Test Report: XLG-200-L-DA2

200W 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

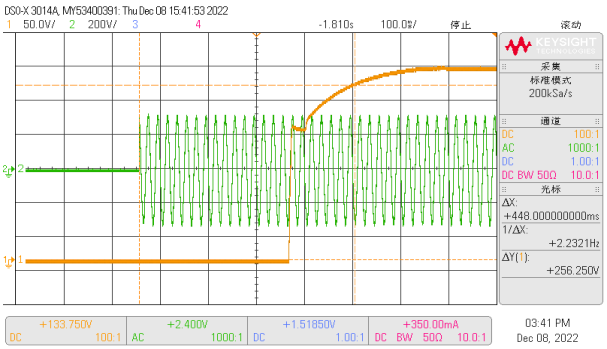
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

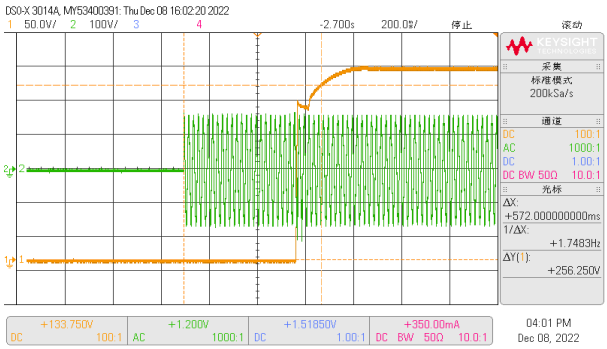
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	±5%	I/P:230VAC O/P:LEDmax CP: 0.7A & 1.05A Ta:25℃	CP0.7A: 0.708A/230VAC@CV MAX-1V 0.710A/230VAC@CV MIN 1.42% CP 1.05A: 1.051A/230VAC@CV MAX-1V 1.053A/230VAC@CV MIN 0.285%
2	FULL POWER CURRENT RANGE	700~1050mA	I/P: 230VAC O/P:LEDmax CP: 0.7A & 1.05A Ta:25℃	285.2V/0.7A/230VAC 190.8V/1.05A/230VAC
3	OPEN CIRCUIT VOLTAGE (max)	320V	I/P: 230VAC O/P:NO LOAD CP: OPEN Ta:25℃	292.6V
4	CONSTANT CURRENT REGION	CP 0.7A: CH1:142V~ 285V CP 1.05A: CH1:142V~ 190V	I/P: 230VAC O/P:LEDmax CP: 0.7A & 1.05A Ta:25℃	CP 0.7A: 110V~ 291.2V/230VAC CP 1.05A: 110.8V~ 209.6V/230VAC
5	CURRENT ADJ. RANGE	CH1: 350mA~1050mA	I/P: 230VAC O/P:CVmin& CVmax-1V CP: 0.7A & 1.05A Ta:25℃	0.2826mA~0.8240mA/230VAC@CV MAX-1V 0.2828mA~1.1676mA /230VAC@CV MIN
6	CURRENT RIPPLE	4.0% max.	I/P: 230VAC O/P:LEDmax CP: 0.7A & 1.05A Ta:25℃	CP 0.7A: 2.82% CP 1.05A: 1.78%
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/448ms 115VAC/ 572ms

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

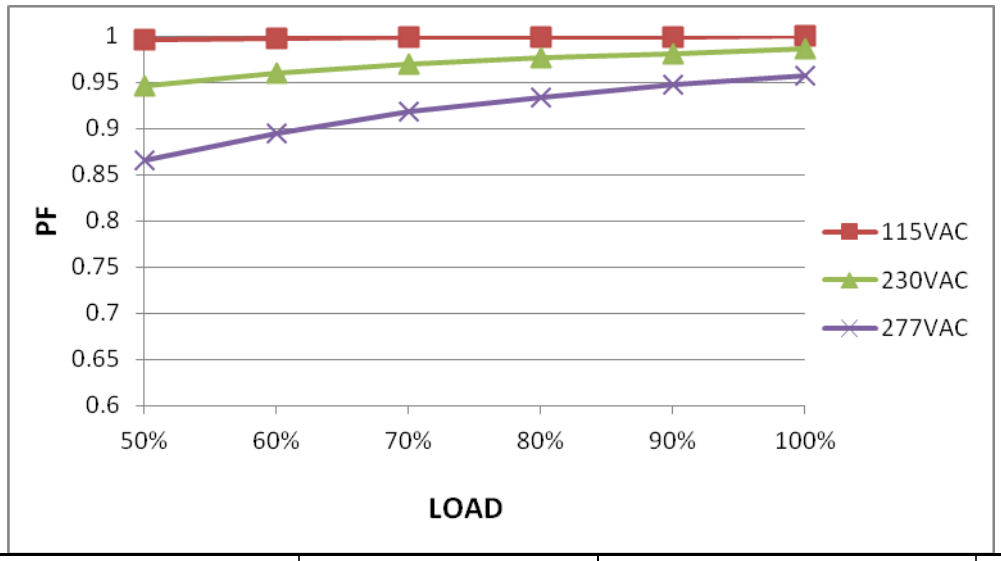


INPUT FUNCTION TEST

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) 92Vac~308Vac (2) 139Vdc~434Vdc (3) 139Vdc~434Vdc (4) 139Vdc~434Vdc
			I/P: LOW-LINE-3V=87 V 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

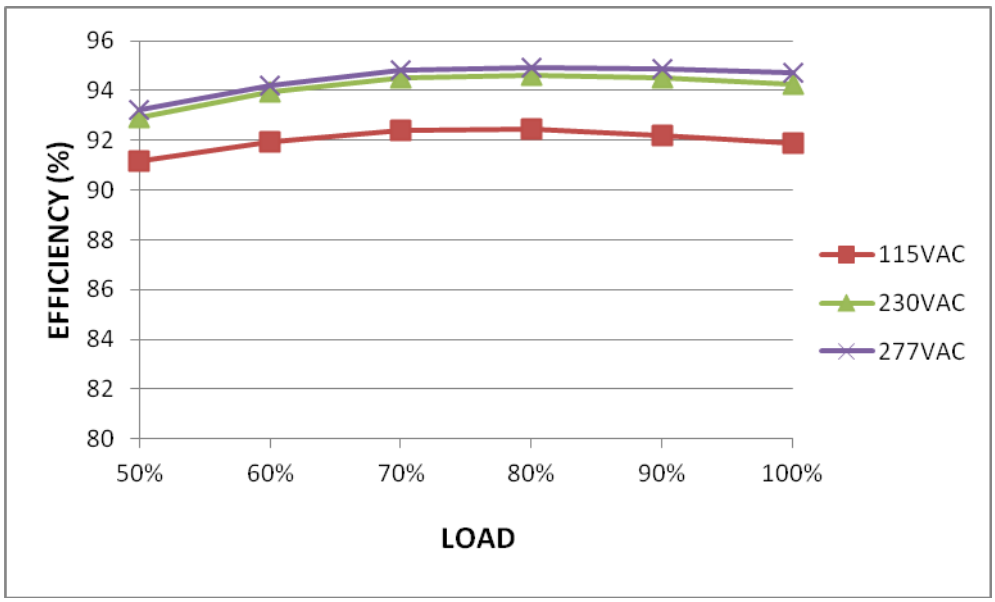
3	INPUT CURRENT (TYP)	230VAC/ 1.1A 115VAC/ 2.2A 277VAC/0.9A	I/P: 230VAC/115VAC/277VAC O/P:LEDmax CP 0.7A Ta:25℃	I =0.923A/ 230VAC I =1.861A/115VAC I =0.786A/277VAC
4	POWER FACTOR(TYP)	0.92/277VAC LEDMAX 0.95/230VAC LEDMAX 0.97/115VAC LEDMAX	I/P: 277VAC/230VAC/115VAC O/P:LEDmax CP 0.7A Ta:25℃	PF=0.957 /277V/100%LOAD PF=0.986/230V/100%LOAD PF=0.999/115V/100%LOAD

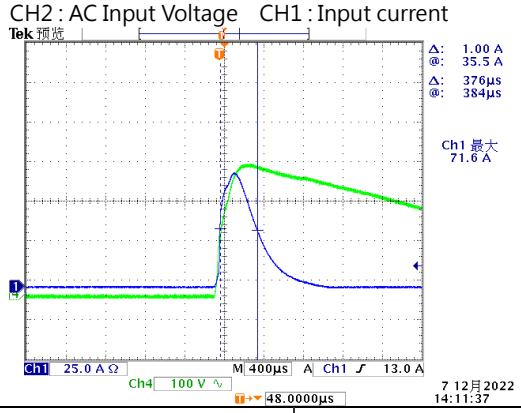
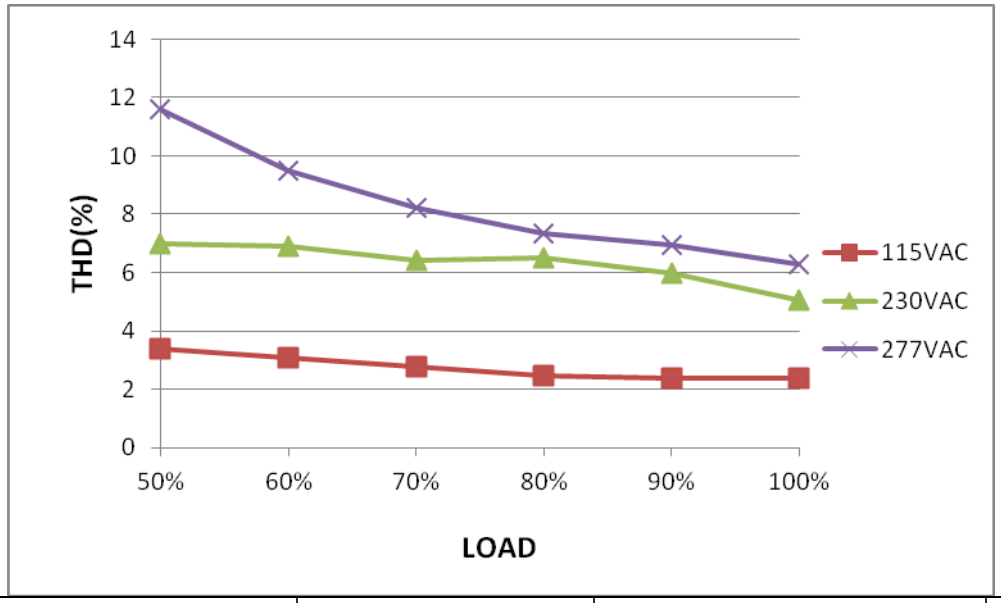
P.F vs LOAD



5	EFFICIENCY	94%	I/P: 230VAC O/P:LEDmax CP 0.7A Ta:25℃	94.26%

EFFICIENCY vs LOAD



6	INRUSH CURRENT (TYP)	230V/75A COLD START (twidth=400 usmeasured at 50% Ipeak) COLD START	I/P: 230VAC O/P:LEDmax CP 0.7A Ta:25℃	I =71.6A/230VAC T50= 384 μ S
	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： 6.98%230V /50% THD： 3.4%115V /50% THD： 7.74%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℃	0.4428W
9	LEAKAGE CURRENT	EN61347-1 < 0.75mA / 277VAC	I/P: 277 VAC O/P:Min LOAD Ta:25℃	L-FG:0.159 mA N-FG: 0.430mA

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 remove
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-200I 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: 12A /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) 209V (2) 456V (3) 505V (4) 432V (5) 537V **CP: 1.05A** **VDS:** (1) 501V (2) 456V (3) 509V (4) 456V (5) 533V 97V **CP: 0.7A** Q3 VDS: (1) 513V (2) 448V (3) 521V (4) 436V (5) 537V
2	P.F.C Transistor (D to S) or (C to E) **Peak Voltage**	Q1 Rated: 20 A/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 VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short Ta:25℃	**308V** **CP: 0.7A** Q1 VDS: (1) 545V (2) 477V (3) 545V (4) 477V (5) 465V **97V** **CP: 0.7A** Q1 VDS: (1) 557V (2) 537V (3) 557V (4) 505V (5) 541V

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 = 107V O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short Ta:25℃	 (1)469 V (2) 453V (3) 469V (4)453V (5)469V (1) 469V (2) 453V (3) 469V (4)465V (5)465V
4	Diode Peak **Voltage**	D100 Rated: 6A/400V	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) 288V (2) 284V (3) 0.21V **CP: 1.05A** Q100 VDS: (1) 190V (2) 190V (3) 7V
5	**Input Capacitor Voltage**	C5 Rated: 120μ /450 V Surge voltage: 540 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) 457V (2) 444V (3) 469V (4) 440V
6	**Control IC Voltage Test**	PFC IC U1 Rated MW05A 10.5V~27V PWM IC U2 Rated 13V~ 26V 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	 **U1&U2** (1) 14.6V (2) 14.6V (3) 14.8V (4) 14.6V (5) 14.6V

			Ta:25℃	U107 (1) 10.44V (2) 10.36V (3) 10.28V (4) 10.52V (5) 10.28V
7	TOP SWITCHING STAND BY POWER	U300 Rated 1.5A/750V	AC ON/OFF **CP: 0.7A** I/P:High-Line +3V =308V O/P: (1)LEDmax (2) LEDmin I/P:Low-Line -3V =107 V O/P: (1)LEDmax (2) LEDmin Ta:25℃	**CP: 0.7A** (1) 525V (2) 549V (1) 549V (2) 545V
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: 3.5A** VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue	D304 D450 D470 (1) 0.92A (1) 0.88A (1)1.82A (2) 0.65A (2)0.71A (2)1.56A (3) 0.87A (3)0.89 A (3)1.78A (4) 0.55A (4)0.78A (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: 2.16 KVAC/min Ta:25℃	I/P-O/P: 2.574mA I/P-FG: 3.069mA O/P-FG:2.448 mA 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: 999MΩ O/P-FG: 9999M Ω NO DAMAGE
3	GROUNDING CONTINUITY	EN61347-1 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	12 mΩ

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-200-L-DA2-A
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 27.2℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=52℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 27.2 ℃</th><th>HIGH AMBIENT Ta=52 ℃</th></tr>
<tr><td>1</td><td>RTH1</td><td>66.0℃</td><td>84.7℃</td></tr>
<tr><td>2</td><td>LF2</td><td>63.5℃</td><td>84.1℃</td></tr>
<tr><td>3</td><td>BD1</td><td>65.5℃</td><td>86.6℃</td></tr>
<tr><td>4</td><td>L2</td><td>66.1℃</td><td>86.2℃</td></tr>
<tr><td>5</td><td>R7</td><td>67.0℃</td><td>87.0℃</td></tr>
<tr><td>6</td><td>C5</td><td>66.3℃</td><td>86.2℃</td></tr>
<tr><td>7</td><td>C51</td><td>70.0℃</td><td>89.4℃</td></tr>
<tr><td>8</td><td>Q1</td><td>67.8℃</td><td>86.9℃</td></tr>
<tr><td>9</td><td>D5</td><td>66.8℃</td><td>88.2℃</td></tr>
<tr><td>10</td><td>Q5</td><td>66.7℃</td><td>88.0℃</td></tr>
<tr><td>11</td><td>Q6</td><td>67.0℃</td><td>88.4℃</td></tr>
<tr><td>12</td><td>U1</td><td>64.5℃</td><td>85.5℃</td></tr>
<tr><td>13</td><td>U2</td><td>64.3℃</td><td>87.5℃</td></tr>
<tr><td>14</td><td>T1core</td><td>68.8℃</td><td>90.9℃</td></tr>
<tr><td>15</td><td>T1</td><td>70.0℃</td><td>92.8℃</td></tr>
<tr><td>16</td><td>D100</td><td>37.0℃</td><td>92.4℃</td></tr>
<tr><td>17</td><td>D101</td><td>70.2℃</td><td>91.5℃</td></tr>
<tr><td>18</td><td>D102</td><td>65.1℃</td><td>88.4℃</td></tr>
<tr><td>19</td><td>C105</td><td>63.2℃</td><td>75.6℃</td></tr>
<tr><td>20</td><td>C106</td><td>63.4℃</td><td>85.2℃</td></tr>
<tr><td>21</td><td>U300</td><td>82.7℃</td><td>96.2℃</td></tr>
<tr><td>22</td><td>T2</td><td>73.4℃</td><td>92.9℃</td></tr>
<tr><td>23</td><td>C312</td><td>70.0℃</td><td>90.8℃</td></tr>
<tr><td>24</td><td>RG47</td><td>68.0℃</td><td>90.5℃</td></tr>
<tr><td>25</td><td>U431</td><td>60.5℃</td><td>82.2℃</td></tr>
<tr><td>26</td><td>RT22</td><td>61.1℃</td><td>82.3℃</td></tr>
<tr><td>27</td><td>TC</td><td>59.6℃</td><td>79.3℃</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>±0.0002%/℃(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：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-200-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) 74458 HRS (2) 79110 HRS (3) 91273 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 1747.5K hrs min. Telcordia SR-332 (Bellcore) ; 150.1K 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