



Test Report: XLG-75-L

75W 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

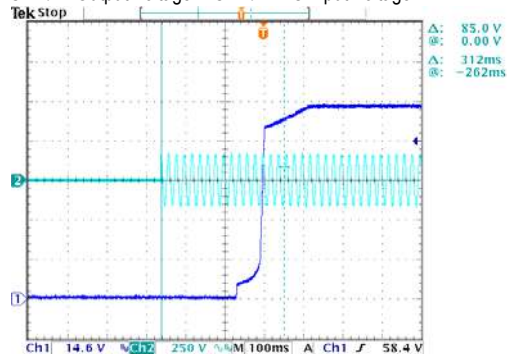
DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	$\pm 5\%$	I/P: 100 VAC / 305 VAC O/P: FULL/ MIN LOAD Ta: 25°C	$< \pm 5\%$
2	CONSTANT CURRENT REGION	53V-107V	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	47 V~ 108.9 V
3	OPEN CIRCUIT VOLTAGE (max.)	115V	I/P: 230 VAC O/P: NO LOAD	112V
4	CURRENT RIPPLE	3.0% max. @rated current	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	2.8%
5	CURRENT ADJ. RANGE	350 mA ~1050mA	I/P: 230 VAC O/P: TESTING Ta: 25°C	308mA- 1190mA
6	CONSTANT POWER	O/P: 75W	I/P: 230 VAC O/P: $V_o \times I_o$	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°C	312ms/115 VAC 358ms/230 VAC

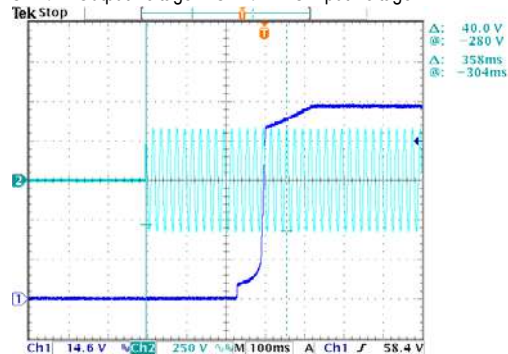
INPUT=115VAC/50HZ @ FULL LOAD

CH1: Output Voltage CH2: AC Input Voltage



INPUT=230 VAC/50HZ @ FULL LOAD

CH1: Output Voltage CH2: AC Input Voltage

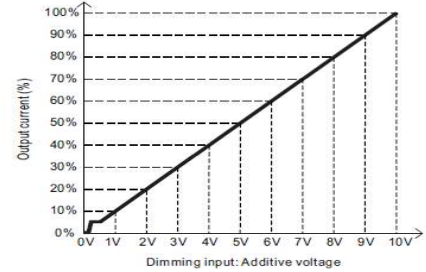
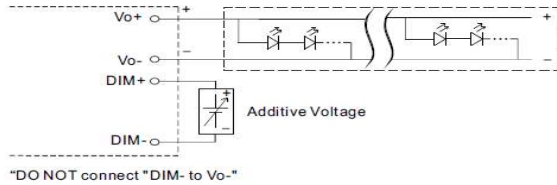


8 DIMMING OPERATION (for AB-Type)

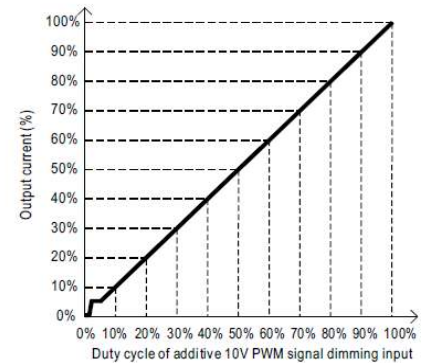
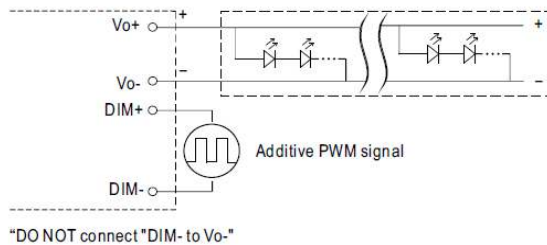
※ 3 in 1 dimming function (for AB-Type)

- 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 μ A (typ.)

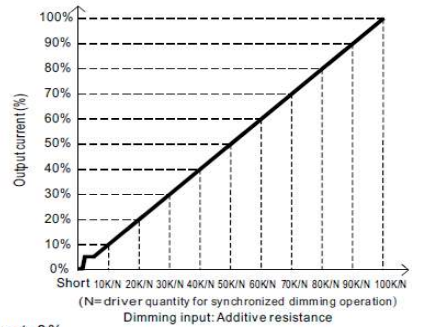
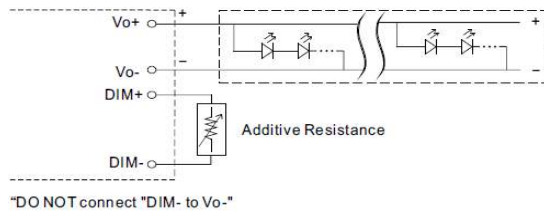
◎ Applying additive 0 ~ 10VDC



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



◎ Applying additive resistance:



- Note : 1. Min. dimming level is about 8% and the output current is not defined when $0\% < I_{out} < 8\%$.
 2. The output current could drop down to 0% when dimming input is about 0k Ω or 0Vdc, or 10V PWM signal with 0% duty cycle.

I/P: 230 VAC

O/P: DIMMING TEST

Ta: 25°C

	DIMMING	Short	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
1	Output Current	0	0.074A	0.139A	0.205A	0.271A	0.348A	0.411A	0.482A	0.556A	0.630A	0.702A	0.702A
	%	0%	10.57%	19.89%	29.26%	38.69%	49.71%	58.71%	68.86%	79.43%	90.00%	100.34%	100.34%
2	PWM	0V	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current	0	0.063A	0.128A	0.198A	0.266A	0.336A	0.408A	0.480A	0.556A	0.631A	0.702A	0.702A
	%	0%	8.97%	18.23%	28.29%	38.00%	48.06%	58.29%	68.57%	79.43%	90.17%	100.29%	100.23%
3	R	0%	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0	0.075A	0.141A	0.208A	0.274A	0.342A	0.420A	0.489A	0.558A	0.633A	0.703A	0.712A
	%	0%	10.69%	20.17%	29.66%	39.20%	48.80%	60.06%	69.86%	79.66%	90.43%	100.43%	101.71%

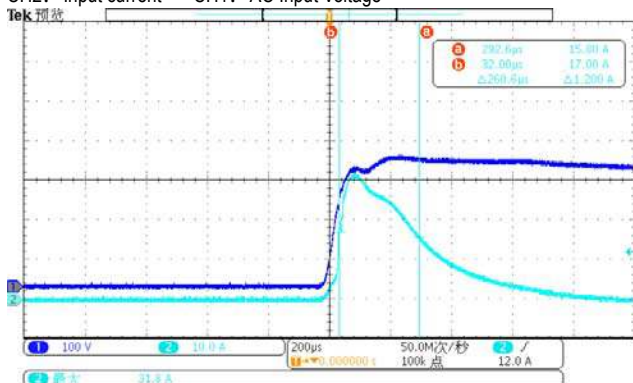
TEST RESULT: OK

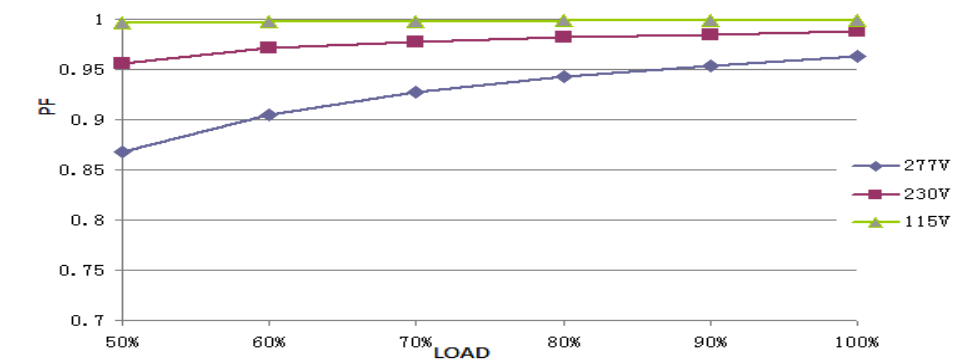
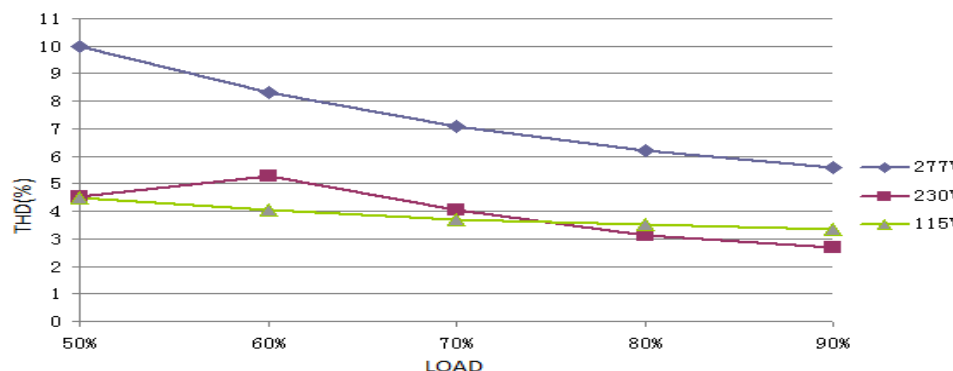
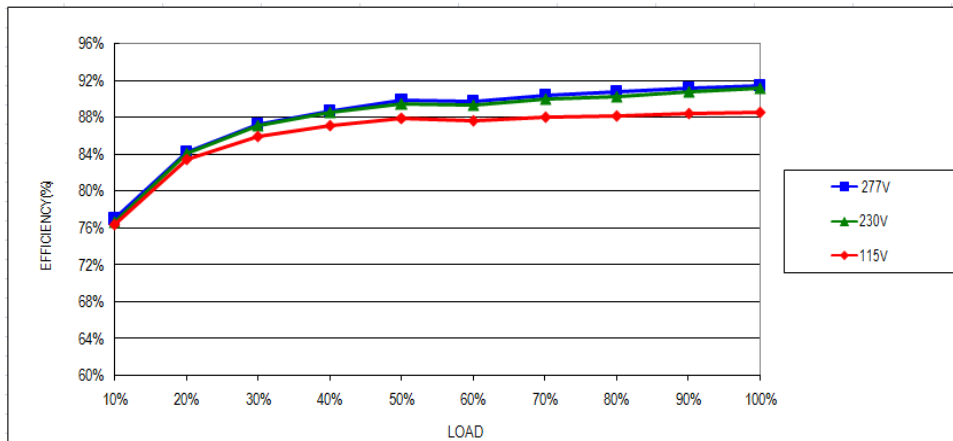
INPUT FUNCTION TEST

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°C	97V~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°C	TEST: OK
3	AC CURRENT	1.0A/115VAC 0.45A/230VAC 0.38A/277VAC	I/P: 115 VAC I/P: 230 VAC I/P: 277 VAC O/P: FULL LOAD Ta: 25°C	I=0.715A/ 115VAC I= 0.356A/ 230VAC I= 0.299A/277VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.324mA N-FG: 0.324mA
5	STANDBY POWER CONSUMPTION	<0.5W for AB -Type	I/P: 230VAC O/P: STANDBY Ta: 25°C	0.237W
6	INRUSH CURRENT(Typ)	230 V/ 50A COLD START (twidth=300us measured at 50% Ipeak) COLD START at 230V	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I=31.8A/ 230VAC Twidth = 260us

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°C	PF=0.999 @ FULL LOAD /115VAC PF=0.988 @ FULL LOAD /230VAC PF=0.963@ FULL LOAD /277VAC																																												
PF vs LOAD  <table><caption>PF vs LOAD Data (Approximate)</caption><thead><tr><th>LOAD (%)</th><th>115V PF</th><th>230V PF</th><th>277V PF</th></tr></thead><tbody><tr><td>50%</td><td>0.995</td><td>0.985</td><td>0.88</td></tr><tr><td>60%</td><td>0.995</td><td>0.99</td><td>0.91</td></tr><tr><td>70%</td><td>0.995</td><td>0.992</td><td>0.93</td></tr><tr><td>80%</td><td>0.995</td><td>0.994</td><td>0.94</td></tr><tr><td>90%</td><td>0.995</td><td>0.996</td><td>0.95</td></tr><tr><td>100%</td><td>0.995</td><td>0.998</td><td>0.96</td></tr></tbody></table>					LOAD (%)	115V PF	230V PF	277V PF	50%	0.995	0.985	0.88	60%	0.995	0.99	0.91	70%	0.995	0.992	0.93	80%	0.995	0.994	0.94	90%	0.995	0.996	0.95	100%	0.995	0.998	0.96																
LOAD (%)	115V PF	230V PF	277V PF																																													
50%	0.995	0.985	0.88																																													
60%	0.995	0.99	0.91																																													
70%	0.995	0.992	0.93																																													
80%	0.995	0.994	0.94																																													
90%	0.995	0.996	0.95																																													
100%	0.995	0.998	0.96																																													
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°C	THD=5.05% @50% load /115VAC THD=6.41% @50% load /230VAC THD=6.97% @75% load /277VAC																																												
THD vs LOAD  <table><caption>THD vs LOAD Data (Approximate)</caption><thead><tr><th>LOAD (%)</th><th>115V THD (%)</th><th>230V THD (%)</th><th>277V THD (%)</th></tr></thead><tbody><tr><td>50%</td><td>4.5</td><td>4.5</td><td>10.0</td></tr><tr><td>60%</td><td>4.2</td><td>5.2</td><td>8.5</td></tr><tr><td>70%</td><td>3.8</td><td>4.0</td><td>7.0</td></tr><tr><td>80%</td><td>3.5</td><td>3.2</td><td>6.2</td></tr><tr><td>90%</td><td>3.4</td><td>2.8</td><td>5.5</td></tr></tbody></table>					LOAD (%)	115V THD (%)	230V THD (%)	277V THD (%)	50%	4.5	4.5	10.0	60%	4.2	5.2	8.5	70%	3.8	4.0	7.0	80%	3.5	3.2	6.2	90%	3.4	2.8	5.5																				
LOAD (%)	115V THD (%)	230V THD (%)	277V THD (%)																																													
50%	4.5	4.5	10.0																																													
60%	4.2	5.2	8.5																																													
70%	3.8	4.0	7.0																																													
80%	3.5	3.2	6.2																																													
90%	3.4	2.8	5.5																																													
9	EFFICIENCY(Typ)	91%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	91.11%																																												
EFFICIENCY vs LOAD  <table><caption>EFFICIENCY vs LOAD Data (Approximate)</caption><thead><tr><th>LOAD (%)</th><th>115V Efficiency (%)</th><th>230V Efficiency (%)</th><th>277V Efficiency (%)</th></tr></thead><tbody><tr><td>10%</td><td>76</td><td>76</td><td>76</td></tr><tr><td>20%</td><td>84</td><td>84</td><td>84</td></tr><tr><td>30%</td><td>87</td><td>88</td><td>88</td></tr><tr><td>40%</td><td>88</td><td>89</td><td>89</td></tr><tr><td>50%</td><td>89</td><td>90</td><td>90</td></tr><tr><td>60%</td><td>89</td><td>90</td><td>90</td></tr><tr><td>70%</td><td>90</td><td>91</td><td>91</td></tr><tr><td>80%</td><td>90</td><td>91</td><td>91</td></tr><tr><td>90%</td><td>91</td><td>92</td><td>92</td></tr><tr><td>100%</td><td>91</td><td>92</td><td>92</td></tr></tbody></table>					LOAD (%)	115V Efficiency (%)	230V Efficiency (%)	277V Efficiency (%)	10%	76	76	76	20%	84	84	84	30%	87	88	88	40%	88	89	89	50%	89	90	90	60%	89	90	90	70%	90	91	91	80%	90	91	91	90%	91	92	92	100%	91	92	92
LOAD (%)	115V Efficiency (%)	230V Efficiency (%)	277V Efficiency (%)																																													
10%	76	76	76																																													
20%	84	84	84																																													
30%	87	88	88																																													
40%	88	89	89																																													
50%	89	90	90																																													
60%	89	90	90																																													
70%	90	91	91																																													
80%	90	91	91																																													
90%	91	92	92																																													
100%	91	92	92																																													

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER POWER PROTECTION	110-150%	I/P: 100VAC I/P: 230VAC I/P: 305VAC O/P: TESTING Ta: 25°C	114.5%/ 100VAC 115.2%/ 230VAC 115.6%/ 305VAC Hiccup mode, recovers automatically after fault condition is removed
2	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
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°C	NO DAMAGE Hiccup mode or Constant Current Limiting, recovers automatically after fault condition is removed
4	INPUT OVER VOLTAGE (for XLG-75I only)	320 ~ 370VAC (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°C	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 6A/ 800V	I/P: High-Line +3V =308V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 640V (2) 472V (3) 640V
2	PFC Transistor	Q1 Rated 10.6A/650 V	I/P: High-Line +3V =308V O/P: (1) Full Load (2) Output Short (3) Full Load continue	(1) 488V (2) 452V (3) 456V
3	P.F.C DIODE	D5 Rated 3A/600V	I/P: High-Line +3V =308V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 456V (2) 432V (3) 436V
4	Diode Peak Voltage	Q101 Rated 10A/400 V	I/P: High-Line +3V =308V O/P: (1) Full Load (2) Output Short (3) Full Load continue (4) No Load Ta: 25°C	(1) 324V (2) 244V (3) 328V (4) 360V



75W Constant Power Mode LED Driver

XLG-75 series

5	Input Capacitor Voltage	C5 Rated: 33 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°C	(1) 448V (2) 449V (3) 442V (4) 442V
6	Control IC Voltage Test	U2 Rated 27 V	I/P: High-Line +3V =308V O/P:(1)FULL LOAD (2) Output Short (3)NO LOAD VR.LOW LINE Ta: 25°C	(1) 15.5V (2) 15.5V (3) 15.5V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4.2KVAC/min I/P-FG: 2.1KVAC/min O/P-FG: 1.5KVAC/min	I/P-O/P: 4.6 KVAC/min I/P-FG: 2.52 KVAC/min O/P-FG: 1.8 KVAC/min Ta: 25°C	I/P-O/P: 3.452mA I/P-FG: 3.590mA O/P-FG: 2.758mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P: 500VDC>100M Ω I/P-FG: 500VDC>100M Ω O/P-FG: 500VDC>100M Ω	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta: 25°C	I/P-O/P: >9999G Ω I/P-FG: >9999 G Ω O/P-FG: >9999 G Ω NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 m Ω	40A / 2min Ta:25°C	17m Ω

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°C	PASS
2	CONDUCTION	EN55015	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	PASS Test by certified Lab
3	RADIATION	EN55015	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	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°C	CRITERIA A
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 2KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	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°C	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-75-L 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 24.7℃ 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=61.8℃ <table><thead><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 24.7 ℃</th><th>HIGH AMBIENT Ta=61.8 ℃</th></tr></thead><tbody><tr><td>1</td><td>ZNR3</td><td>47.5℃</td><td>83.3℃</td></tr><tr><td>2</td><td>RTH1</td><td>54.8℃</td><td>88.4℃</td></tr><tr><td>3</td><td>C1</td><td>49.8℃</td><td>85.9℃</td></tr><tr><td>4</td><td>BD1</td><td>57.2℃</td><td>93.1℃</td></tr><tr><td>5</td><td>Q1</td><td>55.1℃</td><td>92.8℃</td></tr><tr><td>6</td><td>Q2</td><td>61.6℃</td><td>103.1℃</td></tr><tr><td>7</td><td>U1</td><td>53.2℃</td><td>89.5℃</td></tr><tr><td>8</td><td>U2</td><td>54.8℃</td><td>91.6℃</td></tr><tr><td>9</td><td>C5</td><td>55.2℃</td><td>91.9℃</td></tr><tr><td>10</td><td>C50</td><td>53.7℃</td><td>90.2℃</td></tr><tr><td>11</td><td>L2</td><td>54.9℃</td><td>90.8℃</td></tr><tr><td>12</td><td>T1</td><td>61.7℃</td><td>98.8℃</td></tr><tr><td>13</td><td>Q101</td><td>57.2℃</td><td>93.2℃</td></tr><tr><td>14</td><td>C102</td><td>51.1℃</td><td>63.6℃</td></tr><tr><td>15</td><td>C104</td><td>54.2℃</td><td>89.8℃</td></tr><tr><td>16</td><td>RT2</td><td>52.8℃</td><td>89.2℃</td></tr><tr><td>17</td><td>TC</td><td>50.2℃</td><td>85.1℃</td></tr></tbody></table>			NO	Position	ROOM AMBIENT Ta= 24.7 ℃	HIGH AMBIENT Ta=61.8 ℃	1	ZNR3	47.5℃	83.3℃	2	RTH1	54.8℃	88.4℃	3	C1	49.8℃	85.9℃	4	BD1	57.2℃	93.1℃	5	Q1	55.1℃	92.8℃	6	Q2	61.6℃	103.1℃	7	U1	53.2℃	89.5℃	8	U2	54.8℃	91.6℃	9	C5	55.2℃	91.9℃	10	C50	53.7℃	90.2℃	11	L2	54.9℃	90.8℃	12	T1	61.7℃	98.8℃	13	Q101	57.2℃	93.2℃	14	C102	51.1℃	63.6℃	15	C104	54.2℃	89.8℃	16	RT2	52.8℃	89.2℃	17	TC	50.2℃	85.1℃
NO	Position	ROOM AMBIENT Ta= 24.7 ℃	HIGH AMBIENT Ta=61.8 ℃																																																																									
1	ZNR3	47.5℃	83.3℃																																																																									
2	RTH1	54.8℃	88.4℃																																																																									
3	C1	49.8℃	85.9℃																																																																									
4	BD1	57.2℃	93.1℃																																																																									
5	Q1	55.1℃	92.8℃																																																																									
6	Q2	61.6℃	103.1℃																																																																									
7	U1	53.2℃	89.5℃																																																																									
8	U2	54.8℃	91.6℃																																																																									
9	C5	55.2℃	91.9℃																																																																									
10	C50	53.7℃	90.2℃																																																																									
11	L2	54.9℃	90.8℃																																																																									
12	T1	61.7℃	98.8℃																																																																									
13	Q101	57.2℃	93.2℃																																																																									
14	C102	51.1℃	63.6℃																																																																									
15	C104	54.2℃	89.8℃																																																																									
16	RT2	52.8℃	89.2℃																																																																									
17	TC	50.2℃	85.1℃																																																																									
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 60 ℃ NO DAMAGE	I/P: 305VAC O/P: FULL LOAD Ta=60 ℃ HUMIDITY= 95% R.H	TEST: OK																																																																								
4	TEMPERATURE COEFFICIENT	±0.03%/℃ (0~60℃)	I/P: 230 VAC O/P: FULL LOAD	±0.003%/℃ (0~60℃)																																																																								



75W Constant Power Mode LED Driver

XLG-75 series

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~+60℃	1. Thermal shock Temperature: -45℃ ~ +65℃ 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-75-L: SUPPOSE C104 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) 84396 HRS (2) 115762 HRS (3) 131054 HRS	
9	MTBF	Conducted by Parts Stress Analysis Prediction 1232.28 K hrs min. Telcordia SR-332 (Bellcore) 376.3K 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