



Test Report: XLG-100-L

100W 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

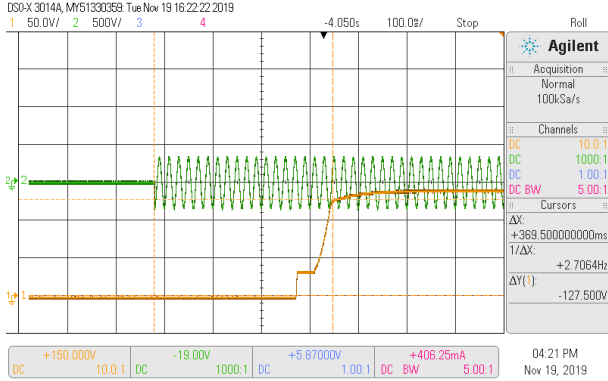
ENVIRONMENT TEST

■ DESIGN VERIFY TEST

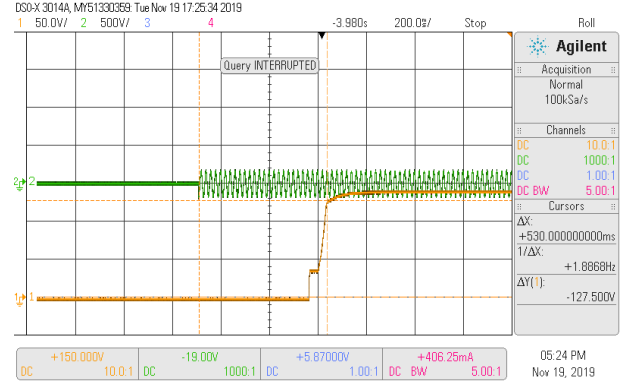
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	±5%	I/P:230VAC O/P:LEDmax/ LEDmin CP: 700mA & 1050mA Ta:25°C	CP700mA: 0.702 A/230VAC@CV MAX-1V 0.703A/230VAC@CV MIN 0.429% CP 1050mA: 1.054/230VAC@CV MAX-1V 1.054A/230VAC@CV MIN 0.38%
2	FULL POWER CURRENT RANGE	700~1050mA	I/P: 230VAC O/P:LEDmax CP: 700mA & 1050mA Ta:25°C	146.59V/700mA/230VAC 146.59V/1050mA/230VAC
3	CONSTANT POWER	O/P : 100W	I/P : 230 VAC O/P : Vo×Io	TEST : OK
4	OPEN CIRCUIT VOLTAGE (max)	149V	I/P: 230VAC O/P:NO LOAD CP: OPEN Ta:25°C	147.05V
5	CONSTANT CURRENT REGION	CP 700mA: 71V~ 142V CP 1050mA: 71V~ 95V	I/P: 230VAC O/P:LEDmax CP: 700mA & 1050mA Ta:25°C	CP 700mA: 11.5V~ 142V/230VAC CP 1050mA: 11.6V~ 95V/230VAC
6	CURRENT ADJ. RANGE	CH1: 350mA~1050mA	I/P: 230VAC O/P:CVmin& CVmax-1V CP: 700mA & 1050mA Ta:25°C	241mA~1099mA/230VAC@CV MAX-1V 242mA~1221mA /230VAC@CV MIN
7	CURRENT RIPPLE	3.0% max.	I/P: 230VAC O/P:LEDmax CP: 700mA & 1050mA Ta:25°C	CP 700mA: 1.49% CP 1050mA: 1.11%
8	SET UP TIME	230VAC/ 500 ms (Max) 115VAC/ 1200 ms (Max)	I/P: 230VAC I/P: 115VAC O/P:LEDmax CP 700mA Ta:25°C	230VAC/369.5ms 115VAC/ 530ms

INPUT=230VAC/50HZ @ LEDMAX@ CP 700mA
CH1 : Output Voltage CH2 : AC Input Voltage



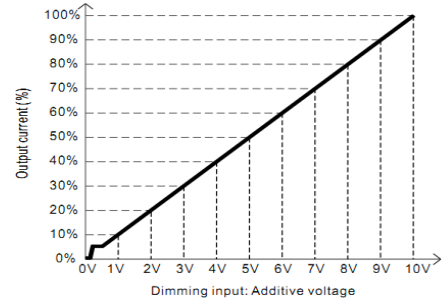
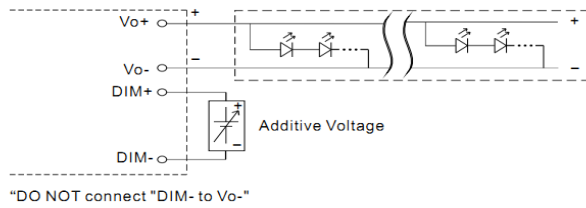
INPUT=115VAC/60HZ @ LEDMAX@ CP 700mA
CH1 : Output Voltage CH2 : AC Input Voltage



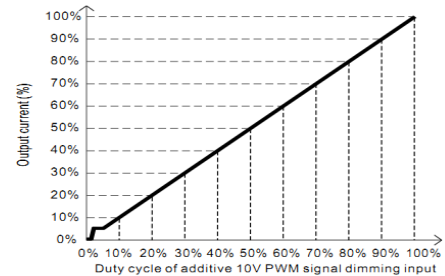
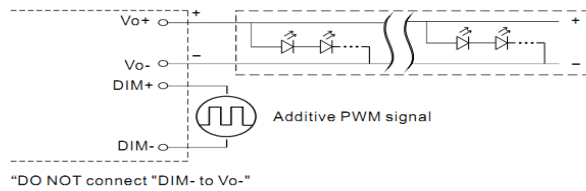
9 DIMMING OPERATION (for AB-Type)

- 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: 100uA (typ.)

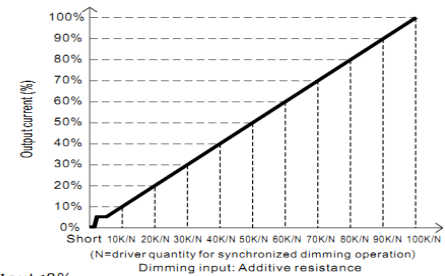
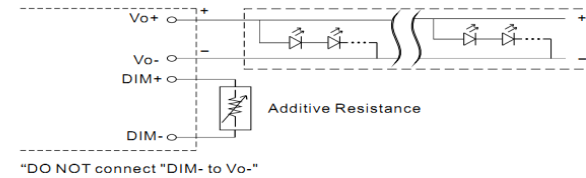
☉ Applying additive 0 ~ 10VDC



☉ 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% < 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

	V	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
1	Output Current	0.0000 0A	0.091 A	0.15 5A	0.231A	0.296A	0.361A	0.437A	0.502A	0.572A	0.644A	0.701A	0.701A
	%	0.00%	13.00 %	22.1 4%	33.00 %	42.29 %	51.57 %	62.43 %	71.71 %	81.71 %	92.00 %	100.09 %	100.09 %
2	PWM	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current (100Hz)	0.0000 0A	0.090 A	0.15 5A	0.220A	0.296A	0.361A	0.427A	0.502A	0.570A	0.640A	0.701A	0.701A

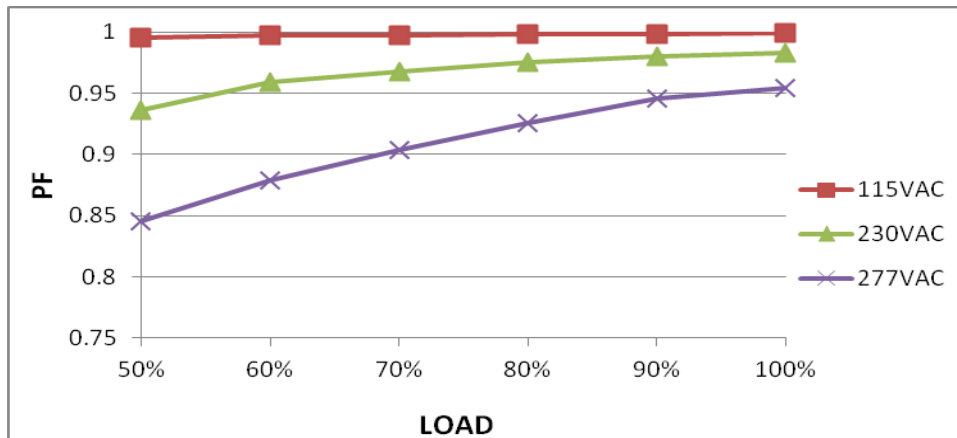
3	%	0.00%	12.86%	22.14%	31.43%	42.29%	51.57%	61.00%	71.71%	81.43%	91.43%	100.09%	100.09%
	R	SHORT	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0.00000A	0.091A	0.155A	0.220A	0.296A	0.361A	0.426A	0.491A	0.562A	0.627A	0.700A	0.701A
	%	0.00%	13.00%	22.14%	31.43%	42.29%	51.57%	60.86%	70.14%	80.29%	89.57%	100.01%	100.09%

TEST RESULT : OK

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305 VAC	I/P:TESTING O/P:LEDmax CP 700mA Ta:25°C	72V~305 V
			I/P: LOW-LINE-3V=97V HIGH-LINE+10V=315 V O/P: LEDmax / LEDmin CP 700mA (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 700mA Ta:25°C	TEST:OK
3	INPUT CURRENT (TYP)	277VAC/ 0.42A 230VAC/ 0.5 A 115VAC/ 1.1A	I/P: 277VAC /230VAC/115VAC O/P:LEDmax CP 700mA Ta:25°C	I=0.401A/ 277VAC I=0.476A/ 230VAC I=0.957A/115VAC
4	POWER FACTOR(TYP)	0.92/277 VAC LEDMAX 0.95/230 VAC LEDMAX 0.97/115 VAC LEDMAX	I/P: 277VAC/230VAC/115VAC O/P:LEDmax CP 700mA Ta:25°C	PF=0.954 /277V/100%LOAD PF=0.983/230V/100%LOAD PF=0.999/115V/100%LOAD

P.F vs LOAD



5	EFFICIENCY (TYP)	92.5%	I/P: 230VAC O/P: LEDmax CP 700mA Ta: 25°C	93.39%																												
<p>EFFICIENCY vs LOAD</p> <table border="1"> <caption>Efficiency vs Load Data</caption> <thead> <tr> <th>Load (%)</th> <th>115VAC (%)</th> <th>230VAC (%)</th> <th>277VAC (%)</th> </tr> </thead> <tbody> <tr><td>50%</td><td>90.0</td><td>92.0</td><td>92.5</td></tr> <tr><td>60%</td><td>91.0</td><td>93.0</td><td>93.5</td></tr> <tr><td>70%</td><td>91.5</td><td>93.5</td><td>94.0</td></tr> <tr><td>80%</td><td>91.0</td><td>93.5</td><td>93.5</td></tr> <tr><td>90%</td><td>90.5</td><td>93.0</td><td>93.5</td></tr> <tr><td>100%</td><td>91.0</td><td>93.5</td><td>93.5</td></tr> </tbody> </table>					Load (%)	115VAC (%)	230VAC (%)	277VAC (%)	50%	90.0	92.0	92.5	60%	91.0	93.0	93.5	70%	91.5	93.5	94.0	80%	91.0	93.5	93.5	90%	90.5	93.0	93.5	100%	91.0	93.5	93.5
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6	INRUSH CURRENT (TYP)	230V/ 50A COLD START (twidh=300 us measured at 50% Ipeak) COLD START	I/P: 230VAC O/P: LEDmax CP 700mA Ta: 25°C	I=41.8A/ 230VAC T50= 264 us																												
<p>INPUT=230VAC/ 50HZ @ LEDMAX CH2 : AC Input Voltage CH1 : Input current</p> <table border="1"> <caption>Inrush Current Waveform Data</caption> <thead> <tr> <th>Parameter</th> <th>Value</th> </tr> </thead> <tbody> <tr><td>Ch2 Max</td><td>310 V</td></tr> <tr><td>Ch1 Max</td><td>41.8 A</td></tr> <tr><td>Δ (Current)</td><td>240mA</td></tr> <tr><td>Φ (Current)</td><td>960mA</td></tr> <tr><td>Δ (Voltage)</td><td>264μs</td></tr> <tr><td>Φ (Voltage)</td><td>24.0μs</td></tr> </tbody> </table>					Parameter	Value	Ch2 Max	310 V	Ch1 Max	41.8 A	Δ (Current)	240mA	Φ (Current)	960mA	Δ (Voltage)	264μs	Φ (Voltage)	24.0μs														
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7	TOTAL HARMONIC DISTORTION	THD < 10% @ load, > 50% at 230VAC/115VAC, load, > 75% at 277VAC	I/P : 277VAC I/P : 230VAC I/P : 115VAC O/P : 50%/75% LOAD CP 700mA Ta : 25°C	THD : 8.35 %277V 75% THD : 6.99 %230V 50% THD : 3.89 %115V 50%																												
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8	LEAKAGE CURRENT	<0.75mA / 277VAC	I/P : 277 VAC O/P : NO LOAD Ta : 25°C	L-FG : 0.125 mA N-FG : 0.125 mA
9	STANDBY POWER CONSUMPTION	STANDBY POWER CONSUMPTION <0.5W for AB –Type(Dimming Off)	I/P : 230 VAC O/P : STANDBY(AB) Ta : 25°C	0.3407W/AB

ROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	160V~220V	I/P: 305VAC I/P: 230VAC I/P: 100VAC CP 700mA O/P:MIN LOAD Ta:25°C	172.61V / 305VAC 173.59V/ 230VAC 173.25V/ 100VAC PROTECTION TYPE : Shut down output voltage, re-power on to recovery
2	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 305VAC I/P: 100VAC O/P:LEDmax CP 700mA Ta:25°C	O.T.P. Active PROTECTION TYPE : Shut down output voltage, re-power on to recovery
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 305VAC I/P: 100VAC O/P: LEDMAX CP: 700mA &1050mA Ta:25°C	NO DAMAGE PROTECTION TYPE : Hiccupmode or Constant current limiting, recovers automatically after fault condition is removed CP:
4	Over Power Protection (For XLG-100)	105%-150%	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P:: 700mA &1050mA Ta:25°C	133%/ 305VAC 133%/ 230VAC 133%/ 100VAC PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed
5	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°C	PASS

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q3 Rated: 7.5A /650V	I/P:High-Line +3V =308V I/P:Low-Line -3V = 97V AC ON/OFF CP: 700mA&1050mA VDS: O/P: (1)LEDmax	308V CP: 700mA CP: 1050mA VDS: (1) 419V (1) 420V (2) 415V (2) 416V (3) 419V (3) 416V

			<p>(2) LEDmin (3) Output Short (4)LED min dimming on/off</p> <p>Ta:25°C</p>	<p>(4) 415V 97V CP: 700mA VDS: (1) 435V (2) 431V (3) 419V (4) 431V</p>	<p>(4) 416V CP: 1050mA VDS: (1) 433V (2) 432V (3) 416V (4) 432V</p>
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated: 12.5A/700V	<p>I/P:High-Line +3V =308V I/P:Low-Line -3V = 97V</p> <p>AC ON/OFF CP: 700mA VDS: O/P: (1)LEDmax (2) LEDmin (3) Output Short (4)LED min dimming on/off</p> <p>Ta:25°C</p>	<p>308V CP: 700mA VDS: (1) 439V (2) 435V (3) 419V (4) 431V 97V CP: 700mA VDS: (1) 499V (2) 499V (3) 423V (4) 499V</p>	
3	P.F.C DIODE	D5 Rated: 9A/600V	<p>I/P:High-Line +3V =308V AC ON/OFF CP: 700mA VDS: O/P: (1)LEDmax (2) LEDmin (3) Output Short (4)LED min dimming on/off</p>	<p>(1) 443 V (2) 435V (3) 419V (4) 435V</p>	
4	Diode Peak Voltage	D100 Rated: 6A/400V	<p>I/P:High-Line +3V =308V AC ON/OFF CP: 700mA&1050mA VDS: O/P: (1)LEDmax (2) Output Short (3) burst mode Ta:25°C</p>	<p>CP: 700mA VDS: (1) 286V (2) 14.1V (3) 299V</p>	
5	Input Capacitor Voltage	C5 Rated: : 47 μ /450 V	<p>I/P:High-Line +3V =308V AC ON/OFF CP: 700mA VDS: O/P: (1)LEDmax (2) LEDmin Ta:25°C</p>	<p>(1) 421V (2) 421 V</p>	
6	Control IC Voltage Test	PWM IC U2 Rated UCC256402 30V	<p>I/P:High-Line +3V =308V AC ON/OFF CP: 700mA VDS: O/P: (1)LEDmax (2) LEDmin (3) Output Short (4)NO LOAD VRmin.LOW LIINE (5)OVP Ta:25°C</p>	<p>U2 (1) 25.7V (2) 25.7V (3) 25.5V (4) 18.6V (5) 25.7V</p>	

SAFETY & EMC TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	EN61230-1 I/P-O/P: 3.75KVAC/min I/P-FG: 2 KVAC/min<4.5mA 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°C	I/P-O/P: 3.87mA I/P-FG: 3.18mA O/P-FG: 3.13mA 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°C	I/P-O/P: 30GΩ I/P-FG: 30G Ω O/P-FG: 30G Ω NO DAMAGE
3	GROUNDING CONTINUITY	EN61230-1 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	27mΩ

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-100-L 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25.0°C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=60.0°C																																																																																										
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25.0 °C</th> <th>HIGH AMBIENT Ta=60.0 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>BD1</td><td>56.7°C</td><td>85.5°C</td></tr> <tr><td>2</td><td>ZNR1</td><td>50.0°C</td><td>79.3°C</td></tr> <tr><td>3</td><td>D1</td><td>49.7°C</td><td>79.2°C</td></tr> <tr><td>4</td><td>LF2</td><td>54.6°C</td><td>82.9°C</td></tr> <tr><td>5</td><td>Q1</td><td>57.8°C</td><td>86.5°C</td></tr> <tr><td>6</td><td>C5</td><td>59.3°C</td><td>87.2°C</td></tr> <tr><td>7</td><td>T1(core)</td><td>77.5°C</td><td>106.9°C</td></tr> <tr><td>8</td><td>T1(wire)</td><td>67.9°C</td><td>103.2°C</td></tr> <tr><td>9</td><td>L2</td><td>56.7°C</td><td>96.1°C</td></tr> <tr><td>10</td><td>C13</td><td>60.1°C</td><td>94.7°C</td></tr> <tr><td>11</td><td>C105</td><td>59.1°C</td><td>92.7°C</td></tr> <tr><td>12</td><td>C106</td><td>55.9°C</td><td>88.6°C</td></tr> <tr><td>13</td><td>Q101</td><td>62.2°C</td><td>93.5°C</td></tr> <tr><td>14</td><td>U2</td><td>60.8°C</td><td>91.3°C</td></tr> <tr><td>15</td><td>R7</td><td>56.5°C</td><td>87.4°C</td></tr> <tr><td>16</td><td>Q3</td><td>57.9°C</td><td>89.1°C</td></tr> <tr><td>17</td><td>D5</td><td>55.4°C</td><td>86.4°C</td></tr> <tr><td>18</td><td>Q2</td><td>57.4°C</td><td>88.5°C</td></tr> <tr><td>19</td><td>J102</td><td>56.0°C</td><td>86.4°C</td></tr> <tr><td>20</td><td>RTH3</td><td>54.7°C</td><td>84.4°C</td></tr> <tr><td>21</td><td>TC</td><td>50.6°C</td><td>81.0°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 25.0 °C	HIGH AMBIENT Ta=60.0 °C	1	BD1	56.7°C	85.5°C	2	ZNR1	50.0°C	79.3°C	3	D1	49.7°C	79.2°C	4	LF2	54.6°C	82.9°C	5	Q1	57.8°C	86.5°C	6	C5	59.3°C	87.2°C	7	T1(core)	77.5°C	106.9°C	8	T1(wire)	67.9°C	103.2°C	9	L2	56.7°C	96.1°C	10	C13	60.1°C	94.7°C	11	C105	59.1°C	92.7°C	12	C106	55.9°C	88.6°C	13	Q101	62.2°C	93.5°C	14	U2	60.8°C	91.3°C	15	R7	56.5°C	87.4°C	16	Q3	57.9°C	89.1°C	17	D5	55.4°C	86.4°C	18	Q2	57.4°C	88.5°C	19	J102	56.0°C	86.4°C	20	RTH3	54.7°C	84.4°C	21	TC	50.6°C	81.0°C
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/100VAC O/P : FULL LOAD Ta= -45°C/-35°C	TEST : OK																																																																																								
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 °C NO DAMAGE	I/P : 305VAC O/P : FULL LOAD Ta=60 °C HUMIDITY= 95% R.H	TEST : OK																																																																																								
4	TEMPERATURE COEFFICIENT	±0.03%/°C (0~60°C)	I/P : 230 VAC O/P : FULL LOAD	±0.0021%/°C (0~60°C)																																																																																								
5	STORAGE TEMPERATURE TEST	-40~+80°C	1. Thermal shock Temperature : -50°C~ +125°C 2. Temperature change rate : 25°C / 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°C	1. Thermal shock Temperature : -45°C~ +65°C 2. Temperature change rate : 25°C / 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°C TEST : OK
8	CAPACITOR LIFE CYCLE	XLG-100-L : SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Tc= 80 °C LIFE TIME (2) I/P : 230VAC O/P : 75% LOAD Tc= 80 °C LIFE TIME (3) I/P : 230VAC O/P : 50% LOAD Tc= 80 °C LIFE TIME	(1) 28694 HRS (2) 43943 HRS (3) 54727 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 2782.6K hrs min. Telcordia SR-332 (Bellcore) ; 276.4K hrs min. MIL-HDBK-217F (25°C)	
10	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 50,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQ/ZHOUB	WENF	LIUWY