Test Report： XLG-150-L

150W 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

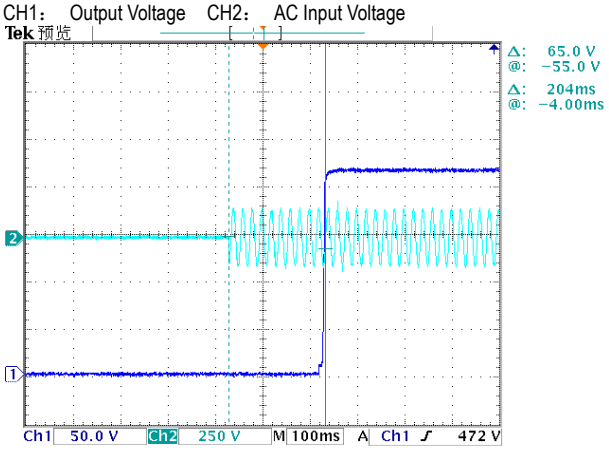
■ DESIGN VERIFY TEST

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	120V-214V	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	107 V~ 218 V
3	OPEN CIRCUIT VOLTAGE (max.)	225V	I/P： 230 VAC O/P：NO LOAD	219V
4	CURRENT RIPPLE	3.0% max. @ full load	I/P： 230 VAC O/P： FULL LOAD Ta：25℃	1.58%
5	CURRENT ADJ. RANGE	350 mA ~1050mA	I/P: 230 VAC O/P：TESTING Ta：25℃	308 mA ~1180mA
6	CONSTANT POWER	O/P：150W	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℃	204/115 VAC 174/230 VAC

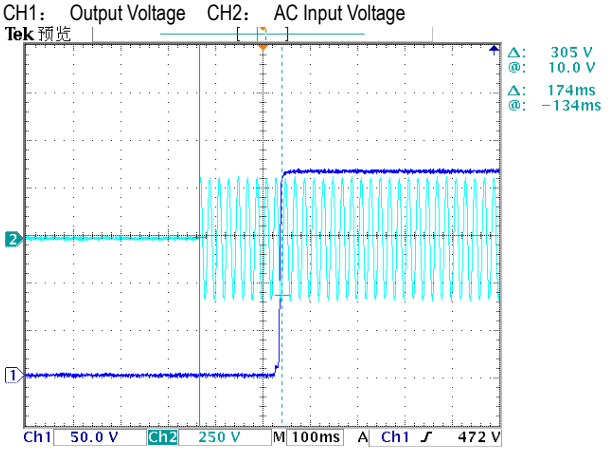
INPUT=115VAC/50HZ @ FULL LOAD

CH1： Output Voltage CH2： AC Input Voltage



INPUT=230 VAC/50HZ @ FULL LOAD

CH1： Output Voltage CH2： AC Input Voltage

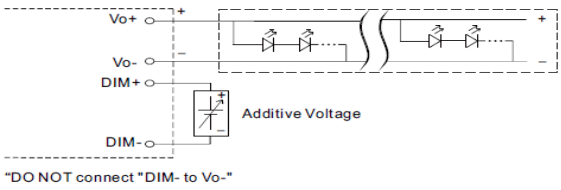


8 DIMMING OPERATION (for AB-Type)

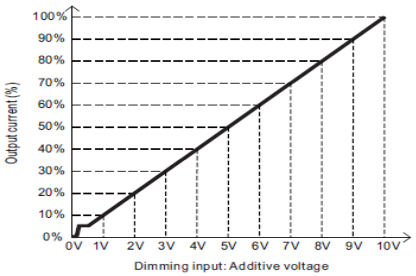
※ 3 in 1 dimming function (for AB-Type)

- 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.)

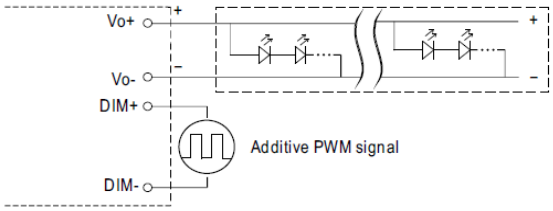
◎ Applying additive 0 ~ 10VDC



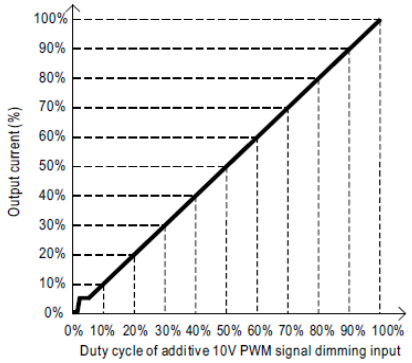
"DO NOT connect "DIM- to Vo-"



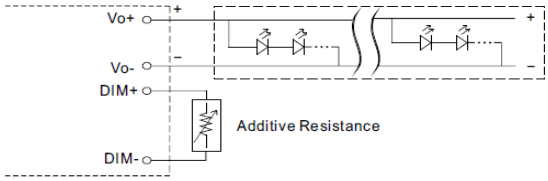
◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



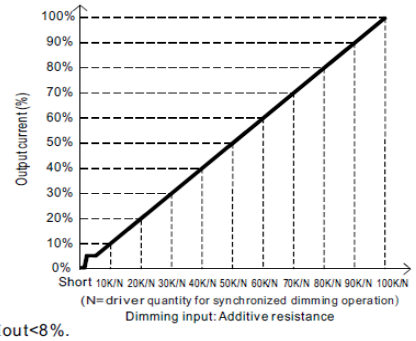
"DO NOT connect "DIM- to Vo-"



◎ 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

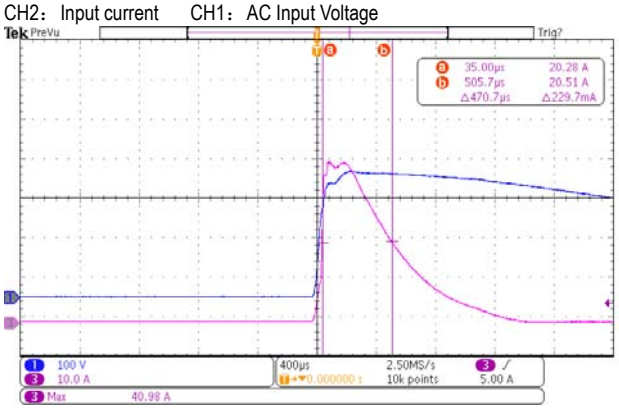
O/P：DIMMING TEST

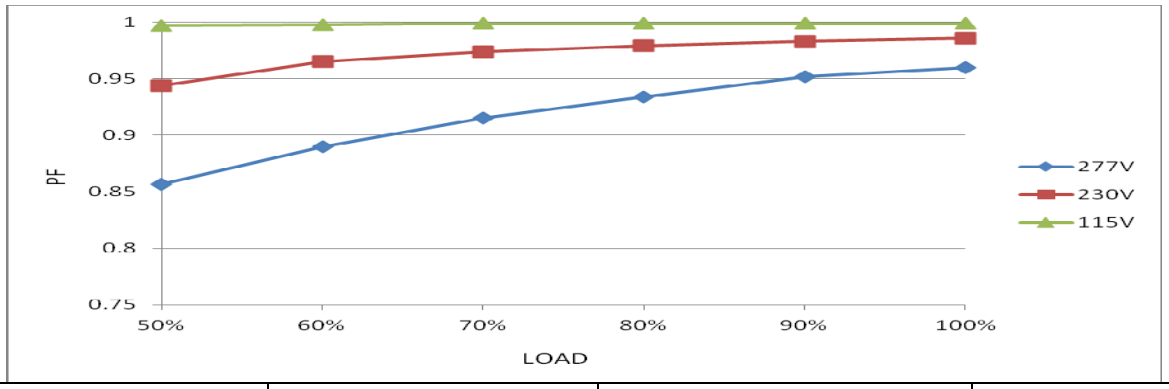
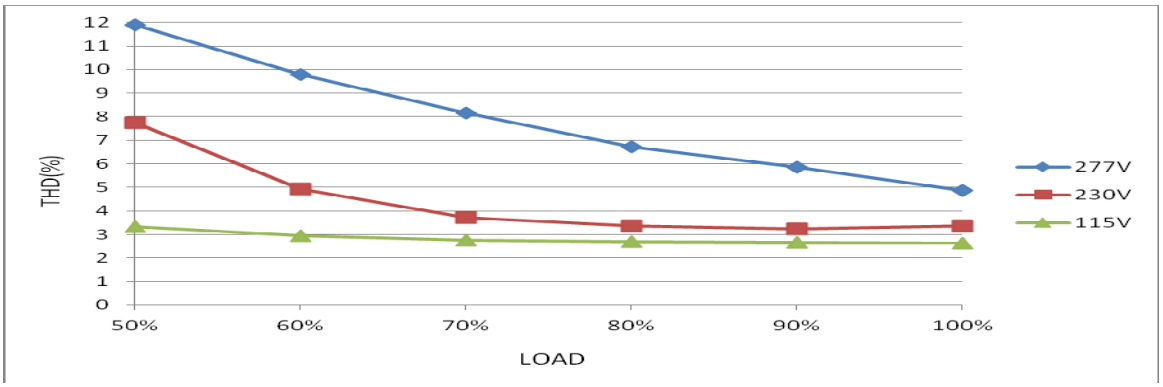
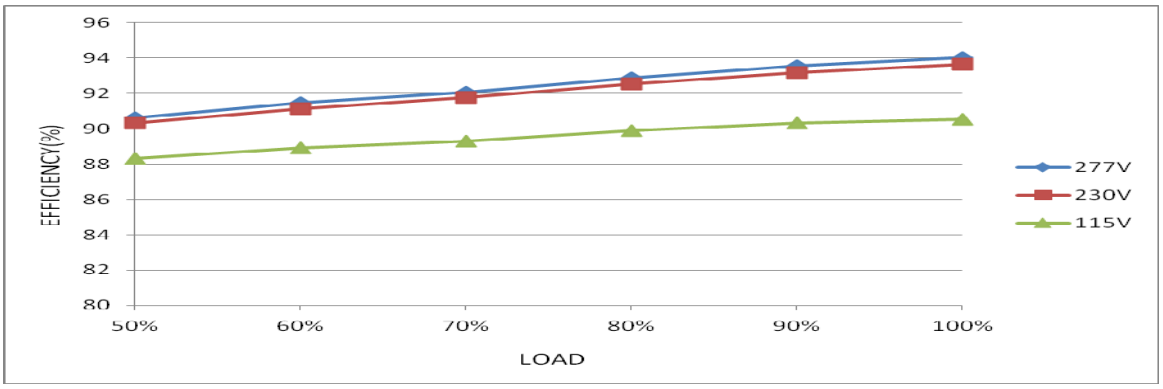
Ta：25℃

	DIMMING	Short	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
1	Output Current	0	0.092A	0.166A	0.231A	0.295A	0.370A	0.434A	0.510A	0.570A	0.641A	0.702A	0.702A
	%	0%	13.20%	23.76%	33.00%	42.16%	52.87%	62.06%	72.89%	81.41%	91.54%	100.35%	100.23%
2	PWM	0V	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current	0	0.093A	0.157A	0.218A	0.296A	0.355A	0.424A	0.489A	0.561A	0.640A	0.701A	0.702A
	%	0%	13.30%	22.44%	31.16%	42.33%	50.69%	60.50%	69.90%	80.17%	91.36%	100.18%	100.25%
3	R	0%	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0	0.093A	0.159A	0.218A	0.294A	0.359A	0.423A	0.488A	0.553A	0.618A	0.693A	0.702A
	%	0%	13.33%	22.70%	31.19%	42.03%	51.23%	60.44%	69.70%	79.00%	88.33%	99.03%	100.24%

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℃	90V~311 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	1.8A/115VAC 1.0A/230VAC 0.8A/277VAC	I/P： 115 VAC I/P： 230 VAC I/P： 277 VAC O/P：FULL LOAD Ta：25℃	I =1.434A/ 115VAC I = 0.702A/ 230VAC I = 0.592A/277VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P： 277 VAC O/P：NO LOAD Ta：25℃	L-FG： 0.291mA N-FG： 0.290mA
5	STANDBY POWER CONSUMPTION	<0.5W for AB -Type	I/P：230VAC O/P：STANDBY Ta：25℃	0.4055W
6	INRUSH CURRENT(Typ)	230 V/ 50A COLD START (twidth=500us measured at 50% Ipeak) COLD START at 230V	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I=40.98A/ 230VAC Twidth = 470.7us
	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=0.999 @ FULL LOAD /115VAC PF=0.986 @ FULL LOAD /230VAC PF=0.960@ 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=3.58% @50% load /115VAC THD=7.71% @50% load /230VAC THD=7.34% @75% load /277VAC
	THD vs LOAD 			
9	EFFICIENCY(Typ)	93%	I/P： 230VAC O/P：FULL LOAD Ta：25℃	93.64%
	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: 230V~ 265V	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P:MIN LOAD Ta:25℃	250.0V/ 305VAC 250.0V/ 230VAC 250.0V/ 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-150I 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	Q5 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) 451V (2) 438V (3) 434V
2	PFC Transistor	Q1 Rated 10.6A/650V	I/P：High-Line +3V =308V O/P: (1)Full Load (2)Output Short (3) Full Load continue Ta：25℃	 (1) 553V (2) 532V (3) 489V
3	P.F.C DIODE	D1 Rated 9 A/ 600V	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 489V (2) 446V (3) 470V
4	Diode Peak Voltage	Q100 Rated 10A/600V	I/P：High-Line +3V =308V O/P: (1)Full Load (2)Output Short (3) Full Load continue (4) No Load Ta：25℃	 (1) 494V (2) 17V (3)483V (4) 531V

5	Input Capacitor Voltage	C5 Rated: 82 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) 456V (2) 456V (3) 456V (4) 443V
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) 12.2V (2) 12.1V (3) 12.2V (4) 12.2V

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: 2.617mA I/P-FG: 2.591mA O/P-FG: 3.620mA 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: >9999 MΩ O/P-FG: >9999 M Ω NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	16mΩ

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-150-L 1. ROOM AMBIENT BURN-IN：2 HRS I/P： 230VAC O/P： FULL LOAD Ta= 27.1℃ 2. HIGH AMBIENT BURN-IN： 2 HRS I/P： 230VAC O/P： FULL LOAD Ta=55.1℃		

NO	Position	ROOM AMBIENT Ta= 27.1 ℃	HIGH AMBIENT Ta=55.1 ℃
1	RTH2	65.5℃	85.6℃
2	C2	57.8℃	79.7℃
3	C9	60.2℃	82.2℃
4	BD1	61.0℃	82.6℃
5	ZNR3	60.8℃	82.5℃
6	L2	62.4℃	84.1℃
7	C10	62.0℃	83.5℃
8	Q1	61.8℃	83.4℃
9	C5	66.6℃	86.2℃
10	D1	64.9℃	87.0℃
11	Q5	66.7℃	87.4℃
12	Q6	68.4℃	88.4℃
13	U1	60.5℃	81.8℃
14	U2	71.2℃	90.9℃
15	C15	65.4℃	85.6℃
16	T1	80.0℃	92.4℃
17	T1core	69.7℃	88.4℃
18	Q100	71.4℃	89.5℃
19	Q101	72.3℃	89.1℃
20	C105	68.1℃	87.3℃
21	C106	64.5℃	83.7℃
22	RTH3	63.7℃	84.3℃
23	TC	56.7℃	77.4℃

2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P： 305VAC/100VAC 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 55 ℃ NO DAMAGE	I/P： 305VAC O/P：FULL LOAD Ta=55 ℃ HUMIDITY= 95% R.H	TEST：OK
4	TEMPERATURE COEFFICIENT	±0.06%/℃(0~60℃)	I/P： 230 VAC O/P：FULL LOAD	±0.003%/℃(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~+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-L：SUPPOSE C105 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) 84075 HRS (2) 94064 HRS (3) 94318 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 712.17 K 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/ZHOUB	WENF	LIUWY