Test Report： XLG-200-L

200W 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

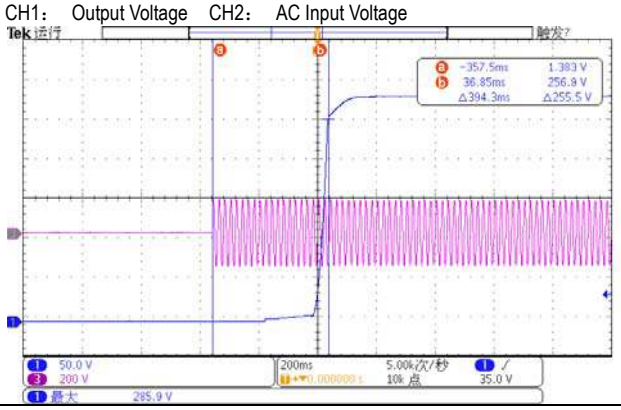
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	±5%	I/P：100 VAC / 305 VAC O/P：FULL/ MIN LOAD Ta：25℃	<±2.2%
2	CONSTANT CURRENT REGION	142V-285V	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	127 V~ 288 V
3	OPEN CIRCUIT VOLTAGE (max.)	300V	I/P： 230 VAC O/P：NO LOAD	288.2V
4	CURRENT RIPPLE	3.0% max. @ load≥50%rated voltage	I/P： 230 VAC O/P： FULL LOAD Ta：25℃	2.33%
5	CURRENT ADJ. RANGE	350 mA ~1050mA	I/P: 230 VAC O/P：TESTING Ta：25℃	322 mA ~1147mA
6	CONSTANT POWER	O/P：200W	I/P：230 VAC O/P：Vo×Io	TEST：OK
7	SET UP TIME(Max)	1200ms/115VAC 500ms/230VAC	I/P： 115 VAC I/P： 230 VAC O/P：FULL LOAD Ta：25℃	394/115 VAC 348/230 VAC

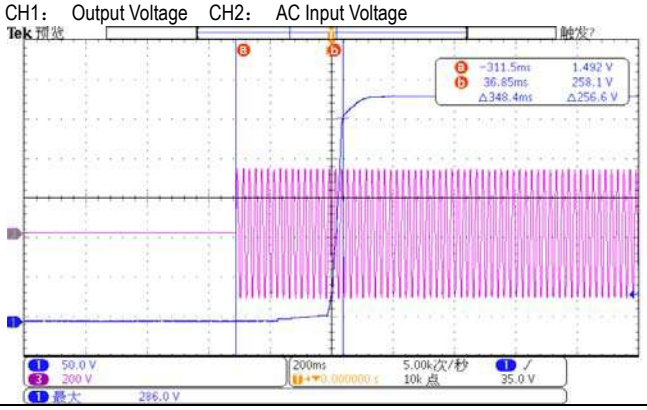
INPUT=115VAC/50HZ @ FULL LOAD

CH1： Output Voltage CH2： AC Input Voltage



INPUT=230 VAC/50HZ @ FULL LOAD

CH1： Output Voltage CH2： AC Input Voltage

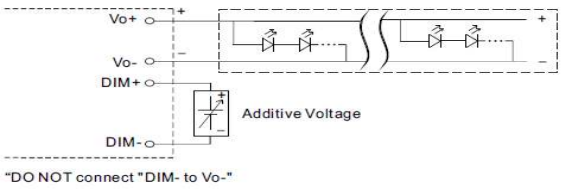


8 DIMMING OPERATION (for AB-Type)

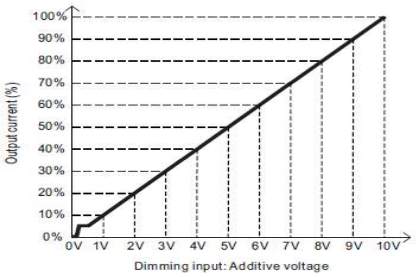
※ 3 in 1 dimming function (for AB-Type)

- 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: 100 μA (typ.)

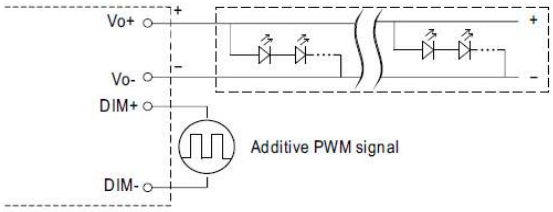
◎ Applying additive 0 ~ 10VDC



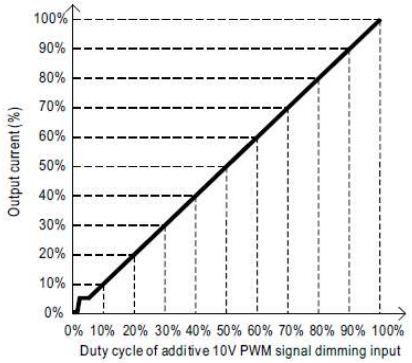
"DO NOT connect "DIM- to Vo-"



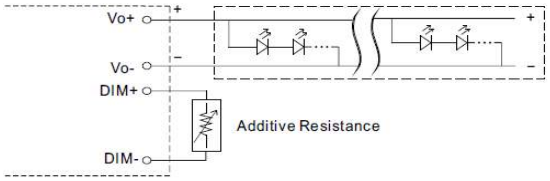
◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



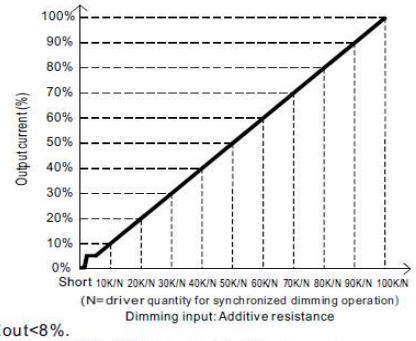
"DO NOT connect "DIM- to Vo-"



◎ 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

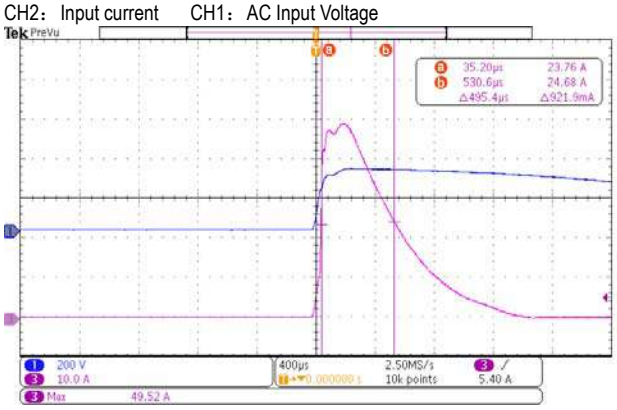
O/P：DIMMING TEST

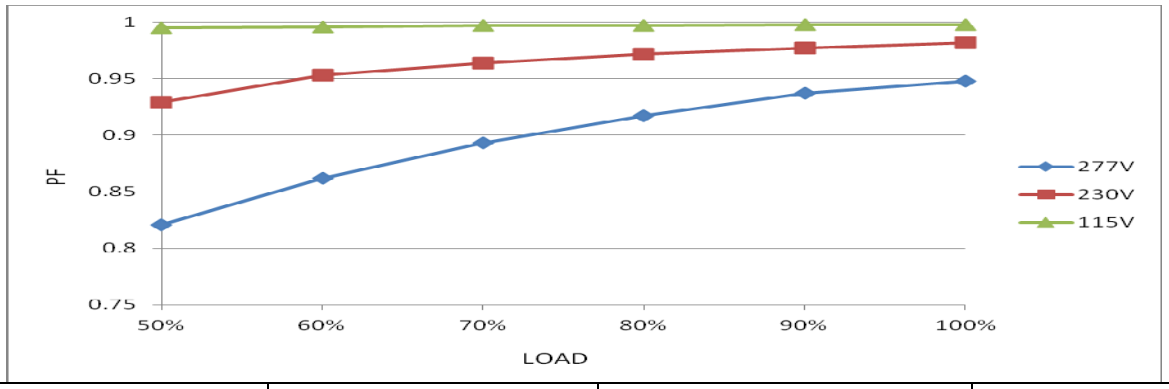
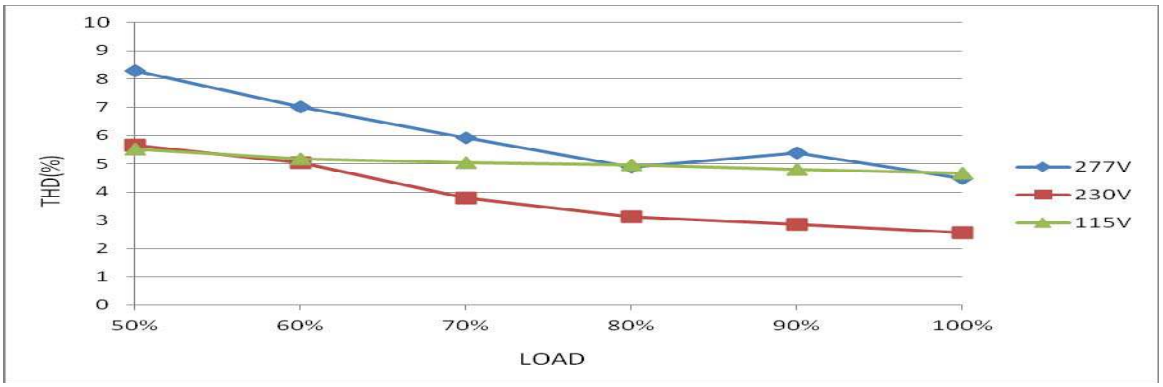
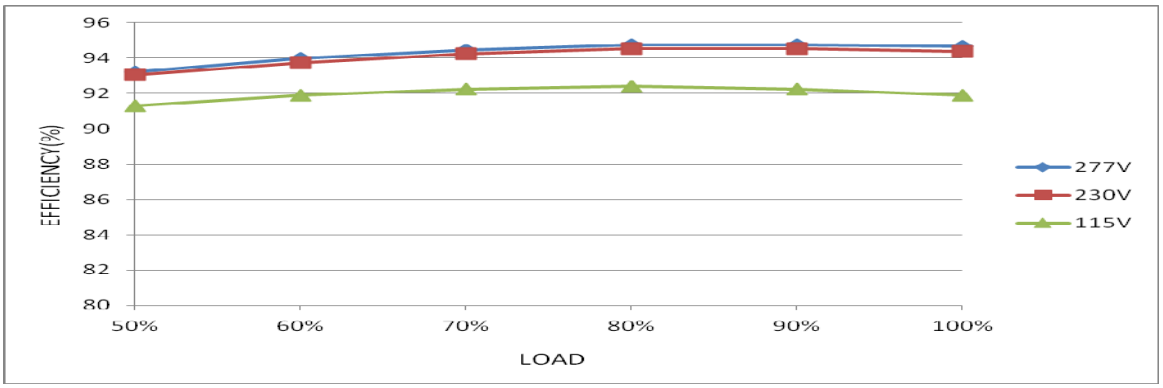
Ta：25℃

	DIMMING	Short	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
1	Output Current	0	0.089A	0.153A	0.217A	0.293A	0.359A	0.425A	0.502A	0.570A	0.642A	0.706A	0.706A
	%	0%	12.77%	21.81%	30.99%	41.83%	51.21%	60.64%	71.77%	81.43%	91.74%	100.80%	100.79%
2	PWM	0V	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current	0	0.079A	0.149A	0.217A	0.285A	0.354A	0.424A	0.494A	0.567A	0.641A	0.705A	0.705A
	%	0%	11.27%	21.23%	30.97%	40.76%	50.63%	60.61%	70.63%	81.04%	91.50%	100.71%	100.71%
3	R	0%	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0	0.087A	0.151A	0.216A	0.292A	0.358A	0.423A	0.490A	0.558A	0.631A	0.701A	0.706A
	%	0%	12.49%	21.60%	30.79%	41.66%	51.09%	60.49%	70.00%	79.64%	90.13%	100.10%	100.80%

TEST RESULT：OK

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC	I/P：TESTING O/P：FULL LOAD (PLEASE CHECK DERATING CURVE) Ta：25℃	95V~315 V
			I/P： LOW-LINE-3V=97 V HIGH-LINE+10V=315 V O/P：FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON：30 Sec OFF：30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST：OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P： 100 VAC ~305 VAC O/P：FULL~NO LOAD Ta：25℃	TEST：OK
3	AC CURRENT	2.2A/115VAC 1.1A/230VAC 0.9A/277VAC	I/P： 115 VAC I/P： 230 VAC I/P： 277 VAC O/P：FULL LOAD Ta：25℃	I =1.909A/ 115VAC I = 0.941A/ 230VAC I = 0.796A/277VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P： 277 VAC O/P：NO LOAD Ta：25℃	L-FG： 0.303mA N-FG： 0.303mA
5	STANDBY POWER CONSUMPTION	<0.5W for AB -Type	I/P：230VAC O/P：STANDBY Ta：25℃	0.3846W
6	INRUSH CURRENT(Typ)	230 V/ 65A COLD START (twidth=550us measured at 50% Ipeak) COLD START at 230V	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I=49.52A/ 230VAC Twidth = 495.4us
	INPUT=230VAC/50HZ @ FULL LOAD CH2：Input current CH1：AC Input Voltage 			

7	POWER FACTOR	0.97/ 115VAC@ FULL LOAD 0.95/ 230VAC@ FULL LOAD 0.92/ 277VAC@ FULL LOAD	I/P： 115 VAC I/P： 230 VAC I/P： 277 VAC O/P：FULL LOAD Ta：25℃	PF=0.998 @ FULL LOAD /115VAC PF=0.982 @ FULL LOAD /230VAC PF=0.948@ FULL LOAD /277VAC
	PF vs LOAD 			
8	TOTAL HARMONIC DISTORTION	THD＜10% （@load≥50%/115VAC； @load≥50%/230VAC； @load≥75%/277VAC）	I/P： 115 VAC I/P： 230 VAC I/P： 277 VAC O/P：50% /75% LOAD Ta：25℃	THD=5.96% @50% load /115VAC THD=5.65% @50% load /230VAC THD=5.43% @75% load /277VAC
	THD vs LOAD 			
9	EFFICIENCY(Typ)	94%	I/P： 230VAC O/P：FULL LOAD Ta：25℃	94.35%
	EFFICIENCY vs LOAD 			

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P： 100VAC I/P： 230VAC I/P： 305VAC O/P：FULL LOAD	O.T.P. Active Shut down output voltage， re-power on to recovery
2	OVER VOLTAGE PROTECTION	V1: 301V~ 360V	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P:MIN LOAD Ta:25℃	334.8V/ 305VAC 334.8V/ 230VAC 334.9V/ 100VAC Shut down output voltage, re-power on to recover
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P： 100VAC I/P： 230VAC I/P： 305VAC O/P： FULL LOAD Ta：25℃	NO DAMAGE Hiccup mode or Constant Current Limiting，recovers automatically after fault condition is removed
4	INPUT OVER VOLTAGE (for XLG-100I only)	320 ~ 390VAC (Shut down output voltage when the input voltage exceeds protection voltage Can survive input voltage stress of 440Vac for 48 hours	I/P：TESTING O/P: FULL LOAD Ta:25℃	PASS

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q2 Rated 9A/600V	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 447V (2) 450V (3) 445V
2	PFC Transistor	Q1 Rated 20A/600V	I/P：High-Line +3V =308V O/P: (1)Full Load (2)Output Short (3) Full Load continue Ta：25℃	 (1) 459V (2) 439V (3) 461V
3	P.F.C DIODE	D1 Rated 600V/9A	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 451V (2) 431V (3) 452V
4	Diode Peak Voltage	D100 Rated 6A/400V	I/P：High-Line +3V =308V O/P: (1)Full Load (2)Output Short (3) Full Load continue (4) No Load Ta：25℃	 (1) 301V (2) 30V (3)290V (4) 295V

5	Input Capacitor Voltage	C5 Rated: 100 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) 457V (2) 444V (3) 458V (4) 448V
6	Control IC Voltage Test	U1 Rated 27 V	I/P: High-Line +3V =308V O/P(1)FULL LOAD (2) Output Short (3) O.V.P (4)NO LOAD VR.LOW LINE Ta: 25℃	 (1) 12.0V (2) 12.0V (3) 12.0V (4) 12.0V

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: 4.125KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 1.8 KVAC/min Ta: 25℃	I/P-O/P: 2.673mA I/P-FG: 2.485mA O/P-FG: 2.429mA 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℃	12mΩ

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.			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	TEMPERATURE RISE TEST	MODEL： XLG-200-L 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=51.2℃		

NO	Position	ROOM AMBIENT Ta= 29.1 ℃	HIGH AMBIENT Ta=51.2 ℃
1	RTH1	66.5℃	84.3℃
2	ZNR3	58.0℃	79.9℃
3	BD1	61.4℃	83.0℃
4	L2	59.4℃	81.4℃
5	C9	59.5℃	81.2℃
6	C10	58.6℃	80.7℃
7	C5	58.0℃	79.6℃
8	Q1	58.8℃	80.4℃
9	U1	57.7℃	79.2℃
10	C15	59.6℃	82.2℃
11	D1	61.2℃	84.7℃
12	Q2	63.0℃	86.1℃
13	Q3	62.1℃	85.2℃
14	R7	60.4℃	82.8℃
15	U2	61.1℃	84.2℃
16	D2	60.7℃	83.2℃
17	T1	61.8℃	84.5℃
18	C200	56.9℃	79.1℃
19	C106	57.4℃	79.3℃
20	C108	55.9℃	77.7℃
21	LF100	54.1℃	76.2℃
22	D100	62.6℃	85.1℃
23	D101	62.5℃	84.8℃
24	D102	60.6℃	83.5℃
25	D103	60.4℃	82.2℃
26	J102	57.0℃	79.1℃
27	RTH3	56.5℃	78.4℃
28	TC	54.5℃	75.7℃

2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P： 305VAC/110VAC O/P：FULL LOAD Ta= -45℃/-35℃	TEST：OK

3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 ℃ NO DAMAGE	I/P： 305VAC O/P：FULL LOAD Ta=50 ℃ HUMIDITY= 95% R.H	TEST：OK
4	TEMPERATURE COEFFICIENT	±0.03%/℃(0~60℃)	I/P： 230 VAC O/P：FULL LOAD	±0.0003%/℃(0~60℃)
5	STORAGE TEMPERATURE TEST	-40~+80℃	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	
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：SUPPOSE C106 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Tc= 70 ℃ LIFE TIME (2) I/P： 230VAC O/P：75% LOAD Tc= 70 ℃ LIFE TIME (3) I/P： 230VAC O/P：50% LOAD Tc= 70 ℃ LIFE TIME		(1) 187578 HRS (2) 202758 HRS (3) 241139 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 749.06 K hrs min. Telcordia SR-332 (Bellcore) 200.67K 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