



# Test Report: IDLC-65-700

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65W Constant Current Mode LED Driver

## ■ 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

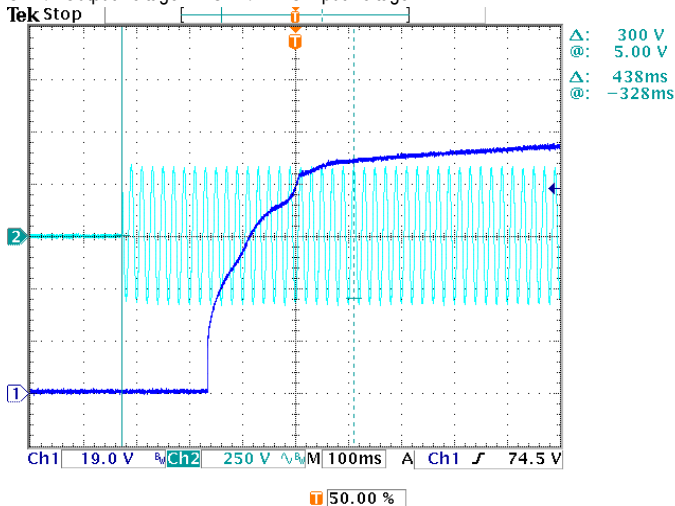
## DESIGN VERIFY TEST

### OUTPUT FUNCTION TEST

| NO | TEST ITEM                  | SPECIFICATION        | TEST CONDITION                                | RESULT        |
|----|----------------------------|----------------------|---|---------------|
| 1  | CONSTANT CURRENT REGION    | 69V~93V              | I/P: 230VAC<br>O/P: LED MODE<br>Ta: 25°C      | 59 V~95 V     |
| 2  | CURRENT RIPPLE             | 5% max@rated current | I/P: 230VAC<br>O/P: FULL/MIN LOAD<br>Ta: 25°C | 4.65%         |
| 3  | CURRENT TOLERANCE          | ±7%                  | I/P: 230VAC<br>O/P: FULL/MIN LOAD<br>Ta: 25°C | ±3.14%        |
| 4  | OPEN CIRCUIT VOLTAGE (max) | 118V                 | I/P: 230VAC<br>O/P: NO LOAD<br>Ta: 25°C       | 113.6V        |
| 5  | OVER/UNDERSHOOT TEST       | <±5 %                | I/P: 230VAC<br>O/P: FULL LOAD<br>Ta: 25°C     | <5 %          |
| 6  | SET UP TIME                | 500ms/230VAC         | I/P: 230 VAC<br>O/P: FULL LOAD<br>Ta: 25°C    | 438 ms/230VAC |

INPUT=230VAC/50HZ @ FULL LOAD

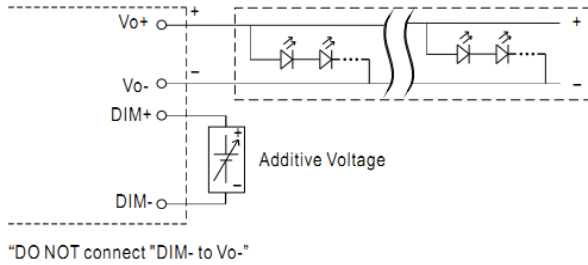
CH1: Output Voltage CH2: AC Input Voltage



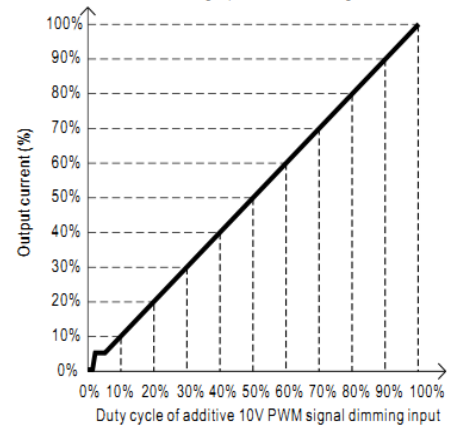
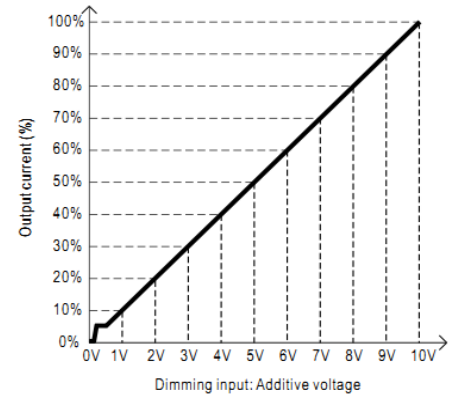
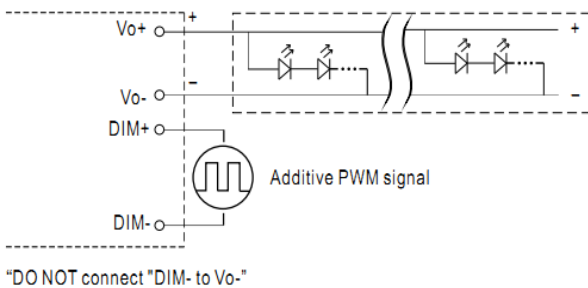
|   |  |  |                                |         |
|---|--|--|--------------------------------|---------|
| 7 | AUXILIARY DC OUTPUT<br>(For A-Type only) | Nominal 12V (deviation 11.4~12.6)<br>@50mA | I/P: 230 VAC<br>O/P: FULL LOAD | 11.98 V |
|---|--|--|--------------------------------|---------|

8 DIMMING TEST  
(For Blank -Type)

- Output constant current level can be adjusted by applying one of the two methodologies between DIM+ and DIM-: 0 ~ 10Vdc, or 10V PWM signal.
- Direct connecting to LEDs is suggested. It is not suitable to be used with additional drivers.
- ◎ Applying additive 0 ~ 10VDC



- ◎ Applying additive 10V PWM signal (frequency range 300Hz ~ 3KHz):



- Note : 1. Min. dimming level is about 8% and the output current is not defined when 0% < Iout < 8%.  
 2. The output current could drop down to 0% when dimming input is about 0Vdc or 10V PWM signal with 0% duty cycle.

I/P: 230 VAC

O/P: DIMMING TEST

Ta: 25°C

| 1 | V              | 0V     | 1V      | 2V      | 3V      | 4V      | 5V      | 6V      | 7V      | 8V      | 9V      | 10V     |
|---|----------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|   | Output Current | 0A     | 0.0800A | 0.1490A | 0.2135A | 0.2800A | 0.3460A | 0.4145A | 0.4817A | 0.5452A | 0.6123A | 0.6785A |
| % | 0.00%          | 11.43% | 21.29%  | 30.50%  | 40.00%  | 49.43%  | 59.21%  | 68.81%  | 77.89%  | 87.47%  | 96.93%  |         |
| 2 | PWM(100Hz)     | 0%     | 10%     | 20%     | 30%     | 40%     | 50%     | 60%     | 70%     | 80%     | 90%     | 100%    |
|   | Output Current | 0A     | 0.0900A | 0.1540A | 0.2160A | 0.2800A | 0.3470A | 0.4150A | 0.4820A | 0.5440A | 0.6100A | 0.6758A |
|   | %              | 0.00%  | 12.86%  | 22.00%  | 30.86%  | 40.00%  | 49.57%  | 59.29%  | 68.86%  | 77.71%  | 87.14%  | 96.54%  |

TEST RESULT: OK

9 DALI DIMMING OPERATION  
(primary side: for DA-Type)

- ※DALI Interface
- Apply DALI signal between DA+ and DA-.
- DALI protocol comprises 16 groups and 64 addresses.
- First step is fixed at 8% of output.

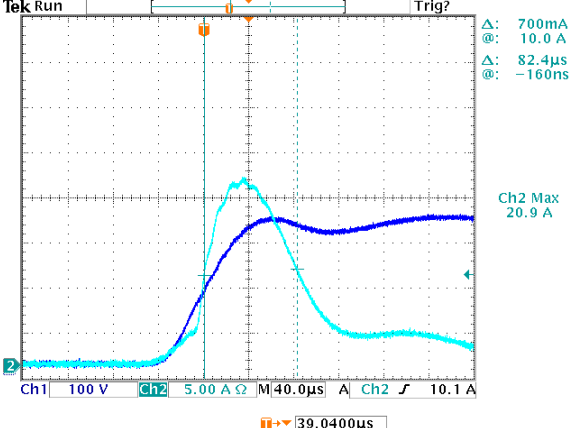
I/P: 230 VAC

O/P: DIMMING TEST

Ta: 25°C

TEST RESULT: OK

**INPUT FUNCTION TEST**

| NO  | TEST ITEM                            | SPECIFICATION  | TEST CONDITION   | RESULT   |
|---|--------------------------------------|--|--|--|
| 1   | INPUT VOLTAGE RANGE                  | 180VAC~295VAC  | I/P: TESTING<br>O/P: 80%/FULL LOAD<br>Ta: 25°C   | 177V~305V  |
|   |                                      |  | I/P:<br>(1)LOW-LINE-3V=177 V<br>HIGH-LINE+10V=305 V<br>O/P: 80%/FULL/MIN LOAD<br>ON: 30 Sec OFF: 30 Sec 10MIN<br>(2)230VAC<br>ON: 0.5 Sec OFF: 0.5 Sec 20MIN<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~MIN LOAD<br>Ta: 25°C  | TEST: OK   |
| 3   | AC CURRENT                           | 0.4A/230VAC<br>0.3A/277VAC   | I/P: 230 VAC<br>I/P: 277 VAC<br>O/P: FULL LOAD<br>Ta: 25°C   | I =0.321A/ 230VAC<br>I =0.271A/ 277VAC                           |
| 4   | LEAKAGE CURRENT                      | < 0.75mA / 277VAC  | I/P: 277 VAC<br>O/P: NO LOAD<br>Ta: 25°C   | L-CASE: 0.0029 mA<br>N-CASE: 0.0029 mA                           |
| 5   | NO LOAD/STANDBY<br>POWER CONSUMPTION | < 0.5W for Blank-Type<br>< 1.2W for A-Type<br>< 0.5W for DA-Type   | I/P: 230VAC<br>O/P: NO LOAD<br>Ta: 25°C  | 0.388W for Blank-Type<br>0.595W for A-Type<br>0.459W for DA-Type |
| 6   | INRUSH CURRENT(Typ)                  | 230V/ 30A<br>Twidth =100 us measured at 50%<br>Ipeak<br>COLD START | I/P: 230 VAC<br>O/P: FULL LOAD<br>Ta: 25°C   | I =20.9A/ 230VAC<br>Twidth =82.4 us                              |
| <p>INPUT=230VAC/50HZ @ FULL LOAD<br/>CH1: AC Input Voltage CH2: Input current</p>  <p>Ch2 Max 20.9 A</p> |                                      |  |  |  |
| 7   | EFFICIENCY(Typ)                      | 89%  | I/P: 230VAC<br>O/P: FULL LOAD<br>Ta: 25°C  | 89.68%   |

|          | <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>50%</td><td>86.0</td><td>86.8</td></tr> <tr><td>60%</td><td>86.5</td><td>87.2</td></tr> <tr><td>70%</td><td>87.0</td><td>87.8</td></tr> <tr><td>80%</td><td>87.5</td><td>88.2</td></tr> <tr><td>90%</td><td>88.5</td><td>89.5</td></tr> <tr><td>100%</td><td>89.5</td><td>89.8</td></tr> </tbody> </table> |  |  | LOAD (%)   | 277V Efficiency (%) | 230V Efficiency (%) | 50% | 86.0 | 86.8 | 60% | 86.5 | 87.2 | 70% | 87.0 | 87.8 | 80% | 87.5 | 88.2 | 90% | 88.5 | 89.5 | 100% | 89.5 | 89.8 |
|----------|---|--|--|--|---------------------|---------------------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|-----|------|------|------|------|------|
| LOAD (%) | 277V Efficiency (%)   | 230V Efficiency (%)  |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 50%      | 86.0  | 86.8   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 60%      | 86.5  | 87.2   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 70%      | 87.0  | 87.8   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 80%      | 87.5  | 88.2   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 90%      | 88.5  | 89.5   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 100%     | 89.5  | 89.8   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 8        | POWER FACTOR  | 0.95/ 230VAC<br>0.90/ 277VAC                                 | I/P: 230 VAC<br>I/P: 277 VAC<br>O/P: FULL LOAD<br>Ta: 25°C     | PF=0.984/ 230VAC<br>PF=0.958/ 277VAC                               |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
|          | <p><b>P.F vs LOAD</b></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>0.91</td><td>0.95</td></tr> <tr><td>60%</td><td>0.92</td><td>0.96</td></tr> <tr><td>70%</td><td>0.93</td><td>0.96</td></tr> <tr><td>80%</td><td>0.94</td><td>0.96</td></tr> <tr><td>90%</td><td>0.95</td><td>0.97</td></tr> <tr><td>100%</td><td>0.96</td><td>0.98</td></tr> </tbody> </table>                                       |  |  | LOAD (%)   | 277V PF             | 230V PF             | 50% | 0.91 | 0.95 | 60% | 0.92 | 0.96 | 70% | 0.93 | 0.96 | 80% | 0.94 | 0.96 | 90% | 0.95 | 0.97 | 100% | 0.96 | 0.98 |
| LOAD (%) | 277V PF   | 230V PF  |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 50%      | 0.91  | 0.95   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 60%      | 0.92  | 0.96   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 70%      | 0.93  | 0.96   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 80%      | 0.94  | 0.96   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 90%      | 0.95  | 0.97   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 100%     | 0.96  | 0.98   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 9        | TOTAL HARMONIC DISTORTION   | THD < 20%<br>(@load ≥ 75% / 230VAC;<br>@load ≥ 75% / 277VAC) | I/P: 230 VAC / 75% LOAD<br>I/P: 277 VAC / 75% LOAD<br>Ta: 25°C | THD = 6.30% @ 75% load / 230VAC<br>THD = 8.92% @ 75% load / 277VAC |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
|          | <p><b>THD vs LOAD</b></p> <table border="1"> <caption>THD vs Load Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>277V THD (%)</th> <th>230V THD (%)</th> </tr> </thead> <tbody> <tr><td>50%</td><td>8.5</td><td>6.2</td></tr> <tr><td>60%</td><td>8.8</td><td>6.8</td></tr> <tr><td>70%</td><td>8.6</td><td>6.7</td></tr> <tr><td>80%</td><td>8.5</td><td>6.7</td></tr> <tr><td>90%</td><td>8.4</td><td>6.8</td></tr> <tr><td>100%</td><td>8.5</td><td>6.9</td></tr> </tbody> </table>   |  |  | LOAD (%)   | 277V THD (%)        | 230V THD (%)        | 50% | 8.5  | 6.2  | 60% | 8.8  | 6.8  | 70% | 8.6  | 6.7  | 80% | 8.5  | 6.7  | 90% | 8.4  | 6.8  | 100% | 8.5  | 6.9  |
| LOAD (%) | 277V THD (%)  | 230V THD (%)   |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 50%      | 8.5   | 6.2  |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 60%      | 8.8   | 6.8  |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 70%      | 8.6   | 6.7  |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 80%      | 8.5   | 6.7  |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 90%      | 8.4   | 6.8  |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |
| 100%     | 8.5   | 6.9  |  |  |                     |                     |     |      |      |     |      |      |     |      |      |     |      |      |     |      |      |      |      |      |

**PROTECTION FUNCTION TEST**

| NO | TEST ITEM                | SPECIFICATION                          | TEST CONDITION   | RESULT   |
|----|--------------------------|--|--|--|
| 1  | SHORT CIRCUIT PROTECTION | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE | I/P: 180VAC<br>I/P: 295VAC<br>O/P: 80%/FULL LOAD<br>Ta: 25°C | NO DAMAGE<br>Hiccup mode, auto-recovery after fault condition is removed for DA type;<br>Hiccup mode, re-power on to recovery for other type |

**COMPONENT STRESS TEST**

| NO | TEST ITEM            | SPECIFICATION          | TEST CONDITION   | RESULT                              |
|----|----------------------|------------------------|--|-------------------------------------|
| 1  | PWM Power Transistor | Q 1 Rated<br>800V/9A   | 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) 692V<br>(2) 614V<br>(3) 680V    |
| 2  | O/P Diode (MOSFET)   | D100 Rated<br>10A/800V | 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) 560V<br>(2) 568V<br>(3) 504V    |
| 3  | Control IC           | U1 Rated<br>35V (MAX)  | I/P: High-Line +3V =298V<br>O/P: (1) FULL LOAD<br>(2) Output Short<br>(3) Low Line No Load<br>Ta: 25°C           | (1) 15.4V<br>(2) 14.8V<br>(3) 15.3V |
| 4  | Clamp Diode          | D 1 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) 530V<br>(2) 484V                |

**SAFETY TEST**

| NO | TEST ITEM            | SPECIFICATION         | TEST CONDITION                      | RESULT                         |
|----|----------------------|-----------------------|-------------------------------------|--------------------------------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P: 3.75KVAC/min | I/P-O/P: 4.2 KVAC/min<br>Ta: 25°C   | I/P-O/P: 1.824 mA<br>NO DAMAGE |
| 2  | ISOLATION RESISTANCE | I/P-O/P: 500VDC>100MΩ | I/P-O/P: 500 VDC<br>Ta: 25°C/70% RH | I/P-O/P: > 9999 MΩ             |

**E.M.C TEST**

| NO | TEST ITEM                                   | SPECIFICATION   | TEST CONDITION                                      | RESULT                        |
|----|---|---|---|-------------------------------|
| 1  | HARMONIC                                    | EN61000-3-2<br>CLASS C                                    | I/P: 230 VAC/50HZ<br>O/P: FULL/75% 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>LIGHT INDUSTRY<br>L-N: 1KV                 | I/P: 230VAC/50HZ<br>O/P: FULL LOAD<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: IDLC-65-700<br>1. ROOM AMBIENT BURN-IN: 2 HRS<br>I/P: 230VAC O/P: FULL LOAD Ta= 27.3℃<br>2. HIGH AMBIENT BURN-IN: 2 HRS<br>I/P: 230VAC O/P: FULL LOAD Ta= 42.3℃   |   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
|    |   | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 27.3 ℃</th> <th>HIGH AMBIENT Ta=42.3 ℃</th> </tr> </thead> <tbody> <tr><td>1</td><td>BD1</td><td>86.8℃</td><td>99.4℃</td></tr> <tr><td>2</td><td>C8</td><td>82.6℃</td><td>95.8℃</td></tr> <tr><td>3</td><td>Q1</td><td>86.1℃</td><td>99.2℃</td></tr> <tr><td>4</td><td>D1</td><td>97.4℃</td><td>105.5℃</td></tr> <tr><td>5</td><td>U1</td><td>80.9℃</td><td>93.9℃</td></tr> <tr><td>6</td><td>T1</td><td>89.9℃</td><td>103.1℃</td></tr> <tr><td>7</td><td>RG1</td><td>83.0℃</td><td>96.1℃</td></tr> <tr><td>8</td><td>D100</td><td>78.6℃</td><td>92.1℃</td></tr> <tr><td>9</td><td>Q100</td><td>76.0℃</td><td>89.7℃</td></tr> <tr><td>10</td><td>L100</td><td>85.3℃</td><td>99.5℃</td></tr> <tr><td>11</td><td>C106</td><td>69.8℃</td><td>83.3℃</td></tr> <tr><td>12</td><td>C110</td><td>69.5℃</td><td>83.5℃</td></tr> <tr><td>13</td><td>U100</td><td>74.4℃</td><td>88.4℃</td></tr> <tr><td>14</td><td>TC</td><td>74.2℃</td><td>86.7℃</td></tr> </tbody> </table> | NO  | Position  | ROOM AMBIENT Ta= 27.3 ℃ | HIGH AMBIENT Ta=42.3 ℃ | 1 | BD1 | 86.8℃ | 99.4℃ | 2 | C8 | 82.6℃ | 95.8℃ | 3 | Q1 | 86.1℃ | 99.2℃ | 4 | D1 | 97.4℃ | 105.5℃ | 5 | U1 | 80.9℃ | 93.9℃ | 6 | T1 | 89.9℃ | 103.1℃ | 7 | RG1 | 83.0℃ | 96.1℃ | 8 | D100 | 78.6℃ | 92.1℃ | 9 | Q100 | 76.0℃ | 89.7℃ | 10 | L100 | 85.3℃ | 99.5℃ | 11 | C106 | 69.8℃ | 83.3℃ | 12 | C110 | 69.5℃ | 83.5℃ | 13 | U100 | 74.4℃ | 88.4℃ | 14 | TC | 74.2℃ | 86.7℃ |  |  |
| NO | Position  | ROOM AMBIENT Ta= 27.3 ℃  | HIGH AMBIENT Ta=42.3 ℃  |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 1  | BD1   | 86.8℃  | 99.4℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 2  | C8  | 82.6℃  | 95.8℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 3  | Q1  | 86.1℃  | 99.2℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 4  | D1  | 97.4℃  | 105.5℃  |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 5  | U1  | 80.9℃  | 93.9℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 6  | T1  | 89.9℃  | 103.1℃  |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 7  | RG1   | 83.0℃  | 96.1℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 8  | D100  | 78.6℃  | 92.1℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 9  | Q100  | 76.0℃  | 89.7℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 10 | L100  | 85.3℃  | 99.5℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 11 | C106  | 69.8℃  | 83.3℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 12 | C110  | 69.5℃  | 83.5℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 13 | U100  | 74.4℃  | 88.4℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 14 | TC  | 74.2℃  | 86.7℃   |           |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 2  | LOW TEMPERATURE TURN ON TEST                                      | TURN ON AFTER 2 HOUR   | I/P: 295VAC/180VAC<br>O/P: FULL/80% LOAD<br>Ta= -25℃          | TEST: OK  |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 3  | HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE<br>TURN ON TEST | AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 40 ℃<br>NO DAMAGE   | I/P: 305VAC<br>O/P: FULL LOAD<br>Ta=40 ℃<br>HUMIDITY= 95 %R.H | TEST: OK  |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 4  | TEMPERATURE COEFFICIENT   | ±0.03 %/℃(0~40℃)   | I/P: 230 VAC<br>O/P: FULL LOAD                                | ±0.003%/℃ |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 5  | STORAGE TEMPERATURE TEST  | 1. Thermal shock Temperature: -45℃~ +85℃<br>2. Temperature change rate : 25℃ / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle: 5 CYCLE<br>5. Input/Output condition: AC OFF STATIC   |   | TEST: OK  |                         |                        |   |     |       |       |   |    |       |       |   |    |       |       |   |    |       |        |   |    |       |       |   |    |       |        |   |     |       |       |   |      |       |       |   |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |      |       |       |    |    |       |       |  |  |
| 6  | THERMAL SHOCK TEST  | 1. Thermal shock Temperature: Tcase=-25℃~ +85℃<br>2. Temperature change rate : 25℃ / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle: 16 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: 10min/sweep cycle<br>(4) Acceleration: 2G<br>(5) Test Time: 60min in each axis (X.Y.Z)<br>(6) Ta: 25°C                          | TEST: OK   |
| 8  | CAPACITOR LIFE CYCLE        | IDLC-65-700: 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= 40 °C LIFE TIME<br>(3) I/P: 230VAC O/P: MIN LOAD Ta= 40 °C LIFE TIME | (1) 331992 HRS<br>(2) 130249 HRS<br>(3) 112126 HRS |
| 9  | MTBF                        | Conducted by Parts Stress Analysis Prediction<br>380.7K hrs min MIL-HDBK-217F (25°C)  |  |
| 10 | DMTBF/Accelerated Life Test | Demonstration Mean Time Between Failure(Expected Life) :<br>30,000 hours @ Tcase 80°C ; 50,000 hours @ Tcase 70°C   |  |

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