



# Test Report: HLG-80H-36

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80W Single Output Switching Power Supply

## ■ DESIGN VERIFY TEST

Output Function Test  
Input Function Test  
Protection Function Test  
Control 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  | RIPPLE & NOISE              | V1 : 200 mVp-p (Max)                           | I/P : 230VAC<br>O/P : FULL LOAD<br>Ta : 25°C  | V1 : 36.2 mVp-p (Max)  |
| 2  | OUTPUT VOLTAGE ADJUST RANGE | CH1 : 33V ~ 40 V                               | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C   | 31.749 V ~ 40.671 V / 230 VAC<br>31.753 V ~ 40.673 V / 115 VAC |
| 3  | CURRENT ADJUST RANGE        | CH1 : 1.38 A ~ 2.3 A                           | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C   | 0.545 A ~ 2.522 A / 230 VAC<br>0.565 A ~ 2.530 A / 115 VAC     |
| 4  | OUTPUT VOLTAGE TOLERANCE    | V1 : 1 % ~ -1 % (Max)                          | I/P : 100 VAC / 305 VAC<br>O/P : FULL / MIN LOAD<br>Ta : 25°C   | V1 : 0.13 % ~ -0.13 %  |
| 5  | LINE REGULATION             | V1 : 0.5 % ~ -0.5 % (Max)                      | I/P : 100VAC ~ 305 VAC<br>O/P : FULL LOAD<br>Ta : 25°C  | V1 : 0 % ~ 0 %   |
| 6  | LOAD REGULATION             | V1 : 0.5 % ~ -0.5 % (Max)                      | I/P : 230 VAC<br>O/P : FULL ~ MIN LOAD<br>Ta : 25°C   | V1 : 0.07 % ~ -0.07 %  |
| 7  | SET UP TIME                 | 230VAC : 500 ms (Max)<br>115VAC : 1200 ms(Max) | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C  | 230VAC/ 294 ms<br>115VAC/ 330 ms                               |
| 8  | RISE TIME                   | 230VAC : 80 ms (Max)<br>115VAC : 80 ms (Max)   | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C  | 230VAC/ 30 ms<br>115VAC/ 25 ms                                 |
| 9  | HOLD UP TIME                | 230VAC : 16 ms (TYP)<br>115VAC : 16 ms (TYP)   | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C  | 230VAC/ 80 ms<br>115VAC/ 34 ms                                 |
| 10 | OVER/UNDERSHOOT TEST        | < ±5%  | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C   | TEST : <5 %  |
| 11 | DYNAMIC LOAD                | V1 : 3600 mVp-p                                | I/P : 230 VAC<br>(1).O/P : FULL /Min LOAD 90%DUTY/<br>1KHZ<br>(2).O/P : FULL /Min LOAD 50%DUTY/<br>120HZ<br>Ta : 25°C | (1)392 mVp-p<br>(2)392 mVp-p                                   |

| 12   | DIMMER TEST<br>(for B-type only) | SPEC:   |                  |        |        |        |        |        |        |        |         |        |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
|--|----------------------------------|---|------------------|--------|--------|--------|--------|--------|--------|--------|---------|--------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
|  |                                  | *Reference resistance value for output current adjustment (Typical)   |                  |        |        |        |        |        |        |        |         |        |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
|  |                                  | <table border="1"> <tr> <th>Resistance value</th> <th>10K</th> <th>20K</th> <th>30K</th> <th>40K</th> <th>50K</th> <th>60K</th> <th>70K</th> <th>80K</th> <th>90K</th> <th>100K</th> </tr> <tr> <th>Output current</th> <td>10%</td> <td>20%</td> <td>30%</td> <td>40%</td> <td>50%</td> <td>60%</td> <td>70%</td> <td>80%</td> <td>90%</td> <td>100%</td> </tr> </table> | Resistance value | 10K    | 20K    | 30K    | 40K    | 50K    | 60K    | 70K    | 80K     | 90K    | 100K           | Output current | 10%    | 20%    | 30%    | 40%    | 50%    | 60%    | 70%    | 80%    | 90%    | 100% |        |        |        |        |        |        |        |        |        |         |
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|  |                                  | *1 ~ 10V dimming function for output current adjustment (Typical)   |                  |        |        |        |        |        |        |        |         |        |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
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|  |                                  | 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)   |                  |        |        |        |        |        |        |        |         |        |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
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| Output current   | 10%                              | 20%   | 30%              | 40%    | 50%    | 60%    | 70%    | 80%    | 90%    | 100%   |         |        |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
| TEST RESULT: I/P : 230 VAC ; Ta : 25°C   |                                  |   |                  |        |        |        |        |        |        |        |         |        |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
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|  |                                  | Output current  | 0.285A           | 0.484A | 0.723A | 0.957A | 1.207A | 1.420A | 1.641A | 1.867A | 2.115A  | 2.339A |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
|  | %                                | 12.39%  | 21.04%           | 31.43% | 41.61% | 52.48% | 61.74% | 71.35% | 81.17% | 91.96% | 101.70% |        |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
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|  |                                  | Output current  | 0.280A           | 0.501A | 0.709A | 0.936A | 1.167A | 1.397A | 1.624A | 1.855A | 2.082A  | 2.309A |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
|  | %                                | 12.17%  | 21.78%           | 30.83% | 40.70% | 50.74% | 60.74% | 70.61% | 80.65% | 90.52% | 100.39% |        |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
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| 3  |                                  | Duty value  | 10%              | 20%    | 30%    | 40%    | 50%    | 60%    | 70%    | 80%    | 90%     | 100%   |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
|  |                                  | Output current  | 0.230A           | 0.463A | 0.680A | 0.919A | 1.159A | 1.398A | 1.638A | 1.878A | 2.119A  | 2.357A |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |
|  | %                                | 10.00%  | 20.13%           | 29.57% | 39.96% | 50.39% | 60.78% | 71.22% | 81.65% | 92.13% | 102.48% |        |                |                |        |        |        |        |        |        |        |        |        |      |        |        |        |        |        |        |        |        |        |         |

## INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECIFICATION   | TEST CONDITION  | RESULT  |
|----|-----------------------|---|---|---|
| 1  | INPUT VOLTAGE RANGE   | 90VAC~305 VAC   | I/P : TESTING<br>O/P : FULL LOAD<br>Ta : 25°C<br>I/P :<br>LOW-LINE-3V= 87 V<br>HIGH-LINE+15%=305 V<br>O/P : FULL/MIN LOAD<br>ON : 30 Sec. OFF : 30 Sec 10MIN<br>( AC POWER ON/OFF NO DAMAGE ) | 70 V~305V<br><br>TEST : OK  |
| 2  | INPUT FREQUENCY RANGE | 47HZ ~63 HZ<br>NO DAMAGE  | I/P : 90 VAC ~ 305 VAC<br>O/P : FULL~MIN LOAD<br>Ta : 25°C  | TEST : OK   |
| 3  | POWER FACTOR          | 0.96 / 230 VAC(TYP)<br>0.96 / 115 VAC(TYP)<br>0.94 / 277 VAC(TYP) | I/P : 230 VAC<br>I/P : 115 VAC<br>I/P : 277 VAC<br>O/P : FULL LOAD<br>Ta : 25°C   | PF= 0.964 / 230 VAC<br>PF= 0.991 / 115 VAC<br>PF= 0.945 / 277 VAC |
| 4  | EFFICIENCY            | 91 % (TYP)  | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C   | 91.49 %   |

|   |                           |   |   |  |
|---|---------------------------|---|---|--|
| 5 | INPUT CURRENT             | 277V/ 0.4 A (TYP)<br>230V/ 0.425 A (TYP)<br>115V/ 0.85 A (TYP)  | I/P : 277 VAC<br>I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                     | I = 0.35 A/ 277 VAC<br>I = 0.40 A/ 230 VAC<br>I = 0.79 A/ 115 VAC    |
| 6 | INRUSH CURRENT            | 230V/ 70 A (TYP)<br><br>COLD START  | I/P : 230 VAC<br><br>O/P : FULL LOAD<br>Ta : 25°C   | I = 63 A/ 230 VAC  |
| 7 | LEAKAGE CURRENT           | < 0.75 mA / 277 VAC   | I/P : 277 VAC<br>O/P : Min LOAD<br>Ta : 25°C  | L-FG : 0.2 mA<br>N-FG : 0.2 mA                                       |
| 8 | TOTAL HARMONIC DISTORTION | THD < 20% when output loading $\geq$ 60% at 115VAC/230VAC input and output loading $\geq$ 75% at 277VAC input | I/P : 115 VAC<br>I/P : 230 VAC<br>O/P : 60% LOAD<br><br>I/P : 277 VAC<br>O/P : 75%LOAD<br>Ta : 25°C | THD : 8.65 /115VAC<br>THD : 14.25 /230VAC<br><br>THD : 14.16 /277VAC |

## PROTECTION FUNCTION TEST

| NO | TEST ITEM                   | SPECIFICATION                          | TEST CONDITION  | RESULT  |
|----|-----------------------------|--|---|---|
| 1  | OVER LOAD PROTECTION        | 95 % ~ 108 %                           | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : TESTING<br>Ta : 25°C  | 101 % / 230 VAC<br>101% / 115 VAC<br>Constant current limiting, recovers automatically after fault condition is removed |
| 2  | OVER VOLTAGE PROTECTION     | CH1 : 41 V ~ 49 V                      | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C | 44.432 V / 230 VAC<br>44.152 V / 115 VAC<br>Shut down o/p voltage, re-power on to recover                               |
| 3  | OVER TEMPERATURE PROTECTION | NO DAMAGE                              | I/P : 230 VAC<br>O/P : FULL LOAD                              | O.T.P. Active<br>Shut down o/p voltage, re-power on to recover  |
| 4  | SHORT PROTECTION            | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE | I/P : 305 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                 | NO DAMAGE<br>HICCUP   |

**COMPONENT STRESS TEST**

| NO | TEST ITEM  | SPECIFICATION            | TEST CONDITION   | RESULT                                       |
|----|--|--------------------------|--|--|
| 1  | Power Transistor<br>( D to S) or (C to E) Peak Voltage | Q 1 Rated :<br>12A/700V  | I/P : High-Line +3V = 308 V<br>O/P : (1)Full Load Turn on<br>(2) Output Short<br>(3)Full load continue<br>Ta : 25°C                          | (1) 616 V<br>(2) 476 V<br>(3) 612 V          |
| 2  | Diode Peak Voltage                                     | Q101 Rated :<br>20A/170V | I/P : High-Line +3V = 308 V<br>O/P : (1)Full Load Turn on<br>(2)Output Short<br>(3)Full load continue<br>Ta : 25°C                           | (1) 169 V<br>(2) 133 V<br>(3) 168 V          |
| 3  | Clamp Diode Peak Voltage                               | D12 Rated :<br>2A/800V   | I/P : High-Line +3V = 308 V<br>O/P : (1) Dynamic Load<br>90%Duty/1KHz<br>(2)Full load continue<br>Ta : 25°C                                  | (1) 576 V<br>(2) 578 V                       |
| 4  | Input Capacitor Voltage                                | C 5 Rated :<br>82u/450V  | I/P : High-Line +3V = 308 V<br>O/P : (1)Full Load Turn on /Off<br>(2) Min load Turn on /Off<br>(3)Full Load /Min load<br>Change<br>Ta : 25°C | (1) 418.73 V<br>(2) 431.02 V<br>(3) 431.05 V |
| 5  | Control IC Voltage Test                                | U1 Rated :<br>16V~38V    | I/P : High-Line +3V = 308 V<br>O/P : (1)Full Load Turn on /Off<br>(2) Min load Turn on /Off<br>(3)Full Load /Min load<br>Change<br>Ta : 25°C | (1) 21.462 V<br>(2) 21.416 V<br>(3) 21.409 V |
| 6  | Power Transistor<br>( D to S) or (C to E) Peak Voltage | Q2 Rated :<br>10A/600V   | I/P : High-Line +3V = 308 V<br>O/P : (1)Full Load Turn on<br>(2) Output Short<br>(3)Full load continue<br>Ta : 25°C                          | (1) 478 V<br>(2) 448 V<br>(3) 438 V          |

■ SAFETY & E.M.C. TEST

**SAFETY TEST**

| NO | TEST ITEM            | SPECIFICATION   | TEST CONDITION   | RESULT  |
|----|----------------------|---|--|---|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P : 3.75 KVAC/min<br>I/P-FG : 2 KVAC/min<4.5mA<br>O/P-FG : 1.5 KVAC/min | I/P-O/P : 4 KVAC/min<br>I/P-FG : 2.4KVAC/min<br>O/P-FG : 1.8 KVAC/min<br>Ta : 25°C | I/P-O/P : 2.44 mA<br>I/P-FG : 2.10 mA<br>O/P-FG : 044 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 /70%RH      | I/P-O/P : 30 GΩ<br>I/P-FG : 30 GΩ<br>O/P-FG : 30 GΩ<br>NO DAMAGE      |
| 3  | GROUNDING CONTINUITY | FG(PE) TO CHASSIS<br>OR TRACE < 100 mΩ  | 40 A / 2min<br>Ta : 25°C / 70%RH   | 9 mΩ  |
| 4  | APPROVAL             | TUV : Certificate NO : R50202516<br>UL : File NO : E334687                    |  |   |

**E.M.C TEST**

| NO | TEST ITEM  | SPECIFICATION                                      | TEST CONDITION  | RESULT                        |
|----|------------|--|---|-------------------------------|
| 1  | HARMONIC   | EN61000-3-2<br>CLASS A<br>CLASS C                  | I/P: 230VAC/50HZ<br>O/P:100%<br>ELECTRONICLOAD<br>O/P:100%LED LOAD<br>Ta:25°C | PASS                          |
| 2  | CONDUCTION | EN55015<br>CLASS B                                 | I/P: 230 VAC (50HZ)<br>O/P:FULL LOAD<br>Ta:25°C                               | PASS<br>Test by certified Lab |
| 3  | RADIATION  | EN55015<br>CLASS B                                 | 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>INDUSTRY<br>AIR:8KV / 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>INDUSTRY<br>INPUT: 2KV              | I/P: 230 VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C                                 | CRITERIA A                    |
| 6  | SURGE      | IEC61000-4-5<br>INDUSTRY<br>L-N :2KV<br>L,N-PE:4KV | I/P: 230 VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C                                 | CRITERIA A                    |

■ RELIABILITY TEST

ENVIRONMENT TEST

| NO | TEST ITEM   | SPECIFICATION  | TEST CONDITION   | RESULT            |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
|----|---|--|--|-------------------|----------|----------------------------|-----------------------------|---|-----|--------|--------|---|-----|--------|--------|---|----|--------|--------|---|----|--------|--------|---|----|--------|--------|---|----|--------|--------|---|----|--------|--------|---|------|--------|--------|---|----|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|--|
| 1  | TEMPERATURE RISE TEST   | MODEL : HLG-80H-24<br>1. ROOM AMBIENT BURN-IN : 13.5 HRS<br>I/P : 230VAC O/P : 95% LOAD Ta=25.1 °C °C<br>2. HIGH AMBIENT BURN-IN : 67 HRS<br>I/P : 230VAC O/P : 95% LOAD Ta= 63.8 °C °C  | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT<br/>Ta=25.1 °C</th> <th>HIGH AMBIENT<br/>Ta= 63.8 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>46.1°C</td><td>78.3°C</td></tr> <tr><td>2</td><td>BD1</td><td>51.3°C</td><td>83.2°C</td></tr> <tr><td>3</td><td>L1</td><td>50.3°C</td><td>81.6°C</td></tr> <tr><td>4</td><td>C5</td><td>50.1°C</td><td>81.2°C</td></tr> <tr><td>5</td><td>Q1</td><td>54.2°C</td><td>86.2°C</td></tr> <tr><td>6</td><td>Q2</td><td>52.5°C</td><td>84.1°C</td></tr> <tr><td>7</td><td>U1</td><td>48.1°C</td><td>79.7°C</td></tr> <tr><td>8</td><td>RTH2</td><td>48.5°C</td><td>79.9°C</td></tr> <tr><td>9</td><td>T1</td><td>55.7°C</td><td>86.7°C</td></tr> <tr><td>10</td><td>Q101</td><td>52.0°C</td><td>83.8°C</td></tr> <tr><td>11</td><td>C106</td><td>50.0°C</td><td>81.8°C</td></tr> <tr><td>12</td><td>L100</td><td>47.9°C</td><td>79.9°C</td></tr> </tbody> </table> | NO                | Position | ROOM AMBIENT<br>Ta=25.1 °C | HIGH AMBIENT<br>Ta= 63.8 °C | 1 | LF1 | 46.1°C | 78.3°C | 2 | BD1 | 51.3°C | 83.2°C | 3 | L1 | 50.3°C | 81.6°C | 4 | C5 | 50.1°C | 81.2°C | 5 | Q1 | 54.2°C | 86.2°C | 6 | Q2 | 52.5°C | 84.1°C | 7 | U1 | 48.1°C | 79.7°C | 8 | RTH2 | 48.5°C | 79.9°C | 9 | T1 | 55.7°C | 86.7°C | 10 | Q101 | 52.0°C | 83.8°C | 11 | C106 | 50.0°C | 81.8°C | 12 | L100 | 47.9°C | 79.9°C |  |
| NO | Position  | ROOM AMBIENT<br>Ta=25.1 °C   | HIGH AMBIENT<br>Ta= 63.8 °C  |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 1  | LF1   | 46.1°C   | 78.3°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 2  | BD1   | 51.3°C   | 83.2°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 3  | L1  | 50.3°C   | 81.6°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 4  | C5  | 50.1°C   | 81.2°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 5  | Q1  | 54.2°C   | 86.2°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 6  | Q2  | 52.5°C   | 84.1°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 7  | U1  | 48.1°C   | 79.7°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 8  | RTH2  | 48.5°C   | 79.9°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 9  | T1  | 55.7°C   | 86.7°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 10 | Q101  | 52.0°C   | 83.8°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 11 | C106  | 50.0°C   | 81.8°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 12 | L100  | 47.9°C   | 79.9°C   |                   |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 2  | LOW TEMPERATURE<br>TURN ON TEST                                   | TURN ON AFTER 2 HOUR   | I/P : 305VAC/100VAC<br>O/P : 95 % LOAD<br>Ta= -40/-25 °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 : 305 VAC<br>O/P : 95% LOAD<br>Ta= 60 °C<br>HUMIDITY= 95 %R.H  | TEST : OK         |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 4  | TEMPERATURE<br>COEFFICIENT  | ± 0.03 % (0~50°C)  | I/P : 230 VAC<br>O/P : 95% LOAD  | ± 0.02 % (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  |  | OK                |          |                            |                             |   |     |        |        |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |    |        |        |    |      |        |        |    |      |        |        |    |      |        |        |  |
| 6  | THERMAL SHOCK TEST  | 1. Thermal shock Temperature : -30°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>turn on 58sec ; turn off 2sec |  | 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 : 60min in each axis (X.Y.Z)<br>(6) Ta : 25°C   | TEST : OK   |
| 8  | CAPACITOR LIFE CYCLE        | HLG-80H-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) 534992 HRS<br>(2) 76310 HRS<br>(3) 86993 HRS<br>(4) 110121HRS |
| 9  | MTBF                        | MIL-HDBK-217F NOTICES2 PARTS COUNT<br>TOTAL FAILURE RATE : 357.8K HRS  |   |
| 10 | DMTBF/Accelerated Life Test | Demonstration Mean Time Between Failure(Expected Life) :<br>62,000 hours @ Tcase 75°C  |   |

| DATE       | SAMPLE         | TEST RESULT | TESTER     | APPROVAL      |
|------------|----------------|-------------|------------|---------------|
| 2010/11/5  | RD SAMPLE      | PASS        | SANFORD SU | VINCENT TSENG |
| 2010/12/24 | PRODUCT SAMPLE | PASS        | SANFORD SU | VINCENT TSENG |

2009/08/04 A50-F023