



# Test Report: ELG-150-24

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150W 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

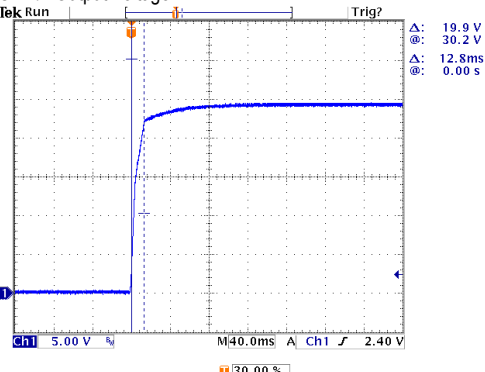
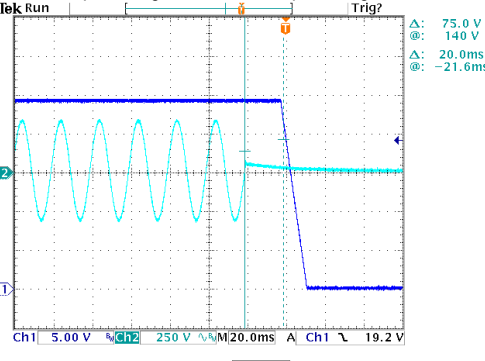
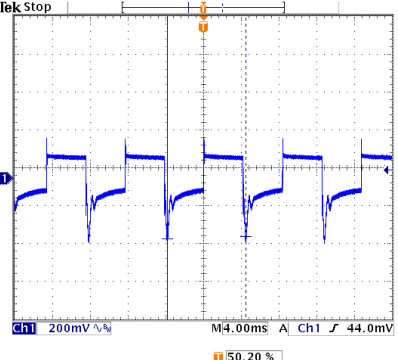
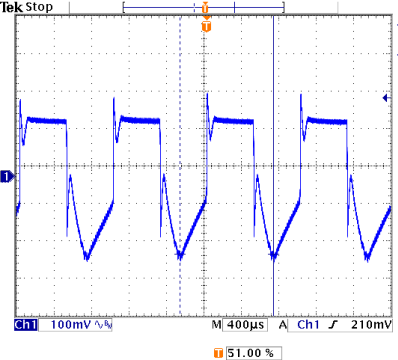
Environment Test

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

| NO  | TEST ITEM                   | SPECIFICATION | TEST CONDITION   | RESULT           |
|---|-----------------------------|---------------|--|------------------|
| 1   | CONSTANT CURRENT REGION     | 12V~24V       | I/P: 230VAC<br>O/P: LED MODE<br>Ta: 25°C               | 9.67 V~ 24.02 V  |
| 2   | OUTPUT VOLTAGE ADJUST RANGE | 21.6V~26.4V   | I/P: 230VAC<br>O/P: NO LOAD<br>Ta: 25°C                | 19.79 V~ 27.41 V |
| 3   | OUTPUT CURRENT ADJUST RANGE | 3.2A~6.25A    | I/P: 230VAC<br>O/P: SETTING<br>Ta: 25°C                | 2.319 A~ 6.858 A |
| 4   | OUTPUT VOLTAGE TOLERANCE    | -3%~+3%       | I/P: 180VAC / 295VAC<br>O/P: FULL/ NO LOAD<br>Ta: 25°C | -0.54%~ 0.87%    |
| 5   | LINE REGULATION             | -0.5%~+0.5%   | I/P: 190VAC ~ 295VAC<br>O/P: FULL LOAD<br>Ta: 25°C     | 0%~ 0%           |
| 6   | LOAD REGULATION             | -1%~+1%       | I/P: 230VAC<br>O/P: FULL ~NO LOAD<br>Ta: 25°C          | -0.12%~ 0.21%    |
| 7   | OVER/UNDERSHOOT TEST        | <± 5 %        | I/P: 230VAC<br>O/P: FULL LOAD<br>Ta: 25°C              | ± 1.25%          |
| 8   | RIPPLE & NOISE (Max)        | 200mVp-p      | I/P: 230VAC<br>O/P: FULL LOAD<br>Ta: 25°C              | 16.8 mVp-p       |
| <div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p>high frequency :</p> </div> <div style="width: 45%;"> <p>low frequency :</p> </div> </div> |                             |               |  |                  |
| 9   | SET UP TIME(Max)            | 230VAC/ 500ms | I/P: 230 VAC<br>O/P: 95% LOAD<br>Ta: 25°C              | 230VAC/ 276 ms   |
| <p>INPUT=230VAC/50HZ @ 95% LOAD</p> <p>CH1: Output Voltage CH2: AC Input Voltage</p>  |                             |               |  |                  |



|   |                   |                |  |                              |
|---|-------------------|----------------|--|------------------------------|
| 10  | RISE TIME (Max)   | 230VAC/ 100ms  | I/P: 230 VAC<br>O/P: 95% LOAD<br>Ta: 25°C  | 230VAC/ 12.8 ms              |
| <p>INPUT=230VAC/50HZ @ 95% LOAD<br/>CH1: Output Voltage</p>  <p>Δ: 19.9 V<br/>@: 30.2 V<br/>Δ: 12.8ms<br/>@: 0.00 s</p> <p>Ch1 5.00 V M40.0ms A Ch1 2.40 V</p> <p>30.00 %</p>  |                   |                |  |                              |
| 11  | HOLD UP TIME(Typ) | 230VAC/ 10ms   | I/P: 230 VAC<br>O/P: 95% LOAD<br>Ta: 25°C  | 230VAC/ 20.0 ms              |
| <p>INPUT=230VAC/50HZ @ 95% LOAD<br/>CH1: Output Voltage CH2: AC Input Voltage</p>  <p>Δ: 75.0 V<br/>@: 140 V<br/>Δ: 20.0ms<br/>@: -21.6ms</p> <p>Ch1 5.00 V Ch2 250 V M20.0ms A Ch1 19.2 V</p> <p>70.00 %</p>   |                   |                |  |                              |
| 12  | DYNAMIC LOAD      | V1: 2400 mVp-p | I/P: 230VAC<br>O/P:<br>(1)FULL /50% LOAD 50%DUTY / 120HZ<br>(2)FULL /50% LOAD 50%DUTY / 1KHZ<br>Ta: 25°C | (1) 548mVp-p<br>(2) 444mVp-p |
| <p>FULL /50% LOAD 50%DUTY / 120HZ</p>  <p>Δ: 12.0mV<br/>@: -320mV<br/>Δ: 120 Hz<br/>@: 255 Hz</p> <p>Ch1 Pk-Pk 548mV</p> <p>Ch1 200mV M4.00ms A Ch1 44.0mV</p> <p>50.20 %</p> <p>FULL /50% LOAD 50%DUTY / 1KHZ</p>  <p>Δ: 0.00 V<br/>@: -208mV<br/>Δ: 1.00kHz<br/>@: 1.42kHz</p> <p>Ch1 Pk-Pk 444mV</p> <p>Ch1 100mV M400µs A Ch1 210mV</p> <p>51.00 %</p> |                   |                |  |                              |

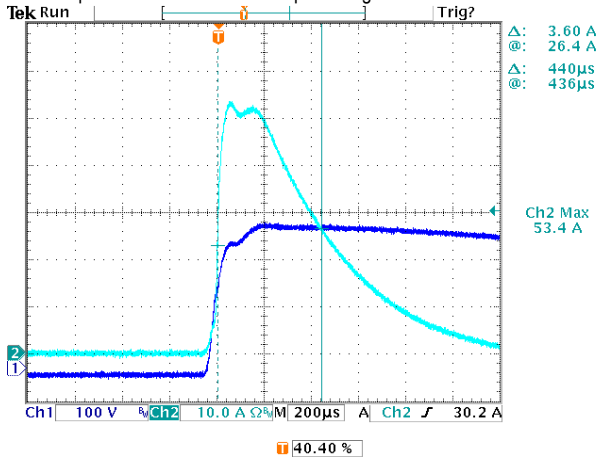
|                        |                                   |   |  |        |         |         |         |         |         |         |         |         |         |          |          |
|------------------------|-----------------------------------|---|--|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|
| 13                     | DIMMING TEST<br>(For B-Type only) | SPEC:   |  |        |         |         |         |         |         |         |         |         |         |          |          |
|                        |                                   | ※ Built-in 3 in 1 dimming function, IP67 rated. Output constant current level can be adjusted through output cable by connecting a resistance or 0 ~ 10Vdc or 10V PWM signal between DIM+ and DIM-. |  |        |         |         |         |         |         |         |         |         |         |          |          |
|                        |                                   | ※ Please DO NOT connect "DIM-" to "-V".   |  |        |         |         |         |         |         |         |         |         |         |          |          |
|                        |                                   | ※ Reference resistance value for output current adjustment (Typical)  |  |        |         |         |         |         |         |         |         |         |         |          |          |
|                        |                                   | Resistance value  | Single driver  | Short  | 10K Ω   | 20K Ω   | 30K Ω   | 40K Ω   | 50K Ω   | 60K Ω   | 70K Ω   | 80K Ω   | 90K Ω   | 100K Ω   | OPEN     |
|                        |                                   |   | Multiple drivers<br>(N=driver quantity for synchronized dimming operation) | Short  | 10K Ω/N | 20K Ω/N | 30K Ω/N | 40K Ω/N | 50K Ω/N | 60K Ω/N | 70K Ω/N | 80K Ω/N | 90K Ω/N | 100K Ω/N | .....    |
|                        |                                   | Percentage of rated current   |  | 0%     | 10%     | 20%     | 30%     | 40%     | 50%     | 60%     | 70%     | 80%     | 90%     | 100%     | 95%~108% |
|                        |                                   | ※ 0 ~ 10V dimming function for output current adjustment (Typical)  |  |        |         |         |         |         |         |         |         |         |         |          |          |
|                        |                                   | Dimming value   |  | 0V     | 1V      | 2V      | 3V      | 4V      | 5V      | 6V      | 7V      | 8V      | 9V      | 10V      | OPEN     |
|                        |                                   | Percentage of rated current   |  | 0%     | 10%     | 20%     | 30%     | 40%     | 50%     | 60%     | 70%     | 80%     | 90%     | 100%     | 95%~108% |
|                        |                                   | ※ 10V PWM signal for output current adjustment (Typical): Frequency range: 100Hz~3KHz   |  |        |         |         |         |         |         |         |         |         |         |          |          |
|                        |                                   | Duty value  |  | 0%     | 10%     | 20%     | 30%     | 40%     | 50%     | 60%     | 70%     | 80%     | 90%     | 100%     | OPEN     |
|                        |                                   | Percentage of rated current   |  | 0%     | 10%     | 20%     | 30%     | 40%     | 50%     | 60%     | 70%     | 80%     | 90%     | 100%     | 95%~108% |
| TEST RESULT:           |                                   |   |  |        |         |         |         |         |         |         |         |         |         |          |          |
| I/P: 230 VAC; Ta: 25°C |                                   |   |  |        |         |         |         |         |         |         |         |         |         |          |          |
| 1                      | Resistance value                  | Short   | 10K  | 20K    | 30K     | 40K     | 50K     | 60K     | 70K     | 80K     | 90K     | 100K    | OPEN    |          |          |
|                        | Output Current                    | 0   | 0.618  | 1.235  | 1.856   | 2.478   | 3.101   | 3.724   | 4.348   | 4.977   | 5.602   | 6.233   | 6.367   |          |          |
|                        | Percentage of rated current       | 0%  | 9.89%  | 19.76% | 29.70%  | 39.65%  | 49.62%  | 59.58%  | 69.57%  | 79.63%  | 89.63%  | 99.73%  | 101.87% |          |          |
| 2                      | Dimming value                     | 0V  | 1V   | 2V     | 3V      | 4V      | 5V      | 6V      | 7V      | 8V      | 9V      | 10V     | OPEN    |          |          |
|                        | Output Current                    | 0   | 0.64   | 1.269  | 1.876   | 2.514   | 3.138   | 3.785   | 4.413   | 5.034   | 5.665   | 6.288   | 6.367   |          |          |
|                        | Percentage of rated current       | 0%  | 10.24%   | 20.30% | 30.02%  | 40.22%  | 50.21%  | 60.56%  | 70.61%  | 80.54%  | 90.64%  | 100.61% | 101.87% |          |          |
| 3                      | Duty value                        | 0%  | 10%  | 20%    | 30%     | 40%     | 50%     | 60%     | 70%     | 80%     | 90%     | 100%    | OPEN    |          |          |
|                        | Output Current                    | 0   | 0.631  | 1.247  | 1.872   | 2.493   | 3.121   | 3.743   | 4.367   | 4.997   | 5.618   | 6.191   | 6.367   |          |          |
|                        | Percentage of rated current       | 0%  | 10.10%   | 19.95% | 29.95%  | 39.89%  | 49.94%  | 59.89%  | 69.87%  | 79.95%  | 89.89%  | 99.06%  | 101.87% |          |          |

INPUT FUNCTION TEST

| NO | TEST ITEM                 | SPECIFICATION   | TEST CONDITION   | RESULT                                   |
|----|---------------------------|---|--|--|
| 1  | INPUT VOLTAGE RANGE       | 180VAC~295VAC   | I/P: TESTING<br>O/P: FULL LOAD<br>Ta: 25°C   | 177 V~ 295 V                             |
|    |                           |   | I/P: LOW-LINE-3V=177 V<br>HIGH-LINE+10V=305 V<br>O/P: FULL/NO LOAD<br>ON: 30 Sec OFF: 30 Sec 10MIN<br>( POWER ON/OFF NO DAMAGE ) | TEST: OK                                 |
| 2  | INPUT FREQUENCY RANGE     | 47HZ ~63 HZ<br>NO DAMAGE  | I/P: 180 VAC ~295 VAC<br>O/P: FULL~NO LOAD<br>Ta: 25°C   | TEST: OK                                 |
| 3  | AC CURRENT                | 0.7A/277VAC<br>0.9A/230VAC  | I/P: 277 VAC<br>I/P: 230 VAC<br>O/P: FULL LOAD<br>Ta: 25°C   | I = 0.57 A/ 277VAC<br>I = 0.68 A/ 230VAC |
| 4  | LEAKAGE CURRENT           | < 0.75mA / 277VAC   | I/P: 277 VAC<br>O/P: NO LOAD<br>Ta: 25°C   | L-FG: 0.340 mA<br>N-FG: 0.309 mA         |
| 5  | NO LOAD POWER CONSUMPTION | < 0.5W  | I/P: 230VAC<br>O/P: NO LOAD<br>Ta: 25°C  | 0.116 W/ 230VAC                          |
| 6  | TOTAL HARMONIC DISTORTION | Total harmonic distortion will be lower than 20% when output loading is 50% or higher at 230VAC | I/P: 230VAC<br>O/P: 50% LOAD   | THD: 10.22 %                             |
|    |                           | Total harmonic distortion will be lower than 20% when output loading is 75% or higher at 277VAC | I/P: 277VAC<br>O/P: 75% LOAD   | THD: 8.65 %                              |
| 7  | INRUSH CURRENT(Typ)       | 230V/ 65A<br>Twidth =550us measured at 50%<br>Ipeak<br>COLD START                               | I/P: 230 VAC<br>O/P: FULL LOAD<br>Ta: 25°C   | I = 53.4 A/ 230VAC<br>Twidth =440 us     |

INPUT=230VAC/50HZ @ FULL LOAD

CH2: Input current CH1: AC Input Voltage



| 8   | EFFICIENCY(Typ)     | 89%                          | I/P: 230VAC<br>O/P: FULL LOAD<br>Ta: 25°C                  | 91.99%                                   |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
|---|---------------------|------------------------------|--|--|----------|---------------------|---------------------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|
| <p><b>EFFICIENCY vs LOAD</b></p> <table border="1"> <caption>Efficiency vs Load Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>277V Efficiency (%)</th> <th>230V Efficiency (%)</th> </tr> </thead> <tbody> <tr><td>10%</td><td>76%</td><td>73%</td></tr> <tr><td>20%</td><td>91%</td><td>85%</td></tr> <tr><td>30%</td><td>92%</td><td>91%</td></tr> <tr><td>40%</td><td>92%</td><td>91%</td></tr> <tr><td>50%</td><td>91%</td><td>91%</td></tr> <tr><td>60%</td><td>92%</td><td>91%</td></tr> <tr><td>70%</td><td>92%</td><td>91%</td></tr> <tr><td>80%</td><td>92%</td><td>91%</td></tr> <tr><td>90%</td><td>92%</td><td>91%</td></tr> <tr><td>100%</td><td>92%</td><td>91%</td></tr> </tbody> </table> |                     |                              |  |  | LOAD (%) | 277V Efficiency (%) | 230V Efficiency (%) | 10% | 76%   | 73%   | 20% | 91%   | 85%   | 30% | 92%   | 91%   | 40% | 92%   | 91%   | 50% | 91%   | 91%   | 60%  | 92%   | 91%   | 70% | 92% | 91% | 80% | 92% | 91% | 90% | 92% | 91% | 100% | 92% | 91% |
| LOAD (%)  | 277V Efficiency (%) | 230V Efficiency (%)          |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 10%   | 76%                 | 73%                          |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 20%   | 91%                 | 85%                          |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 30%   | 92%                 | 91%                          |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 40%   | 92%                 | 91%                          |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 50%   | 91%                 | 91%                          |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 60%   | 92%                 | 91%                          |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 70%   | 92%                 | 91%                          |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 80%   | 92%                 | 91%                          |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 90%   | 92%                 | 91%                          |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 100%  | 92%                 | 91%                          |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 9   | POWER FACTOR        | 0.92/ 277VAC<br>0.95/ 230VAC | I/P: 277 VAC<br>I/P: 230 VAC<br>O/P: FULL LOAD<br>Ta: 25°C | PF= 0.981 / 277VAC<br>PF= 0.993 / 230VAC |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| <p><b>P.F vs LOAD</b></p> <p style="text-align: center;">Constant Current Mode</p> <table border="1"> <caption>P.F vs Load Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>277V PF</th> <th>230V PF</th> </tr> </thead> <tbody> <tr><td>50%</td><td>0.945</td><td>0.978</td></tr> <tr><td>60%</td><td>0.960</td><td>0.983</td></tr> <tr><td>70%</td><td>0.968</td><td>0.987</td></tr> <tr><td>80%</td><td>0.975</td><td>0.989</td></tr> <tr><td>90%</td><td>0.978</td><td>0.991</td></tr> <tr><td>100%</td><td>0.980</td><td>0.993</td></tr> </tbody> </table>  |                     |                              |  |  | LOAD (%) | 277V PF             | 230V PF             | 50% | 0.945 | 0.978 | 60% | 0.960 | 0.983 | 70% | 0.968 | 0.987 | 80% | 0.975 | 0.989 | 90% | 0.978 | 0.991 | 100% | 0.980 | 0.993 |     |     |     |     |     |     |     |     |     |      |     |     |
| LOAD (%)  | 277V PF             | 230V PF                      |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 50%   | 0.945               | 0.978                        |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 60%   | 0.960               | 0.983                        |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 70%   | 0.968               | 0.987                        |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 80%   | 0.975               | 0.989                        |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 90%   | 0.978               | 0.991                        |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |
| 100%  | 0.980               | 0.993                        |  |  |          |                     |                     |     |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |       |       |     |     |     |     |     |     |     |     |     |      |     |     |

**PROTECTION FUNCTION TEST**

| NO | TEST ITEM                   | SPECIFICATION                             | TEST CONDITION  | RESULT   |
|----|-----------------------------|---|---|--|
| 1  | OVER LOAD PROTECTION        | 95%~108%                                  | I/P: 200VAC<br>I/P: 230VAC<br>I/P: 295VAC<br>O/P: TESTING<br>Ta: 25°C | 100.48 %/ 200VAC<br>100.43 %/ 230VAC<br>100.35 %/ 295VAC<br>Constant Current Limiting, recovers automatically after fault condition is removed |
| 2  | OVER VOLTAGE PROTECTION     | 28V~34V                                   | I/P: 180VAC<br>I/P: 230VAC<br>I/P: 295VAC<br>O/P: NO LOAD<br>Ta: 25°C | 31.43 V/ 180VAC<br>31.44 V/ 230VAC<br>31.44 V/ 295VAC<br>Shut down o/p voltage, re-power on to recovery  |
| 3  | OVER TEMPERATURE PROTECTION | NO DAMAGE                                 | I/P: 200VAC<br>I/P: 230VAC<br>I/P: 295VAC<br>O/P: FULL LOAD           | O.T.P. Active<br>Shut down o/p voltage, re-power on to recovery  |
| 4  | SHORT PROTECTION            | SHORT EVERY OUTPUT<br>1 HOUR<br>NO DAMAGE | I/P: 200VAC<br>I/P: 295VAC<br>O/P: FULL LOAD<br>Ta: 25°C              | NO DAMAGE<br>Hiccup mode, recovers automatically after fault condition is removed  |

**COMPONENT STRESS TEST**

| NO | TEST ITEM            | SPECIFICATION          | TEST CONDITION   | RESULT   |
|----|----------------------|------------------------|--|--|
| 1  | PWM Power Transistor | Q 2 Rated<br>730V/10A  | I/P: High-Line +3V =298V<br>O/P: (1) Full Load Turn on<br>(2) Output Short<br>(3) Full load continue<br>Ta: 25°C                           | (1) 690 V<br>(2) 560 V<br>(3) 666 V                                |
| 2  | O/P Diode (MOSFET)   | Q101 Rated<br>120V/56A | I/P: High-Line +3V =298V<br>O/P: (1) Full Load Turn on<br>(2) Output Short<br>(3) Full load continue<br>Ta: 25°C                           | (1) 105 V<br>(2) 78.8 V<br>(3) 103 V                               |
| 3  | Input Capacitor      | C5 Rated<br>100u/ 450V | I/P: High-Line +3V =298 V<br>O/P: (1) Full Load input on/off<br>(2) NO LOAD input on /Off<br>(3) Full Load /NO LOAD Change<br>Ta: 25°C     | (1) 444 V<br>(2) 448 V<br>(3) 448 V                                |
| 4  | Control IC           | U1 Rated<br>28V (MAX.) | I/P: High-Line +3V =298 V<br>O/P: ((1) FULL LOAD<br>(2) Output Short<br>(3) O.L.P<br>(4) O.V.P<br>(5) Low Line No Load Vo(min)<br>Ta: 25°C | (1) 17.5 V<br>(2) 15.0 V<br>(3) 12.1 V<br>(4) 15.0 V<br>(5) 17.2 V |
| 5  | PFC Power Transistor | Q 1 Rated<br>600V/10A  | I/P: High-Line +3V =298V<br>O/P: (1) Full Load Turn on<br>(2) Output Short<br>(3) Full load continue<br>Ta: 25°C                           | (1) 516 V<br>(2) 517 V<br>(3) 482 V                                |

|   |             |                       |  |                        |
|---|-------------|-----------------------|--|------------------------|
| 6 | Clamp Diode | D 10 Rated<br>800V/2A | I/P: High-Line +3V = 298V<br>O/P: (1) Full Load input on/off<br>(2) Output Short<br>Ta: 25°C | (1) 584 V<br>(2) 484 V |
|---|-------------|-----------------------|--|------------------------|

### SAFETY TEST

| NO | TEST ITEM            | SPECIFICATION   | TEST CONDITION   | RESULT   |
|----|----------------------|---|--|--|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P: 3.75KVAC/min<br>I/P-FG: 2.0KVAC/min<br>O/P-FG: 1.5KVAC/min   | I/P-O/P: 4.2KVAC/min<br>I/P-FG: 2.4 KVAC/min<br>O/P-FG: 1.8 KVAC/min<br>Ta: 25°C | I/P-O/P: 2.387 mA<br>I/P-FG: 2.068 mA<br>O/P-FG: 1.389 mA<br>NO DAMAGE |
| 2  | ISOLATION RESISTANCE | I/P-O/P: 500VDC>100MΩ<br>I/P-FG: 500VDC>100MΩ<br>O/P-FG: 500VDC>100MΩ | I/P-O/P: 500 VDC<br>I/P-FG: 500 VDC<br>O/P-FG: 500 VDC<br>Ta: 25°C               | I/P-O/P: >9999 MΩ<br>I/P-FG: >9999 MΩ<br>O/P-FG: >9999 MΩ              |

### E.M.C TEST

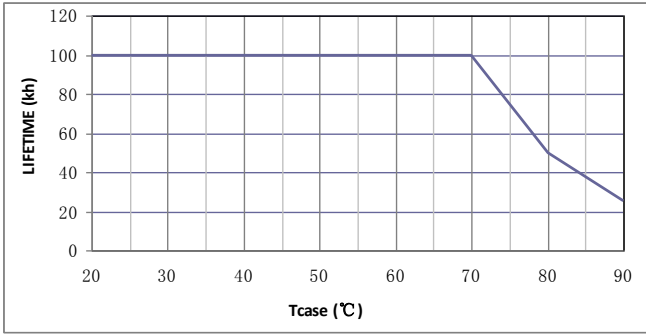
| NO | TEST ITEM                                   | SPECIFICATION   | TEST CONDITION  | RESULT                        |
|----|---|---|---|-------------------------------|
| 1  | HARMONIC                                    | EN61000-3-2<br>CLASS C                                    | I/P: 230VAC/50HZ<br>O/P: FULL/50% LOAD<br>Ta: 25°C                        | PASS                          |
| 2  | CONDUCTION                                  | EN55015   | I/P: 230 VAC (50HZ)<br>O/P: FULL LOAD<br>Ta: 25°C                         | PASS<br>Test by certified Lab |
| 3  | RADIATION                                   | EN55015   | I/P: 230 VAC (50HZ)<br>O/P: FULL LOAD<br>Ta: 25°C                         | PASS<br>Test by certified Lab |
| 4  | E.S.D                                       | EN61000-4-2<br>LIGHT INDUSTRY<br>AIR: 8KV<br>Contact: 4KV | I/P: 230 VAC/50HZ<br>O/P: FULL LOAD<br>Ta: 25°C                           | CRITERIA A                    |
| 5  | E.F.T                                       | EN61000-4-4<br>LIGHT INDUSTRY<br>INPUT: 1KV               | I/P: 230VAC/50HZ<br>O/P: FULL LOAD<br>Ta: 25°C                            | CRITERIA A                    |
| 6  | SURGE                                       | EN61000-4-5<br>INDUSTRY<br>L-N: 3KV<br>L,N-PE: 6KV        | I/P: 230VAC/50HZ<br>O/P: FULL LOAD<br>L-N: 4KV<br>L,N-PE: 8KV<br>Ta: 25°C | CRITERIA A                    |
| 7  | Test by certified Lab & Test Report Prepare |   |   |                               |



■ **RELIABILITY TEST**

**ENVIRONMENT TEST**

| NO | TEST ITEM   | SPECIFICATION  | TEST CONDITION  | RESULT  |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
|----|---|--|---|---|----|----------|-------------------------|-------------------------|---|----|--------|--------|---|-----|--------|--------|---|----|--------|--------|---|----|--------|---------|---|----|--------|--------|---|-----|--------|---------|---|----|--------|--------|---|----|--------|---------|---|----|--------|--------|----|----|--------|---------|----|-----|--------|--------|----|-----|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|----|--------|--------|
| 1  | TEMPERATURE RISE TEST   | MODEL: ELG-150-24<br>1. ROOM AMBIENT BURN-IN: 2 HRS<br>I/P: 230VAC O/P: FULL LOAD Ta=34.7 °C<br>2. HIGH AMBIENT BURN-IN: 2 HRS<br>I/P: 230VAC O/P: FULL LOAD Ta=60.8 °C  |   |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
|    |   |  |   | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=34.7 °C</th> <th>HIGH AMBIENT Ta=60.8 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>L3</td><td>67.7°C</td><td>93.5°C</td></tr> <tr><td>2</td><td>C11</td><td>69.1°C</td><td>94.8°C</td></tr> <tr><td>3</td><td>Q1</td><td>71.6°C</td><td>97.4°C</td></tr> <tr><td>4</td><td>Q2</td><td>77.0°C</td><td>102.6°C</td></tr> <tr><td>5</td><td>D6</td><td>73.1°C</td><td>99.6°C</td></tr> <tr><td>6</td><td>D10</td><td>80.6°C</td><td>108.1°C</td></tr> <tr><td>7</td><td>U1</td><td>66.2°C</td><td>93.0°C</td></tr> <tr><td>8</td><td>R7</td><td>83.4°C</td><td>110.2°C</td></tr> <tr><td>9</td><td>C5</td><td>71.5°C</td><td>97.5°C</td></tr> <tr><td>10</td><td>T1</td><td>75.1°C</td><td>102.8°C</td></tr> <tr><td>11</td><td>C45</td><td>67.0°C</td><td>93.5°C</td></tr> <tr><td>12</td><td>C12</td><td>70.6°C</td><td>97.2°C</td></tr> <tr><td>13</td><td>U101</td><td>67.4°C</td><td>96.5°C</td></tr> <tr><td>14</td><td>Q101</td><td>68.0°C</td><td>95.5°C</td></tr> <tr><td>15</td><td>Q102</td><td>68.1°C</td><td>95.6°C</td></tr> <tr><td>16</td><td>C201</td><td>65.8°C</td><td>93.0°C</td></tr> <tr><td>17</td><td>C105</td><td>62.1°C</td><td>88.5°C</td></tr> <tr><td>18</td><td>C106</td><td>65.9°C</td><td>93.0°C</td></tr> <tr><td>19</td><td>C110</td><td>61.6°C</td><td>88.2°C</td></tr> <tr><td>20</td><td>RTH2</td><td>66.8°C</td><td>92.9°C</td></tr> <tr><td>21</td><td>TC</td><td>60.7°C</td><td>85.6°C</td></tr> </tbody> </table> | NO | Position | ROOM AMBIENT Ta=34.7 °C | HIGH AMBIENT Ta=60.8 °C | 1 | L3 | 67.7°C | 93.5°C | 2 | C11 | 69.1°C | 94.8°C | 3 | Q1 | 71.6°C | 97.4°C | 4 | Q2 | 77.0°C | 102.6°C | 5 | D6 | 73.1°C | 99.6°C | 6 | D10 | 80.6°C | 108.1°C | 7 | U1 | 66.2°C | 93.0°C | 8 | R7 | 83.4°C | 110.2°C | 9 | C5 | 71.5°C | 97.5°C | 10 | T1 | 75.1°C | 102.8°C | 11 | C45 | 67.0°C | 93.5°C | 12 | C12 | 70.6°C | 97.2°C | 13 | U101 | 67.4°C | 96.5°C | 14 | Q101 | 68.0°C | 95.5°C | 15 | Q102 | 68.1°C | 95.6°C | 16 | C201 | 65.8°C | 93.0°C | 17 | C105 | 62.1°C | 88.5°C | 18 | C106 | 65.9°C | 93.0°C | 19 | C110 | 61.6°C | 88.2°C | 20 | RTH2 | 66.8°C | 92.9°C | 21 | TC | 60.7°C | 85.6°C |
| NO | Position  | ROOM AMBIENT Ta=34.7 °C  | HIGH AMBIENT Ta=60.8 °C                                       |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 1  | L3  | 67.7°C   | 93.5°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 2  | C11   | 69.1°C   | 94.8°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 3  | Q1  | 71.6°C   | 97.4°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 4  | Q2  | 77.0°C   | 102.6°C   |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 5  | D6  | 73.1°C   | 99.6°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 6  | D10   | 80.6°C   | 108.1°C   |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 7  | U1  | 66.2°C   | 93.0°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 8  | R7  | 83.4°C   | 110.2°C   |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 9  | C5  | 71.5°C   | 97.5°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 10 | T1  | 75.1°C   | 102.8°C   |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 11 | C45   | 67.0°C   | 93.5°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 12 | C12   | 70.6°C   | 97.2°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 13 | U101  | 67.4°C   | 96.5°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 14 | Q101  | 68.0°C   | 95.5°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 15 | Q102  | 68.1°C   | 95.6°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 16 | C201  | 65.8°C   | 93.0°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 17 | C105  | 62.1°C   | 88.5°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 18 | C106  | 65.9°C   | 93.0°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 19 | C110  | 61.6°C   | 88.2°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 20 | RTH2  | 66.8°C   | 92.9°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 21 | TC  | 60.7°C   | 85.6°C  |   |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 2  | LOW TEMPERATURE<br>TURN ON TEST                                   | TURN ON AFTER 2 HOUR   | I/P: 295VAC/200VAC<br>O/P: FULL LOAD<br>Ta= -45°C             | TEST: OK  |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 3  | HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE<br>TURN ON TEST | AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 60°C<br>NO DAMAGE   | I/P: 305VAC<br>O/P: FULL LOAD<br>Ta=60°C<br>HUMIDITY= 95 %R.H | TEST: OK  |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 4  | TEMPERATURE<br>COEFFICIENT  | ±0.03 %/°C (0~50°C)  | I/P: 230 VAC<br>O/P: FULL LOAD                                | ±0.003 %/°C (0~50°C)  |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |
| 5  | STORAGE TEMPERATURE TEST  | 1. Thermal shock Temperature: -45°C~ +90°C<br>2. Temperature change rate : 25°C / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle: 5 CYCLE<br>5. Input/Output condition: STATIC |   | TEST: OK  |    |          |                         |                         |   |    |        |        |   |     |        |        |   |    |        |        |   |    |        |         |   |    |        |        |   |     |        |         |   |    |        |        |   |    |        |         |   |    |        |        |    |    |        |         |    |     |        |        |    |     |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |      |        |        |    |    |        |        |

|    |                             |   |   |
|----|-----------------------------|---|---|
| 6  | THERMAL SHOCK TEST          | 1. Thermal shock Temperature: -45°C~+65°C<br>2. Temperature change rate : 25°C / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle: 10 CYCLE<br>5. Input/Output condition: 230VAC/Full Load AC ON/OFF TEST<br>AC on 3 sec/AC off 1 sec TEST  | TEST: OK  |
| 7  | VIBRATION TEST              | 1 Carton & 1 Set<br>(1) Waveform: Sine Wave<br>(2) Frequency: 10~500Hz<br>(3) Sweep Time: 12min/sweep cycle<br>(4) Acceleration: 5G<br>(5) Test Time: 72min in each axis (X.Y.Z)<br>(6) Ta: 25°C  | TEST: OK  |
| 8  | CAPACITOR LIFE CYCLE        | ELG-150-24: SUPPOSE C106 IS THE MOST CRITICAL COMPONENT<br>(1) I/P: 230VAC O/P: FULL LOAD Ta= 25 °C LIFE TIME<br>(2) I/P: 230VAC O/P: FULL LOAD Ta= 60 °C LIFE TIME<br>(3) I/P: 230VAC O/P: 75% LOAD Ta= 60 °C LIFE TIME<br>(4) I/P: 230VAC O/P: 50% LOAD Ta= 60 °C LIFE TIME | (1) 416693 HRS<br>(2) 35608 HRS<br>(3) 60627 HRS<br>(4) 80290 HRS |
| 9  | MTBF                        | MIL-HDBK-217F<br>TOTAL FAILURE RATE: 313.66K HRS  |   |
| 10 | DMTBF/Accelerated Life Test | Demonstration Mean Time Between Failure (Expected Life):<br>Above 50000 hours @ Tc 80°C<br>   |   |

| TEST RESULT | TESTER         | REVIEW | APPROVAL |
|-------------|----------------|--------|----------|
| PASS        | ZHANGZJ/ZHUOKB | SKY    | LIUWY    |