Test Report: XLG-150-H- DA2

150W 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

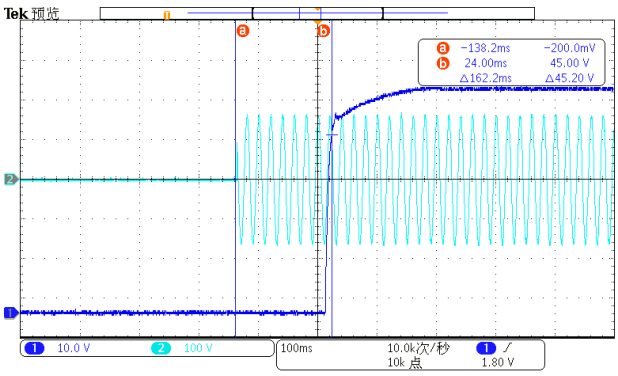
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

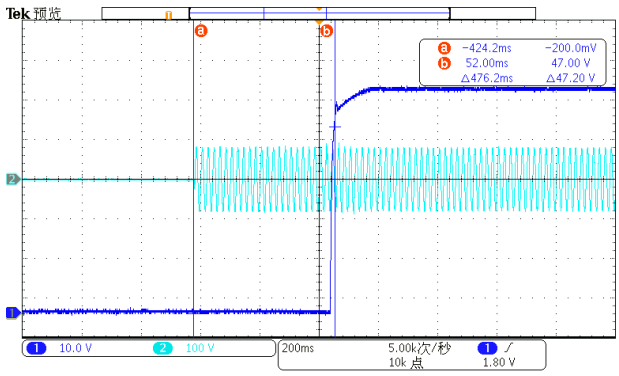
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	±5%	I/P:230VAC O/P:LEDmax CP: 2.68A & 4.17A Ta:25℃	CP 2.68A: 2.683A/230VAC@CV MAX-1V 2.681A/230VAC@CV MIN 0.39% CP 4.17A: 4.178A/230VAC@CV MAX-1V 4.172A/230VAC@CV MIN 1.27%
2	FULL POWER CURRENT RANGE	2680~4170mA	I/P: 230VAC O/P:LEDmax CP: 2.68A & 4.17A Ta:25℃	56V/2.68A/230VAC 36V/4.17A/230VAC
3	OPEN CIRCUIT VOLTAGE (max)	65V	I/P: 230VAC O/P:NO LOAD CP: OPEN Ta:25℃	57.99V
4	CONSTANT CURRENT REGION	CP 2.68A: CH1:27V~ 56V CP 4.17A: CH1:27V~ 36V	I/P: 230VAC O/P:LEDmax CP: 2.68A & 4.17A Ta:25℃	CP 2.68A: 5.25V~56.7V/230VAC CP 4.17A: 4.58V~39.8V/230VAC
5	CURRENT ADJ. RANGE	CH1: 1400mA~4170mA	I/P: 230VAC O/P:CVmin& CVmax-1V CP: 2.68A & 4.17A Ta:25℃	1.067A~3.082A/230VAC@CV MAX-1V 1.078A~4.462A /230VAC@CV MIN
6	CURRENT RIPPLE	4.0% (@full load)	I/P: 230VAC O/P:LEDmax CP: 2.68A & 4.17A Ta:25℃	CP 2.68A: 3.41% CP 4.17A: 2.93%
7	AUXILIARY DC OUTPUT	12V@250mA tolerance ± 10%, ripple 200mVp-p (only for DA2-A-type)	I/P: 230VAC O/P:LEDmax CP: 2.68A & 4.17A 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 2.68A Ta:25℃	230VAC/162ms 115VAC/ 476.2ms

INPUT=230VAC/50HZ @ LEDMAX@ CP 2.68A
CH1 : Output Voltage CH2 : AC Input Voltage

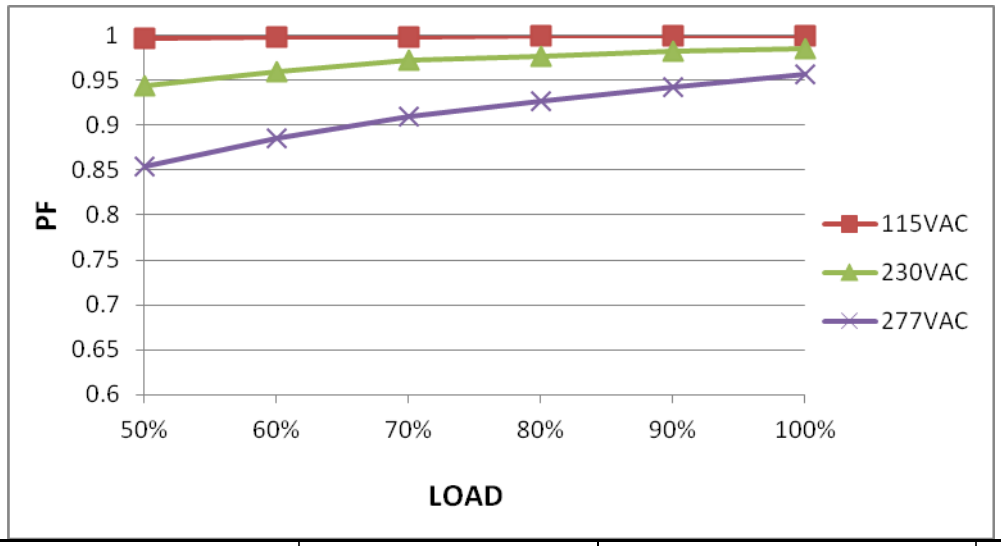
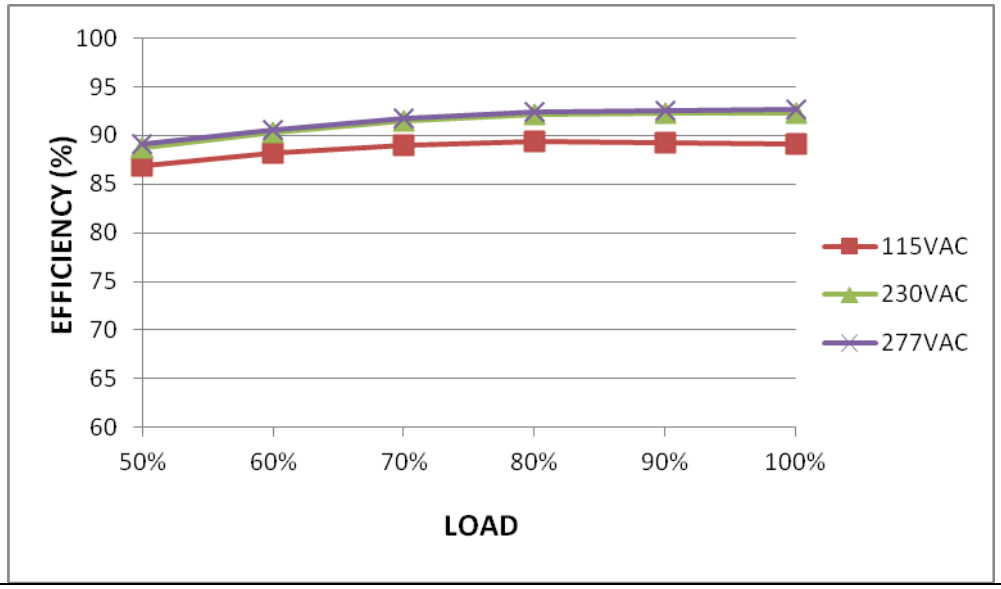


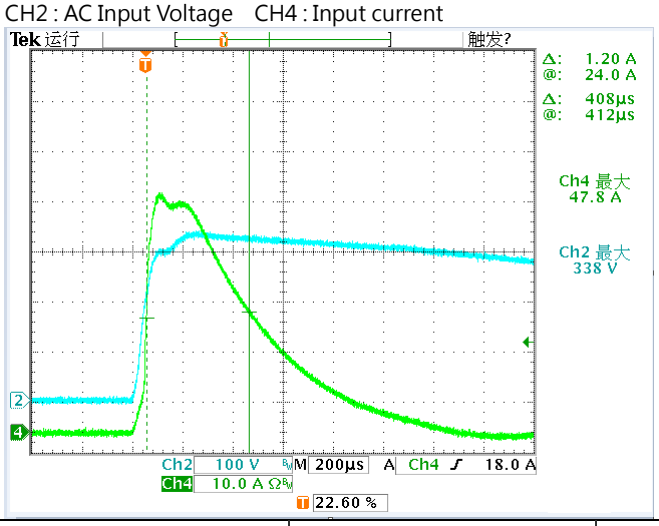
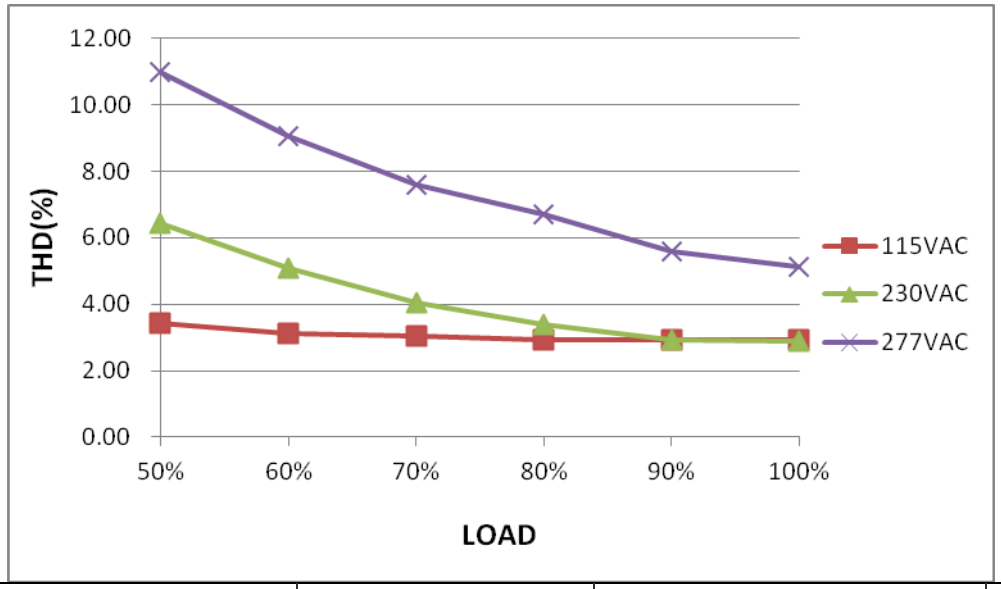
INPUT=115VAC/60HZ @ LEDMAX@ CP 2.68A
CH1 : Output Voltage CH2 : AC Input Voltage



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,】 Ta:25℃	(1) 83Vac~308Vac (2) 120Vdc~435Vdc (3) 120Vdc~435Vdc (4) OK
			I/P: LOW-LINE-3V=97 V HIGH-LINE+10V=308 V O/P: LEDmax / LEDmin CP 2.68A (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 2.68A Ta:25℃	TEST:OK
3	INPUT CURRENT (TYP)	230VAC/ 1.0A 115VAC/ 1.8A 277VAC/0.8A	I/P: 230VAC/115VAC/277VAC O/P:LEDmax CP 2.68A Ta:25℃	I =0.702A/ 230VAC I =1.416A/115VAC I =0.592A/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 2.68A Ta:25℃	PF= 0.964/277V/100%LOAD PF=0.988/230V/100%LOAD PF=0.999/115V/100%LOAD
	P.F vs LOAD  			
5	EFFICIENCY (TYP)	92%	I/P: 230VAC O/P:LEDmax CP 2.68A/4.17A Ta:25℃	92.79%
	EFFICIENCY vs LOAD  			

6	INRUSH CURRENT (TYP)	230V/ 60A COLD START (twidth=500 usmeasured at 50% Ipeak) COLD START	I/P: 230VAC O/P:LEDmax CP 2.68A Ta:25℃	I =47.8A /230VAC T50=408uS
	INPUT=230VAC/ 60HZ @ LEDMAX CH2 : AC Input Voltage CH4 : 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 2.68A Ta：25℃	THD：6.42%230V /50% THD：3.42%115V /50% THD：7.03%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℃	0.4475W
9	LEAKAGE CURRENT	< 0.75mA / 230VAC	I/P: 277 VAC O/P:Min LOAD Ta:25℃	L-FG: 0.636mA N-FG: 0. 167mA

ROTECTION 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 2.68A 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: 2.68A &4.17A Ta:25℃	CP: 2.68A NO DAMAGE PROTECTION TYPE：OK Hiccup mode or constant current limiting, recovers automatically after fault condition is removed CP: 4.17A NO DAMAGE PROTECTION TYPE：OK Hiccup mode or constant current limiting, recovers automatically after fault condition is removed
3	INPUT OVER VOLTAGE (for XLG-150I 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**	**Q6** Rated: 11A /600V	I/P:High-Line +3V =308v AC ON/OFF **CP: 2.68A** 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: 2.68A** Q6 VDS: (1) 471V (2) 439V (3) 463V (4) 435V (5) 503V **CP: 4.17A** **VDS:** (1) 463V (2) 443V (3) 455V (4) 447V (5) 523V 97V **CP: 2.68A** Q6 VDS: (1) 483V (2) 447V (3) 443V (4) 431V (5) 515V
2	P.F.C Transistor (D to S) or (C to E) **Peak Voltage**	Q1 Rated: 10.6A/650V	I/P:High-Line +3V =308V AC ON/OFF **CP: 2.68A** 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: 2.68A** Q1 VDS: (1) 515V (2) 483V (3) 515V (4) 459V (5) 463V **97V** **CP: 2.68A** Q1 VDS: (1) 535V (2) 507V (3) 531V (4) 491V (5) 547V

3	P.F.C DIODE	D5 Rated: 9A/600V	I/P:High-Line +3V =308V AC ON/OFF **CP: 2.68A/4.17A** 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℃	 (1) 499V (2) 487V (3) 503V (4)495V (5)483V (1) 458V (2) 438V (3) 458V (4)442V (5)458V
4	Diode Peak **Voltage**	D100 Rated: 10A/150V	I/P:High-Line +3V =308V AC ON/OFF **CP: 2.68A** VDS: O/P: (1)LEDmax (2) LEDmax continue (3) Output Short	**CP: 2.68A** D100 VDS: (1) 124.9V (2) 123.3V (3) 16.3V **CP: 4.17A** D100 VDS: (1) 83.9V (2) 83.1V (3) 15.5V
5	**Input Capacitor Voltage**	C5 Rated: 82μ /450 V Surge voltage: 540V	I/P:High-Line +3V =308V AC ON/OFF **CP: 2.68A** VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue Ta:25℃	 (1) 459V (2) 447V (3) 451V (4) 435V
6	**Control IC Voltage Test**	PFC IC U1 Rated 9.75V~27V(MIN.) PWM IC U2 Rated 13V~26 V(MIN.) O/P IC U107 Rated 3V~30V	I/P:High-Line +3V =308V AC ON/OFF **CP: 2.68A** VDS: O/P: (1)LEDmax (2) LEDmin (3) Output Short (4) NO LOAD VRmin.LOW LINE (5)DIM OFF Ta:25℃	 **U1&U2** (1) 14.8V (2) 14.8V (3) 14.8V (4) 14.8V (5) 1.1V

				U100 (1) 10.36V (2) 10.44V (3) 10.366V (4) 10.36V (5) 10.36V
7	TOP SWITCHING STAND BY POWER	U300 Rated 1.5A/ 750V	AC ON/OFF **CP: 2.68A** 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℃	**CP: 2.68A** (1) 540V (2) 540V (1) 536V (2) 524V
8	VCC Diode Peak Voltage	D304 Rated: 2 A/400V D450 Rated: 2 A/400V D470 Rated: 2 A/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	D304 (1)0.688 A (2) 0.357A (3) 1.097A (4) 0.365A D405 (1) 0.79A (2) 0.3A (3) 0.87A (4) 0.46A D470 (1) 0.93A (2)0.086 A (3) 0.756A (4) 0.362A

■ 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:1.5KVAC/min	I/P-O/P: 4.125 KVAC/min I/P-FG: 2.4KVAC/min O/P-FG: 1.8 KVAC/min Ta:25℃	I/P-O/P: 2.382 mA I/P-FG: 2.241mA O/P-FG: 2.656mA 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: ＞9999MΩ NO DAMAGE
3	GROUNDING CONTINUITY	EN61347-1 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	14mΩ

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	FCC PART 15	I/P:230VAC (50HZ) O/P: LEDmax /50% LOAD Ta:25℃	PASS Test by certified Lab
3	RADIATION	FCC PART 15	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：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 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-150-H-DA2
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 26.2℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=54.9℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 26.2 ℃</th><th>HIGH AMBIENT Ta=54.9 ℃</th></tr>
<tr><td>1</td><td>RTH2</td><td>64.5℃</td><td>88.2℃</td></tr>
<tr><td>2</td><td>BD1</td><td>62.9℃</td><td>88.5℃</td></tr>
<tr><td>3</td><td>Q1</td><td>62.3℃</td><td>88.2℃</td></tr>
<tr><td>4</td><td>R7</td><td>63.8℃</td><td>90.1℃</td></tr>
<tr><td>5</td><td>C51</td><td>65.4℃</td><td>92.1℃</td></tr>
<tr><td>6</td><td>C5</td><td>63.4℃</td><td>89.7℃</td></tr>
<tr><td>7</td><td>T1</td><td>74.7℃</td><td>101.6℃</td></tr>
<tr><td>8</td><td>U1</td><td>61.5℃</td><td>87.5℃</td></tr>
<tr><td>9</td><td>Q6</td><td>70.4℃</td><td>100.3℃</td></tr>
<tr><td>10</td><td>D100</td><td>75.1℃</td><td>102.8℃</td></tr>
<tr><td>11</td><td>D101</td><td>77.3℃</td><td>105.5℃</td></tr>
<tr><td>12</td><td>U300</td><td>64.1℃</td><td>90.4℃</td></tr>
<tr><td>13</td><td>J102</td><td>72.0℃</td><td>99.3℃</td></tr>
<tr><td>14</td><td>C105</td><td>69.6℃</td><td>96.9℃</td></tr>
<tr><td>15</td><td>RT22</td><td>59.9℃</td><td>86.1℃</td></tr>
<tr><td>16</td><td>C312</td><td>62.8℃</td><td>88.8℃</td></tr>
<tr><td>17</td><td>T2</td><td>62.0℃</td><td>88.2℃</td></tr>
<tr><td>18</td><td>RG47</td><td>57.3℃</td><td>83.3℃</td></tr>
<tr><td>19</td><td>TC</td><td>57.6℃</td><td>82.8℃</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 55 ℃
NO DAMAGE</td><td>I/P： 315VAC
O/P：FULL LOAD
Ta=55 ℃
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>±0.0008%/℃(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~+55℃	1. Thermal shock Temperature： -45℃~ +60℃ 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-150-H-DA2：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) 46576 HRS (2) 48139 HRS (3) 57127 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 2316.2K hrs min. Telcordia SR-332 (Bellcore) ; 213.3K 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