia SR-332 (Bellcore) ; 267.3K hrs min. MIL-HDBK-217F (25°C) | | P |
| 10 | DMTBF/Accelerated Life Test | Demonstration Mean Time Between Failure(Expected Life) : 50,000 hours @ Tcase 70°C | | P |

| DATE | SAMPLE | TEST RESULT | TESTER | APPROVAL |
|-----------|----------------|-------------|------------|---------------|
| 2011/5/13 | RD SAMPLE | PASS | SANFORD SU | VINCENT TSENG |
| 2011/5/25 | PRODUCT SAMPLE | PASS | SANFORD SU | VINCENT TSENG |

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