Test Report: XLG-100-H

100W Constant Power 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

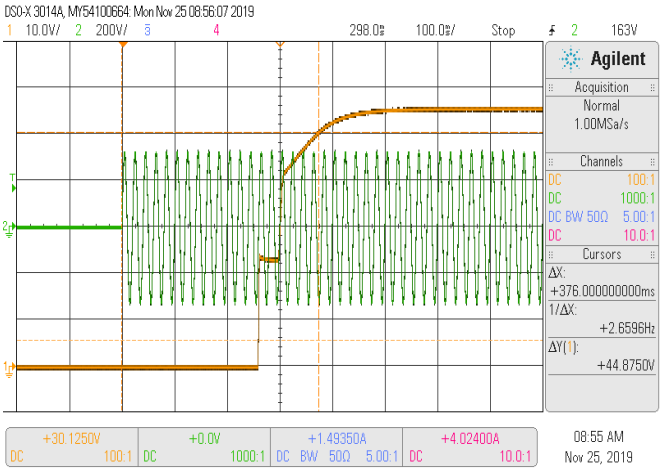
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	±5%	I/P:230VAC O/P:LEDmax/ LEDmin CP: 2100mA & 2780mA Ta:25℃	CP2100mA: 2.095A/230VAC@CV MAX-1V 2.133A/230VAC@CV MIN 1.57% CP 2780mA: 2.805A/230VAC@CV MAX-1V 2.805A/230VAC@CV MIN 0.90%
2	FULL POWER CURRENT RANGE	1750~2780mA	I/P: 230VAC O/P:LEDmax CP: 2100mA & 2780mA Ta:25℃	59.14V/2100mA/230VAC 59.12V V/2780mA/230VAC
3	CONSTANT POWER	O/P：100W	I/P：230 VAC O/P：Vo×Io	TEST：OK
4	OPEN CIRCUIT VOLTAGE (max)	60V	I/P: 230VAC O/P:NO LOAD CP: 1750mA Ta:25℃	57.7V
5	CONSTANT CURRENT REGION	CP 2100mA: 27V~ 47.6V CP 2780mA: 27V~ 36V	I/P: 230VAC O/P: CVmax CP: 2100mA & 2780mA Ta:25℃	CP 2100mA: 8V~47.6 V/230VAC CP 2780mA: 8.7V~ 36V /230VAC
6	CURRENT ADJ. RANGE	875mA~2780mA	I/P: 230VAC O/P:CVmin& CVmax-1V CP: 2780mA Ta:25℃	641mA~3173mA/230VAC@CV MAX-1V 642mA~3172mA /230VAC@CV MIN
7	CURRENT RIPPLE	3.0% max.	I/P: 230VAC O/P:LEDmax CP: 2100mA & 2780mA Ta:25℃	CP 2100mA: 0.87% CP 2780mA: 0.68%
8	SET UP TIME	230VAC/ 500 ms (Max) 115VAC/ 1200 ms (Max)	I/P: 230VAC I/P: 115VAC O/P:LEDmax CP 2100mA Ta:25℃	230VAC/376ms 115VAC/ 448ms

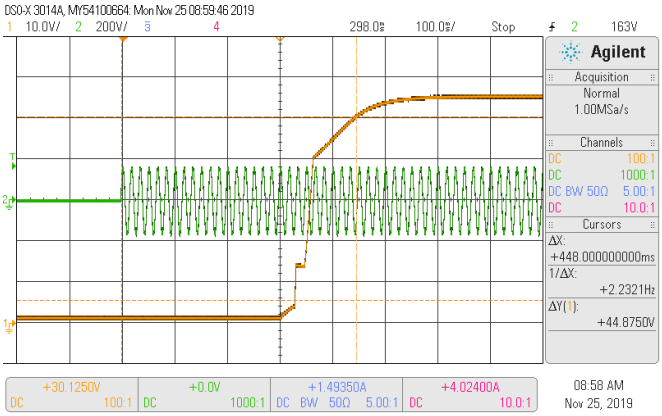
INPUT=230VAC/50HZ @ LEDMAX@ CP 2100mA

CH1 : Output Voltage CH2 : AC Input Voltage



INPUT=115VAC/60HZ @ LEDMAX@ CP 2100mA

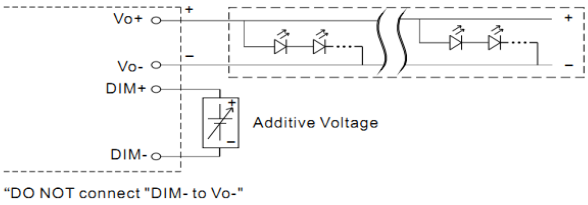
CH1 : Output Voltage CH2 : AC Input Voltage



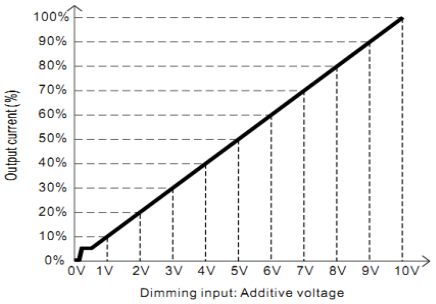
9 DIMMING OPERATION (forAB-Type)

- Output constant current level can be adjusted by applying one of the three methodologies between DIM+ and DIM-: 0 ~ 10Vdc，or 10V PWM signal or resistance.
- Direct connecting to LEDs is suggested.It is not suitable to be used with additional drivers.
- Dimming source current from power supply:100uA(typ.)

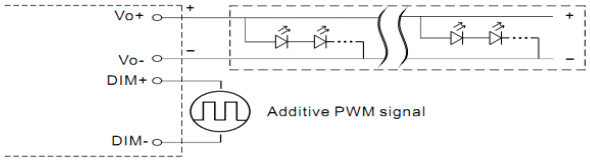
◎ Applying additive 0 ~ 10VDC



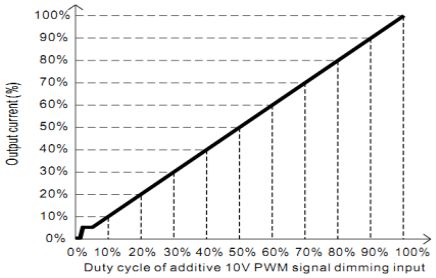
"DO NOT connect "DIM- to Vo-"



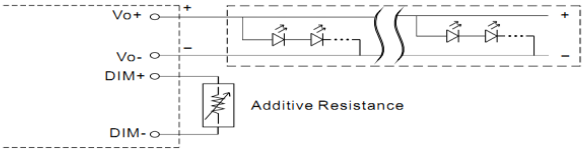
◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



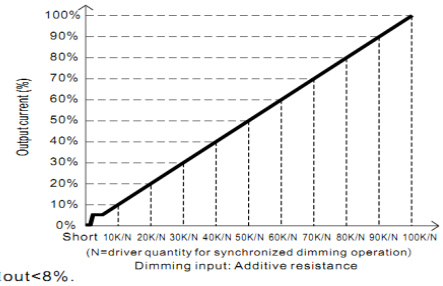
"DO NOT connect "DIM- to Vo-"



◎ Applying additive resistance:



"DO NOT connect "DIM- to Vo-"



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 0kΩ or 0Vdc, or 10V PWM signal with 0% duty cycle.

I/P： 230 VAC O/P：DIMMING TEST

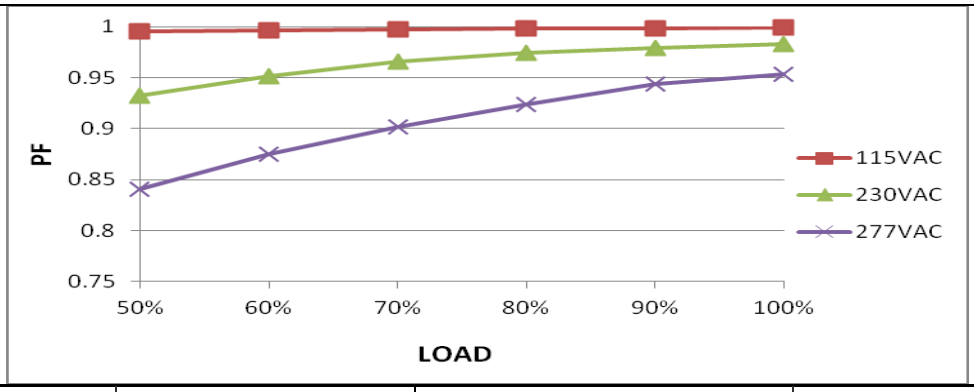
1	V	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
	Output Current	0.00000A	0.233A	0.429A	0.626A	0.856A	1.054A	1.268A	1.467A	1.700A	1.916A	2.104A	2.104A
	%	0.00%	11.10%	20.43%	29.81%	40.76%	50.19%	60.38%	69.86%	80.95%	91.24%	100.19%	100.19%
2	PWM	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN

	Output Current（100Hz）	0.00000A	0.249A	0.446A	0.643A	0.873A	1.071A	1.269A	1.501A	1.700A	1.909A	2.104A	2.104A
	%	0.00%	11.86%	21.24%	30.62%	41.57%	51.00%	60.43%	71.48%	80.95%	90.90%	100.19%	100.19%
3	R	Short	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0.00000A	0.250A	0.446A	0.644A	0.841A	1.071A	1.269A	1.468A	1.667A	1.900A	2.104A	2.104A
	%	0.00%	11.90%	21.24%	30.67%	40.05%	51.00%	60.43%	69.90%	79.38%	90.48%	100.19%	100.19%

TEST RESULT：OK

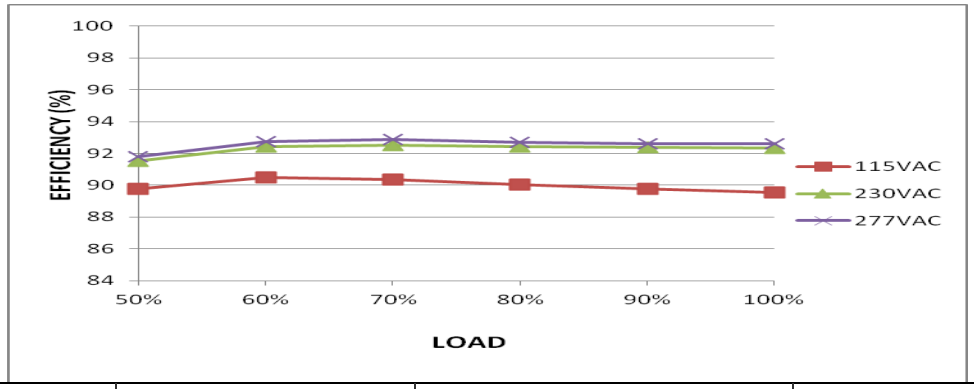
INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305 VAC	I/P:TESTING O/P:LEDmax CP 2100mA Ta:25℃	71V~305 V
			I/P: LOW-LINE-3V=97V HIGH-LINE+10V=315 V O/P: LEDmax / LEDmin CP 2100mA (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	(1).TEST:OK (2).TEST :OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 100VAC ~305VAC O/P: LEDmax ~ LEDmin CP 2100mA Ta:25℃	TEST:OK
3	INPUT CURRENT (TYP)	277VAC/ 0.42A 230VAC/ 0.5 A 115VAC/ 1.1A	I/P: 277VAC /230VAC/115VAC O/P:LEDmax CP 2100mA Ta:25℃	I =0.404A/ 277VAC I =0.476A/ 230VAC I =0.964A/115VAC
4	POWER FACTOR(TYP)	0.92/277 VAC LEDMAX 0.95/230 VAC LEDMAX 0.97/115 VAC LEDMAX	I/P: 277VAC/230VAC/115VAC O/P:LEDmax CP 2100mA Ta:25℃	PF= 0.961/277V/100%LOAD PF=0.983/230V/100%LOAD PF=0.999/115V/100%LOAD
	P.F vs LOAD			



5	EFFICIENCY (TYP)	91%	I/P: 230VAC O/P:LEDmax CP 2100mA Ta:25℃	92.32%

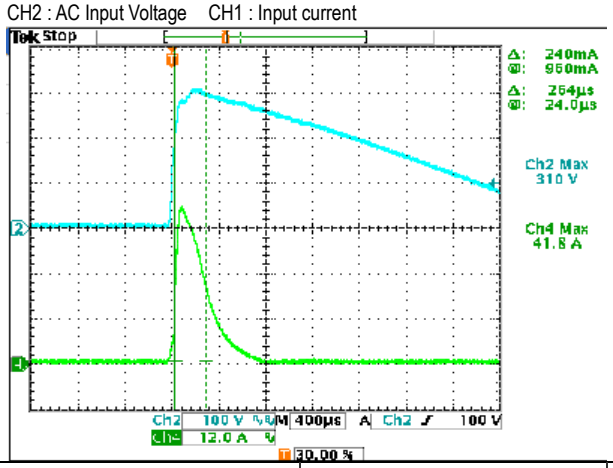
EFFICIENCY vs LOAD



6	INRUSH CURRENT (TYP)	230V/ 50A COLD START (twidth=300 usmeasured at 50% Ipeak) COLD START	I/P: 230VAC O/P:LEDmax CP 2100mA Ta:25℃	I =41.8A /230VAC T50= 264 μS

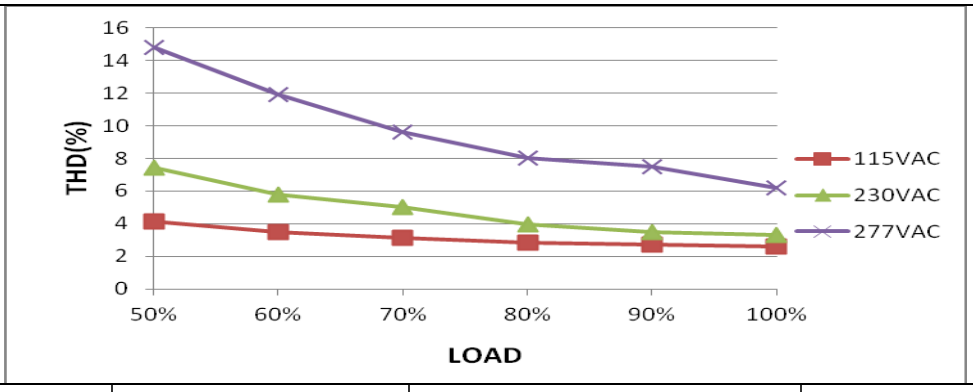
INPUT=230VAC/ 50HZ @ LEDMAX

CH2 : AC Input Voltage CH1 : Input current



7	TOTAL HARMONIC DISTORTION	THD<10%@load,≥ 50% at 230VAC/115VAC, load,≥ 75% at 277VAC	I/P： 277VAC I/P： 230VAC I/P： 115VAC O/P：50%/75% LOAD CP 2100mA Ta：25℃	THD： 8.52 %277V 75% THD： 7.41 %230V 50% THD： 4.15 %115V 50%

THD vs LOAD

				
8	LEAKAGE CURRENT	<0.75mA / 277VAC	I/P： 277 VAC O/P：NO LOAD Ta：25℃	L-FG： 0.175mA N-FG：0.175mA
9	STANDBY POWER CONSUMPTION	STANDBY POWER CONSUMPTION <0.5W for AB –Type(Dimming Off)	I/P：230 VAC O/P： STANDBY(AB) Ta：25℃	0.2575W/AB

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	66V~90V	I/P: 305VAC I/P: 230VAC I/P: 100VAC CP 1750mA O/P:MIN LOAD Ta:25℃	69.92V / 305VAC 69.92V/ 230VAC 69.91V/ 100VAC PROTECTION TYPE： Shut down output voltage, re-power on to recovery
2	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 305VAC I/P: 100VAC O/P:LEDmax CP 1750mA Ta:25℃	O.T.P. Active PROTECTION TYPE： Shut down output voltage, re-power on to recovery
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 305VAC I/P: 100VAC O/P: LEDMAX CP: 1750mA &2780mA Ta:25℃	NO DAMAGE PROTECTION TYPE： Hiccup mode or Constant current limiting,recovers automatically after fault condition is removed
4	Over Power Protection (For XLG-100)	105%-150%	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P:: 1750mA &2780mA Ta:25℃	134%/ 305VAC 134%/ 230VAC 134%/ 100VAC PROTECTION TYPE： Constant current limiting, recovers automatically after fault condition is removed
5	INPUT OVER VOLTAGE (for XLG-100I only)	320 ~ 390VAC (Shut down output voltage when the input voltage exceeds protection voltage Can survive input voltage	I/P：TESTING O/P: FULL LOAD Ta:25℃	PASS

		stress of 440Vac for 48 hours		

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) **Peak Voltage**	Q3 Rated: 7.5A /600V	I/P:High-Line +3V =308V I/P:Low-Line -3V = 97V AC ON/OFF **CP: 1750mA&2780mA** VDS: O/P: (1)LEDmax (2) LEDmin (3) Output Short (4)LED min dimming on/off Ta:25℃	308V **CP: 1750mA** **CP: 2780mA** VDS: VDS: (1) 420V (1) 448V (2) 416V (2) 448V (3) 420V (3) 480V (4) 420V (4) 448V 97V **CP: 1750mA** **CP: 2780mA** VDS: VDS: (1) 432V (1) 432V (2) 432V (2) 436V (3) 424V (3) 420V (4) 432V (4) 440V
2	P.F.C DIODE	D5 Rated: 9A/600V	I/P:High-Line +3V =308V AC ON/OFF **CP: 1750mA** VDS: O/P: (1)LEDmax (2) LEDmin (3) Output Short (4)LED min dimming on/off	(1) 444V (2)440 V (3)439V (4) 443V
3	Diode Peak **Voltage**	D100 Rated: 15A/150V	I/P:High-Line +3V =308V AC ON/OFF **CP: 1750mA** VDS: O/P: (1)LEDmax (2) Output Short (3) **burst mode** Ta:25℃	**CP: 1750mA** VDS: (1) 110.3V (2) 2.75V (3) 117V
4	**Control IC Voltage Test**	PWM IC U2 Rated 30V	I/P:High-Line +3V =308V AC ON/OFF **CP: 1750mA** VDS: O/P: (1)LEDmax (2) LEDmin (3) Output Short	**U2** (1) 25.7V (2) 25.7V (3) 18.3V (4) 18.7V (5) 25.7V

			(4)NO LOAD VRmin.LOW LINE (5)OVP Ta:25℃	
5	PFC Transistor	Q1 Rated 12.5A/700V	I/P：High-Line +3V =308V O/P: (1)Full Load (2)Output Short (3) Full Load continue	 (1) 451V (2) 434V (3) 452V
6	**Input Capacitor Voltage**	C5 Rated： 47 μ F/ 450V	I/P：High-Line +3V =308 V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta：25℃	 (1) 448V (2) 444V (3) 445V (4) 444V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P：3.75KVAC/min I/P-FG： 2KVAC/min O/P-FG：1.5KVAC/min	I/P-O/P：4.125 KVAC/min I/P-FG： 2.4 KVAC/min O/P-FG：1.8 KVAC/min Ta：25℃	I/P-O/P： 3.332mA I/P-FG： 3.533mA O/P-FG： 2.888mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P：500VDC>100MΩ I/P-FG： 500VDC>100MΩ O/P-FG：500VDC>100MΩ	I/P-O/P： 500 VDC I/P-FG： 500 VDC O/P-FG： 500 VDC Ta：25℃	I/P-O/P： >9999GΩ I/P-FG： >9999 G Ω O/P-FG： >9999 G Ω NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	 17mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P：230VAC/50HZ O/P：FULL/50% LOAD Ta：25℃	PASS
2	CONDUCTION	EN55015	I/P：230 VAC/50HZ O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
3	RADIATION	EN55015	I/P：230 VAC/50HZ O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY Air：8KV Contact：4KV	I/P：230 VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA A
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT：2KV	I/P： 230VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA A
6	SURGE	EN61000-4-5 LIGHT INDUSTRY L-N ：4KV L -PE：6KV	I/P： 230VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA A
7	Test by certified Lab & Test Report Prepare. Any contradictions of the test results please refer to the latest EMC test report.			

■ LIABILITY TEST

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： XLG-100-H
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 29.1℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=60.3℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 29.1 ℃</th><th>HIGH AMBIENT Ta=60.3 ℃</th></tr>
<tr><td>1</td><td>ZNR3</td><td>52.5℃</td><td>84.4℃</td></tr>
<tr><td>2</td><td>C1</td><td>55.1℃</td><td>86.7℃</td></tr>
<tr><td>3</td><td>RT1</td><td>62.8℃</td><td>92.8℃</td></tr>
<tr><td>4</td><td>LF2</td><td>57.6℃</td><td>89.6℃</td></tr>
<tr><td>5</td><td>ZNR4</td><td>56.4℃</td><td>88.4℃</td></tr>
<tr><td>6</td><td>BD1</td><td>56.9℃</td><td>88.7℃</td></tr>
<tr><td>7</td><td>C10</td><td>56.0℃</td><td>88.2℃</td></tr>
<tr><td>8</td><td>L2</td><td>61.1℃</td><td>93.0℃</td></tr>
<tr><td>9</td><td>Q1</td><td>62.0℃</td><td>94.2℃</td></tr>
<tr><td>10</td><td>C5</td><td>61.7℃</td><td>93.9℃</td></tr>
<tr><td>11</td><td>D4</td><td>58.0℃</td><td>90.1℃</td></tr>
<tr><td>12</td><td>D5</td><td>59.4℃</td><td>92.2℃</td></tr>
<tr><td>13</td><td>Q2</td><td>63.1℃</td><td>96.8℃</td></tr>
<tr><td>14</td><td>Q3</td><td>65.3℃</td><td>97.8℃</td></tr>
<tr><td>15</td><td>R7</td><td>59.3℃</td><td>91.8℃</td></tr>
<tr><td>16</td><td>U1</td><td>59.8℃</td><td>92.0℃</td></tr>
<tr><td>17</td><td>U2</td><td>65.9℃</td><td>98.3℃</td></tr>
<tr><td>18</td><td>C15</td><td>62.3℃</td><td>94.3℃</td></tr>
<tr><td>19</td><td>T1</td><td>69.7℃</td><td>103.2℃</td></tr>
<tr><td>20</td><td>D100</td><td>66.5℃</td><td>97.7℃</td></tr>
<tr><td>21</td><td>D101</td><td>68.5℃</td><td>100.3℃</td></tr>
<tr><td>22</td><td>U100</td><td>57.6℃</td><td>89.5℃</td></tr>
<tr><td>23</td><td>C105</td><td>62.0℃</td><td>94.5℃</td></tr>
<tr><td>24</td><td>C106</td><td>60.8℃</td><td>93.2℃</td></tr>
<tr><td>25</td><td>TC</td><td>53.7℃</td><td>84.7℃</td></tr>
</table></td></tr>
<tr><td>2</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P： 305VAC/100VAC
O/P：FULL LOAD
Ta= -45℃/-35℃</td><td>TEST：OK</td></tr>
<tr><td>3</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 60 ℃
NO DAMAGE</td><td>I/P： 305VAC
O/P：FULL LOAD
Ta=60 ℃
HUMIDITY= 95% R.H</td><td>TEST：OK</td></tr>
<tr><td>4</td><td>TEMPERATURE
COEFFICIENT</td><td>±0.03%/℃(0~60℃)</td><td>I/P： 230 VAC
O/P：FULL LOAD</td><td>±0.0026%/℃(0~60℃)</td></tr>
<tr><td>5</td><td>STORAGE TEMPERATURE TEST</td><td>-40~+80℃</td><td colspan="2">1. Thermal shock Temperature： -50℃~ +125℃
2. Temperature change rate ：25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle：200CYCLE
5. Input/Output condition： STATIC
TEST：OK</td></tr>
</table>

6	THERMAL SHOCK TEST	-40~+60℃	1. Thermal shock Temperature： -45℃~ +65℃ 2. Temperature change rate ：25℃ / MIN 3. Dwell time low and high temperature ： 30 MIN/EACH 4. Total test cycle：16CYCLE 5. Input/Output condition： 15cycle:230VAC/ FULL LOAD AC on 3 sec/AC off 1 sec TEST 1cycle:230VAC/ FULL LOAD Burn In Test TEST：OK
7	VIBRATION TEST	10~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform： Sine Wave (2) Frequency：10~500Hz (3) Sweep Time：10min/sweep cycle (4) Acceleration：6G (5) Test Time：180min in each axis (X.Y.Z) (6) Ta：25℃ TEST：OK
8	CAPACITOR LIFE CYCLE	XLG-100-H：SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Tc= 80 ℃ LIFE TIME (2) I/P： 230VAC O/P：75% LOAD Tc= 80 ℃ LIFE TIME (3) I/P： 230VAC O/P：50% LOAD Tc= 80 ℃ LIFE TIME	(1) 39835 HRS (2) 55627 HRS (3) 63991 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 2782.6K hrs min. Telcordia SR-332 (Bellcore) ; 276.4K hrs min. MIL-HDBK-217F (25℃)	
10	Ongoing Reliability Test	I/P：230VAC O/P：FULL LOAD TA=50℃ Demonstration Mean Time Between Failure : 50,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQ/ZHOUB	WENF	LIUWY