Test Report: XLG-240-L-DA2

240W Constant Power Mode with DALI-2 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

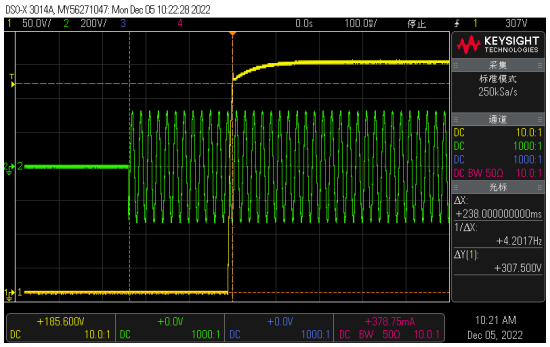
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

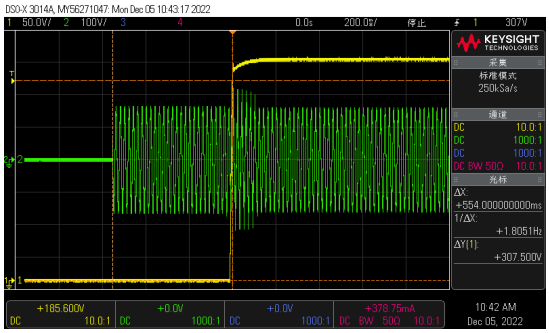
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	±5%	I/P:230VAC O/P:LEDmax CP: 0.7A& 1.05A Ta:25℃	CP 0.7A: 0.701A/230VAC@CV MAX-1V 0.702A/230VAC@CV MIN 0.29% CP 1.05A: 1.053A/230VAC@CV MAX-1V 1.049A/230VAC@CV MIN 0.29%
2	FULL POWER CURRENT RANGE	700~1050mA	I/P: 230VAC O/P:LEDmax CP: 0.7A& 1.05A Ta:25℃	342V/0.7A/230VAC 228V/1.05A/230VAC
3	OPEN CIRCUIT VOLTAGE (max)	380V	I/P: 230VAC O/P:NO LOAD CP: OPEN Ta:25℃	357.92V
4	CONSTANT CURRENT REGION	CP 0.7A: CH1:178V~ 342V CP 1.05A: CH1:178V~ 114V	I/P: 230VAC O/P:LEDmax CP: 0.7A& 1.05A Ta:25℃	CP 0.7A: 141.4V~359.1V/230VAC CP 1.05A: 141.4V~ 254.9V/230VAC
5	CURRENT ADJ. RANGE	CH1:350mA~1050mA	I/P: 230VAC O/P:CVmin& CVmax-1V CP: 0.7A& 1.05A Ta:25℃	276mA~859mA/230VAC@CV MAX-1V 276mA~1174mA/230VAC@CV MIN
6	CURRENT RIPPLE	5.0% max.	I/P: 230VAC O/P:LEDmax CP: 0.7A& 1.05A Ta:25℃	CP 0.7A: 2.87% CP 1.05A: 2.39%
7	AUXILIARY DC OUTPUT	12V@250mA tolerance ± 10%, ripple 200mVp-p (only for DA2-A-type)	I/P: 230VAC O/P:LEDmax CP: 0.7A& 1.05A Ta:25℃	PASS

8	SET UP TIME	230VAC/ 500 ms (Max) 115VAC/ 1200 ms (Max)	I/P: 230VAC I/P: 115VAC O/P:LEDmax CP 0.7A Ta:25℃	230VAC/238ms 115VAC/554ms

INPUT=230VAC/50HZ @ LEDMAX@ CP 0.7A
CH1 : Output Voltage CH2 : AC Input Voltage



INPUT=230VAC/60HZ @ LEDMAX@ CP 0.7A
CH1 : Output Voltage CH2 : AC Input Voltage

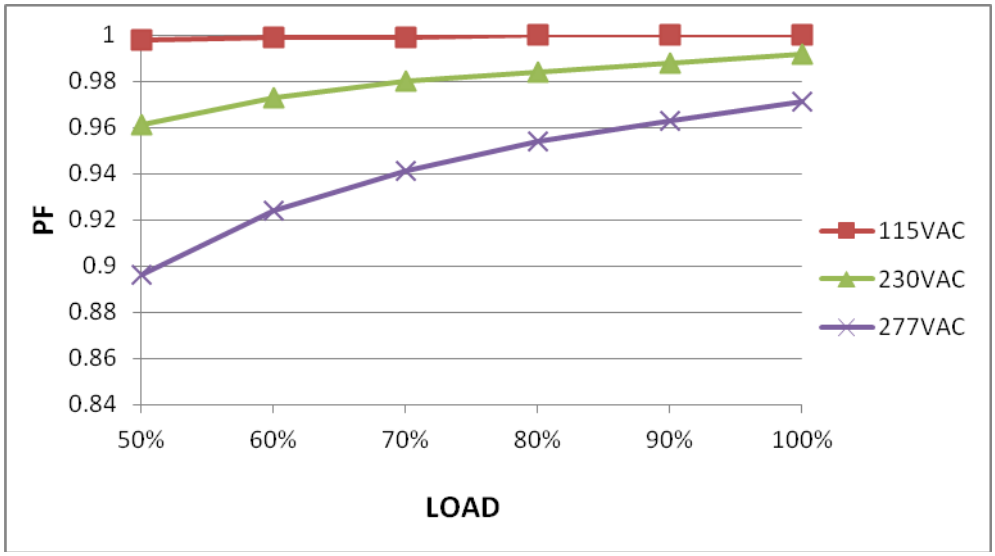


INPUT FUNCTION TEST

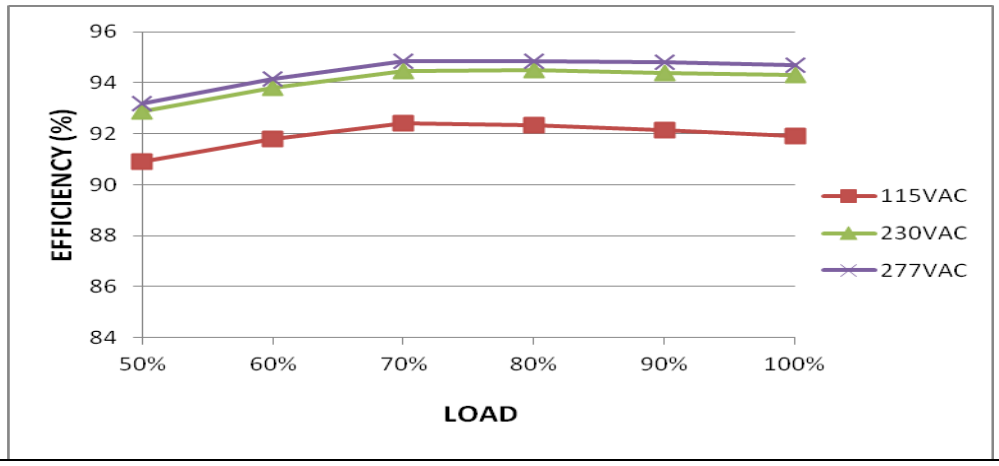
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC 142VDC ~ 431VDC	(1) I/P:TESTING O/P:LEDmax (2) I/P:DC TESTING(L:+ N:-) O/P:LEDmax (3) I/P:DC TESTING(L:- N:+) O/P:LEDmax (4) I/P: LOW-LINE=142VDC HIGH-LINE=431VDC O/P: Dimming on/off 【for Dimming type,】 (PLEASE CHECK DERATING CURVE) Ta:25℃	(1) 100 Vac~305Vac (2) 142 Vdc~431Vdc (3) 142 Vdc~431Vdc (4) OK
			I/P: LOW-LINE-3V=97V HIGH-LINE+10V=308 V O/P: LEDmax / LEDmin CP 0.7A (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 0.7A Ta:25℃	TEST:OK

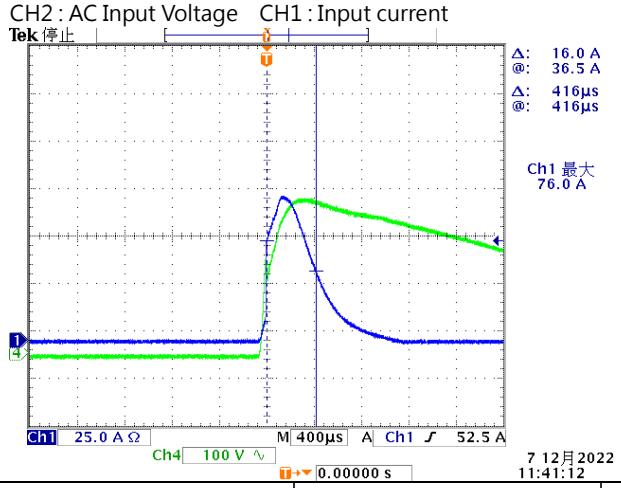
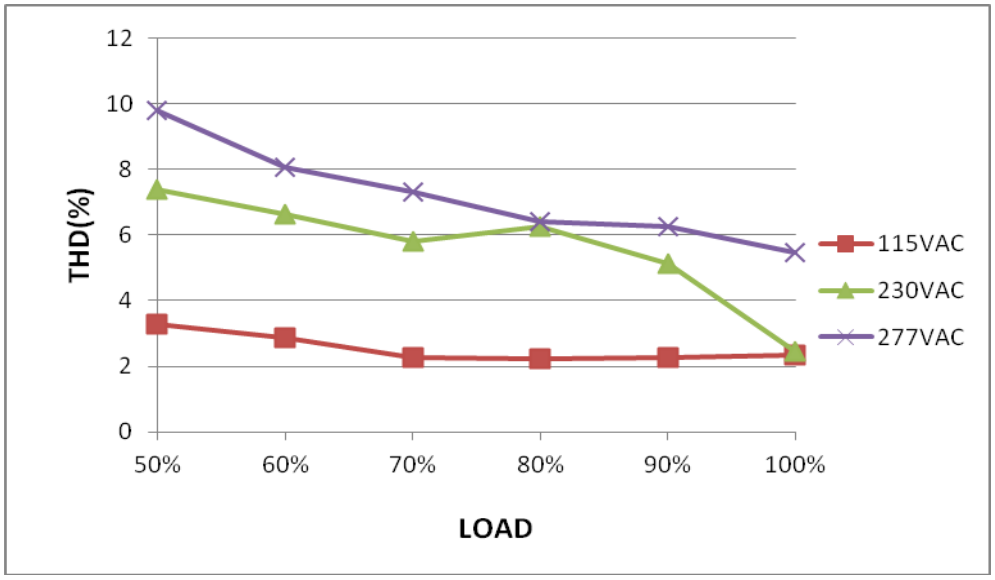
3	INPUT CURRENT (TYP)	230VAC/ 1.3A 115VAC/ 2.7A 277VAC/1.1A	I/P: 230VAC/115VAC/277VAC O/P:LEDmax CP 0.7A Ta:25℃	I =1.11A/ 230VAC I =2.255A/115VAC I =0.937A/277VAC
4	POWER FACTOR(TYP)	0.92/277VAC LEDMAX 0.95/230VAC LEDMAX 0.97/115VAC LEDMAX	I/P: 277VAC/230VAC/115VAC O/P:LEDmax CP 0.7A Ta:25℃	PF=0.971 /277V/100%LOAD PF=0.992/230V/100%LOAD PF=0.999/115V/100%LOAD

P.F vs LOAD



5	EFFICIENCY (TYP)	94%	I/P: 230VAC O/P:LEDmax CP 0.7A Ta:25℃	94.31%



6	INRUSH CURRENT (TYP)	230V/ 85A COLD START (twidth=500 usmeasured at 50% Ipeak) COLD START	I/P: 230VAC O/P:LEDmax CP 0.7A Ta:25℃	I =76A /230VAC **T50= 416us**
	INPUT=230VAC/ 60HZ @ LEDMAX CH2 : AC Input Voltage CH1 : Input current 			
7	TOTAL HARMONIC DISTORTION	THD< 10% (@ load≧ 50% at 115VAC/230VAC, @load≧ 75% at 277VAC	I/P：230VAC/115VAC/277VAC O/P：50% LOAD 75%LOAD CP 0.7A Ta：25℃	THD：7.37%230V /50% THD：3.27%115V /50% THD：7.21%277V /75%
	THD vs LOAD 			
8	STANDBY POWER CONSUMPTION	Standby power consumption <0.5W (Dimming OFF, Only for standard version DA2-type)	I/P：230VAC O/P：NO LOAD Ta：25℃	0.417W
9	LEAKAGE CURRENT	EN61347-1 < 0.75mA / 277VAC	I/P: 277 VAC O/P:Min LOAD Ta:25℃	L-FG: 0.224mA N-FG: 0.210mA

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P:305VAC I/P: 90 VAC O/P:LEDmax CP 0.7A Ta:25℃	O.T.P. Active PROTECTION TYPE： 1: Derating to 75% loading; stage 2: Derating to 50% loading. recovers automatically after fault condition is removed
2	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 305VAC I/P: 100 VAC O/P: LEDMAX CP: 0.7A&1.05A Ta:25℃	CP: 0.7A NO DAMAGE PROTECTION TYPE： Hiccup mode or constant current limiting, recovers automatically after fault condition is removed CP: 1.05A NO DAMAGE PROTECTION TYPE： Hiccup mode or constant current limiting, recovers automatically after fault condition is removed
3	INPUT OVER VOLTAGE (for XLG-240I only)	320 ~ 390VAC (Shut down output voltage when the input voltage exceeds protection voltage,recovers automatically after fault condition is removed) Can survive input voltage stress of 440Vac for 48 hours	I/P: TESTING O/P: LEDMAX	pass

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) **Peak Voltage**	Q3 Rated: 13A/600V	I/P:High-Line +3V =308V AC ON/OFF **CP: 0.7A&1.05A** VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short I/P:Low-Line -3V = 97V VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short Ta:25℃	308V **CP: 0.7A** Q3 VDS: (1) 483V (2) 447V (3) 483V (4) 443V (5) 495V **CP: 1.05A** **VDS:** (1) 483V (2) 451V (3) 483V (4) 451V (5) 491V 97V **CP: 0.7A** Q3 VDS: (1) 475V (2) 455V (3) 471V (4) 443V (5) 491V **CP: 1.05A** Q3 VDS: (1) 475V (2) 455V (3) 471V (4) 455V (5) 495V
2	P.F.C Transistor (D to S) or (C to E) **Peak Voltage**	Q1 Rated: 26 A/600V	I/P:High-Line +3V =308v AC ON/OFF **CP: 0.7A&1.05A** VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short	**308V** **CP: 0.7A** Q1 VDS: (1) 535V (2) 523V (3) 535V (4) 499V (5) 535V **97V** **CP: 1.05A**

			I/P:Low-Line -3V = 97V VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short Ta:25℃	Q1 VDS: (1) 535V (2) 523V (3) 535V (4) 523V (5) 535V
3	P.F.C DIODE	D5 Rated: 8A/600V	I/P:High-Line +3V =308v AC ON/OFF **CP: 0.7A** VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short I/P:Low-Line -3V = 97V O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short Ta:25℃	 **308VAC** (1) 455V (2) 447V (3) 443V (4) 443V (5) 455V 97VAC (1) 459V (2) 447V (3) 455V (4) 447V (5) 459V
4	Diode Peak **Voltage**	D100 Rated: 600V/9A	I/P:High-Line +3V =308v AC ON/OFF **CP: 0.7A&1.05A** VDS: O/P: (1)LEDmax (2) LEDmax continue (3) Output Short Ta:25℃	 **CP: 0.7A** Q100 VDS: (1) 348V (2) 348V (3) 17.2V **CP: 1.05A** Q100 VDS: (1) 235V (2) 233V (3) 16.8V
5	**Input Capacitor Voltage**	C5 Rated: 120μ /450 V Surge voltage: 500 V	I/P:High-Line +3V =308v AC ON/OFF **CP: 0.7A** VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue Ta:25℃	 (1)453V (2)445V (3)457V (4)441V

6	**Control IC Voltage Test**	PFC IC U1 Rated 10.5V~27V(MIN.) PWM IC U2 Rated 16.3V~ 20V(MIN.) O/P IC U107 Rated 3V~32V	I/P:High-Line +3V =308v AC ON/OFF **CP: 0.7A** VDS: O/P: (1)LEDmax (2) LEDmin (3) Output Short (4) NO LOAD VRmin.LOW LINE (5)DIM OFF Ta:25℃	**U1/ U2** (1) 13.5V (2) 13.5V (3) 13.7V (4) 13.5V (5) 1.25V U107 (1) 14.7V (2) 14..7V (3) 14.7V (4) 13.9V (5) 14.1V
7	TOP SWITCHING STAND BY POWER	U300 Rated 1.5A/ 750 V	AC ON/OFF **CP: 0.7A** I/P:High-Line +3V =308V O/P: (1)LEDmax (2) LEDmin I/P:Low-Line -3V =97 V O/P: (1)LEDmax (2) LEDmin Ta:25℃	308VAC **CP: 0.7A** (1) 564V (2) 568V 97VAC (1) 568V (2) 568V
8	VCC Diode Peak Voltage	D450 Rated: 2A/400V D470 Rated: 2A/400V	I/P:High-Line +3V =308v AC ON/OFF **CP: 0.7A** VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue	D450 D470 (1)0.72A (1)1.84A (2)0.41A (2)1.51A (3)0.71A (3)1.80A (4)0.41A (4)1.42A

■ SAFETY & EMC TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	EN61347-1 I/P-O/P: 3.75KVAC/min I/P-FG: 2 KVAC/min O/P-FG:1.8KVAC/min	I/P-O/P: 4.125 KVAC/min I/P-FG: 2.4KVAC/min O/P-FG: 2.16KVAC/min Ta:25℃	I/P-O/P: 2.34mA I/P-FG:2.06 mA O/P-FG: 1.864mA 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: >9999MΩ I/P-FG: >9999MΩ O/P-FG:>9999 M Ω NO DAMAGE
3	GROUNDING CONTINUITY	EN61347-1 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	9mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P: 230VAC/50HZ O/P: LEDmax Ta:25℃	PASS
2	CONDUCTION	EN55015	I/P:230VAC (50HZ) O/P: LEDmax /50% LOAD Ta:25℃	PASS Test by certified Lab
3	RADIATION	EN55015	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25℃	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR：8KV / Contact：4KV	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25℃	CRITERIA A
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 2KV	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25℃	CRITERIA A
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :4KV L,N-PE:6KV	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25℃	CRITERIA B
7	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report			

■ RELIABILITY 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-240-L-DA2-A
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 25.8℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=53.4℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 25.8 ℃</th><th>HIGH AMBIENT Ta=53.4 ℃</th></tr>
<tr><td>1</td><td>ZNR1</td><td>57.1℃</td><td>83.4℃</td></tr>
<tr><td>2</td><td>RTH1</td><td>69.7℃</td><td>93.5℃</td></tr>
<tr><td>3</td><td>BD1</td><td>65.3℃</td><td>91.9℃</td></tr>
<tr><td>4</td><td>C10</td><td>63.0℃</td><td>89.7℃</td></tr>
<tr><td>5</td><td>L2</td><td>64.6℃</td><td>90.4℃</td></tr>
<tr><td>6</td><td>Q1</td><td>66.2℃</td><td>93.0℃</td></tr>
<tr><td>7</td><td>D5</td><td>66.8℃</td><td>93.9℃</td></tr>
<tr><td>8</td><td>R7</td><td>64.9℃</td><td>91.6℃</td></tr>
<tr><td>9</td><td>C5</td><td>61.4℃</td><td>88.0℃</td></tr>
<tr><td>10</td><td>U1</td><td>62.4℃</td><td>89.6℃</td></tr>
<tr><td>11</td><td>U2</td><td>62.5℃</td><td>89.1℃</td></tr>
<tr><td>12</td><td>Q2</td><td>65.8℃</td><td>92.8℃</td></tr>
<tr><td>13</td><td>Q3</td><td>64.7℃</td><td>91.6℃</td></tr>
<tr><td>14</td><td>C51</td><td>64.9℃</td><td>91.8℃</td></tr>
<tr><td>15</td><td>T1</td><td>66.8℃</td><td>93.7℃</td></tr>
<tr><td>16</td><td>C104</td><td>60.5℃</td><td>87.6℃</td></tr>
<tr><td>17</td><td>C105</td><td>60.5℃</td><td>87.3℃</td></tr>
<tr><td>18</td><td>U107</td><td>59.8℃</td><td>86.6℃</td></tr>
<tr><td>19</td><td>D100</td><td>64.5℃</td><td>91.8℃</td></tr>
<tr><td>20</td><td>D101</td><td>67.4℃</td><td>95.1℃</td></tr>
<tr><td>21</td><td>J102</td><td>62.3℃</td><td>89.4℃</td></tr>
<tr><td>22</td><td>RT22</td><td>60.0℃</td><td>87.0℃</td></tr>
<tr><td>23</td><td>U300</td><td>75.6℃</td><td>103.9℃</td></tr>
<tr><td>24</td><td>T2</td><td>69.5℃</td><td>96.8℃</td></tr>
<tr><td>25</td><td>U431</td><td>60.0℃</td><td>86.8℃</td></tr>
<tr><td>26</td><td>TC</td><td>57.3℃</td><td>83.4℃</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/110VAC
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 50 ℃
NO DAMAGE</td><td>I/P： 315VAC
O/P：FULL LOAD
Ta=50 ℃
HUMIDITY= 95% R.H</td><td>TEST：OK</td></tr>
<tr><td>4</td><td>TEMPERATURE
COEFFICIENT</td><td>±0.06%/℃(0~60℃)</td><td>I/P： 230 VAC
O/P：FULL LOAD</td><td>±0.0006%/℃(0~60℃)</td></tr>
<tr><td>5</td><td>STORAGE TEMPERATURE TEST</td><td>-40~+80℃</td><td colspan="2">1. Thermal shock Temperature： -45℃~+90℃
2. Temperature change rate ：25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle：10CYCLE
5. Input/Output condition：AC OFF STATIC
TEST：OK</td></tr>
</table>

6	THERMAL SHOCK TEST	-40~+50℃	1. Thermal shock Temperature： -45℃~+55℃ 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：12min/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-240-L-DA2-A：SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Tc= 75 ℃ LIFE TIME (2) I/P： 230VAC O/P：75% LOAD Tc= 75 ℃ LIFE TIME (3) I/P： 230VAC O/P：50% LOAD Tc= 75 ℃ LIFE TIME	(1) 93697 HRS (2) 102341 HRS (3) 110972 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 1988.7K hrs min. Telcordia SR-332 (Bellcore)； 170.5K 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/HUANGMK	WENF	LINKX