



Test Report: ELG-150-42

150W Single Output Switching Power Supply

■ 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

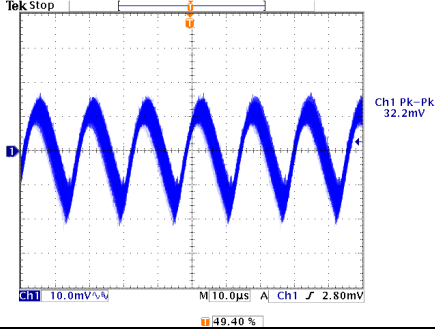
Environment Test

DESIGN VERIFY TEST

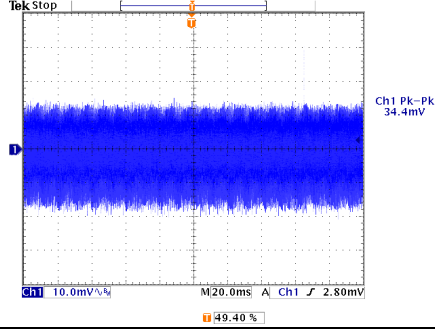
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	21V~42V	I/P: 230VAC O/P: LED MODE Ta: 25°C	12.44 V~ 41.92 V
2	OUTPUT VOLTAGE ADJUST RANGE	37.8V~46.2V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	35.32 V~ 47.32 V
3	OUTPUT CURRENT ADJUST RANGE	1.8A~3.57A	I/P: 230VAC O/P: SETTING Ta: 25°C	1.528 A~ 3.987 A
4	OUTPUT VOLTAGE TOLERANCE	-2.5%~+2.5%	I/P: 180VAC / 295VAC O/P: FULL/ NO LOAD Ta: 25°C	-0.05%~ 0.69%
5	LINE REGULATION	-0.5%~+0.5%	I/P: 190VAC ~ 295VAC O/P: FULL LOAD Ta: 25°C	0%~ 0%
6	LOAD REGULATION	-0.5%~+0.5%	I/P: 230VAC O/P: FULL ~NO LOAD Ta: 25°C	-0.05%~ 0.02%
7	OVER/UNDERSHOOT TEST	<± 5 %	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	± 1.422%
8	RIPPLE & NOISE (Max)	250mVp-p	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	34.4 mVp-p

high frequency :



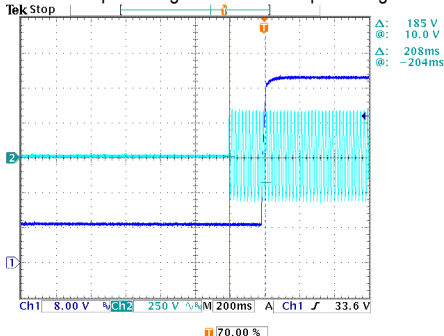
low frequency :



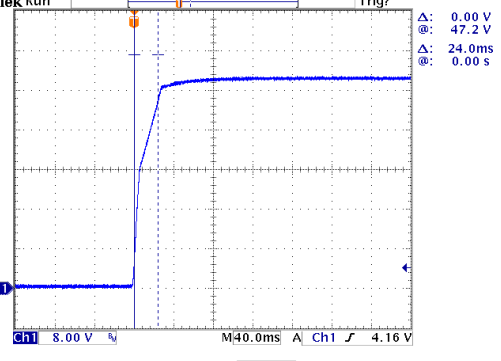
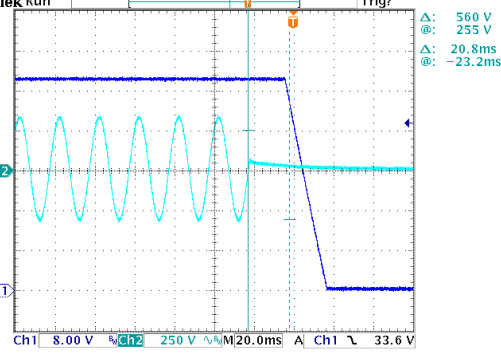
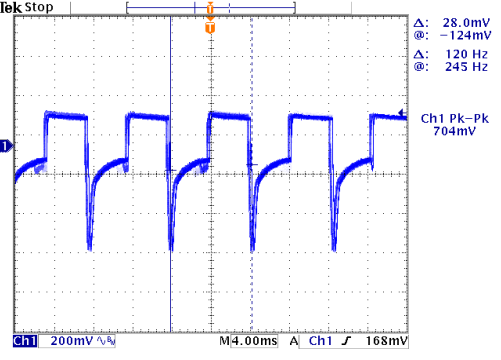
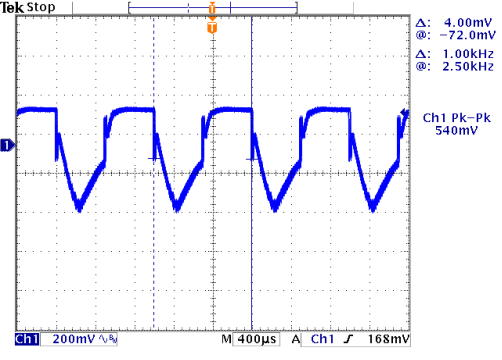
9	SET UP TIME(Max)	230VAC/ 500ms	I/P: 230 VAC O/P: 95% LOAD Ta: 25°C	230VAC/ 208 ms
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INPUT=230VAC/50HZ @ 95% LOAD

CH1: Output Voltage CH2: AC Input Voltage





10	RISE TIME (Max)	230VAC/ 100ms	I/P: 230 VAC O/P: 95% LOAD Ta: 25°C	230VAC/ 24.0 ms
<p>INPUT=230VAC/50HZ @ 95% LOAD CH1: Output Voltage</p>  <p>Δ: 0.00 V @: 47.2 V Δ: 24.0ms @: 0.00 s</p> <p>Ch1 8.00 V 40.0ms A Ch1 4.16 V</p> <p>30.00 %</p>				
11	HOLD UP TIME(Typ)	230VAC/ 10ms	I/P: 230 VAC O/P: 95% LOAD Ta: 25°C	230VAC/ 20.8 ms
<p>INPUT=230VAC/50HZ @ 95% LOAD CH1: Output Voltage CH2: AC Input Voltage</p>  <p>Δ: 560 V @: 255 V Δ: 20.8ms @: -23.2ms</p> <p>Ch1 8.00 V Ch2 250 V 20.0ms A Ch1 33.6 V</p> <p>70.00 %</p>				
12	DYNAMIC LOAD	V1: 4200 mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta: 25°C	(1) 704mVp-p (2) 540mVp-p
<p>FULL /50% LOAD 50%DUTY / 120HZ</p>  <p>Δ: 28.0mV @: -124mV Δ: 120 Hz @: 245 Hz</p> <p>Ch1 Pk-Pk 704mV</p> <p>Ch1 200mV 4.00ms A Ch1 168mV</p> <p>49.80 %</p> <p>FULL /50% LOAD 50%DUTY / 1KHZ</p>  <p>Δ: 4.00mV @: -72.0mV Δ: 1.00kHz @: 2.50kHz</p> <p>Ch1 Pk-Pk 540mV</p> <p>Ch1 200mV 400μs A Ch1 168mV</p> <p>49.80 %</p>				

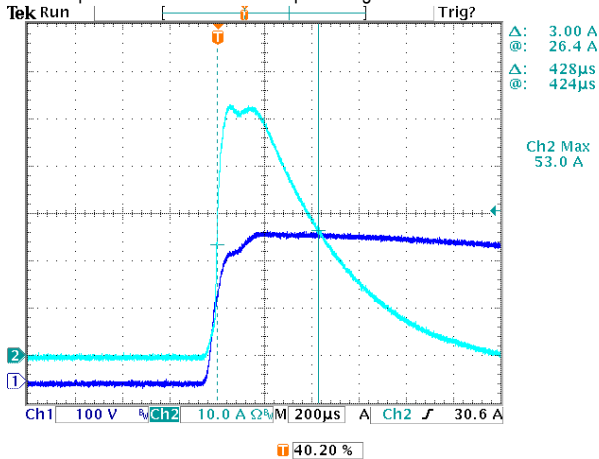
13	DIMMING TEST (For B-Type only)	SPEC:													
		※ Built-in 3 in 1 dimming function, IP67 rated. Output constant current level can be adjusted through output cable by connecting a resistance or 0 ~ 10Vdc or 10V PWM signal between DIM+ and DIM-.													
		※ Please DO NOT connect "DIM-" to "-V".													
		※ Reference resistance value for output current adjustment (Typical)													
		Resistance value	Single driver	Short	10K Ω	20K Ω	30K Ω	40K Ω	50K Ω	60K Ω	70K Ω	80K Ω	90K Ω	100K Ω	OPEN
			Multiple drivers (N=driver quantity for synchronized dimming operation)	Short	10K Ω/N	20K Ω/N	30K Ω/N	40K Ω/N	50K Ω/N	60K Ω/N	70K Ω/N	80K Ω/N	90K Ω/N	100K Ω/N
		Percentage of rated current		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	95%~108%
		※ 0 ~ 10V dimming function for output current adjustment (Typical)													
		Dimming value		0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
		Percentage of rated current		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	95%~108%
		※ 10V PWM signal for output current adjustment (Typical): Frequency range: 100Hz~3KHz													
		Duty value		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
		Percentage of rated current		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	95%~108%
TEST RESULT:															
I/P: 230 VAC; Ta: 25°C															
1	Resistance value	Short	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN		
	Output Current	0	0.291	0.662	1.035	1.412	1.794	2.179	2.569	2.962	3.364	3.580	3.582		
	Percentage of rated current	0%	8.15%	18.54%	28.99%	39.55%	50.25%	61.04%	71.96%	82.97%	94.23%	100.28%	100.34%		
2	Dimming value	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN		
	Output Current	0	0.306	0.674	1.024	1.397	1.762	2.142	2.516	2.867	3.241	3.578	3.582		
	Percentage of rated current	0%	8.57%	18.88%	28.68%	39.13%	49.36%	60.00%	70.48%	80.31%	90.78%	100.22%	100.34%		
3	Duty value	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN		
	Output Current	0	0.325	0.685	1.048	1.409	1.774	2.136	2.498	2.866	3.227	3.554	3.582		
	Percentage of rated current	0%	9.10%	19.19%	29.36%	39.47%	49.69%	59.83%	69.97%	80.28%	90.39%	99.55%	100.34%		

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	180VAC~295VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	177 V~ 295 V
			I/P: LOW-LINE-3V=177 V HIGH-LINE+10V=305 V O/P: FULL/NO LOAD 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: 180 VAC ~295 VAC O/P: FULL~NO LOAD Ta: 25°C	TEST: OK
3	AC CURRENT	0.7A/277VAC 0.9A/230VAC	I/P: 277 VAC I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I = 0.57 A/ 277VAC I = 0.68 A/ 230VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.344 mA N-FG: 0.336 mA
5	NO LOAD POWER CONSUMPTION	< 0.5W	I/P: 230VAC O/P: NO LOAD Ta: 25°C	0.149 W/ 230VAC
6	TOTAL HARMONIC DISTORTION	Total harmonic distortion will be lower than 20% when output loading is 50% or higher at 230VAC	I/P: 230VAC O/P: 50% LOAD	THD: 9.75 %
		Total harmonic distortion will be lower than 20% when output loading is 75% or higher at 277VAC	I/P: 277VAC O/P: 75% LOAD	THD: 8.27 %
7	INRUSH CURRENT(Typ)	230V/ 65A Twidth =550us measured at 50% Ipeak COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I = 53.0 A/ 230VAC Twidth =428 us

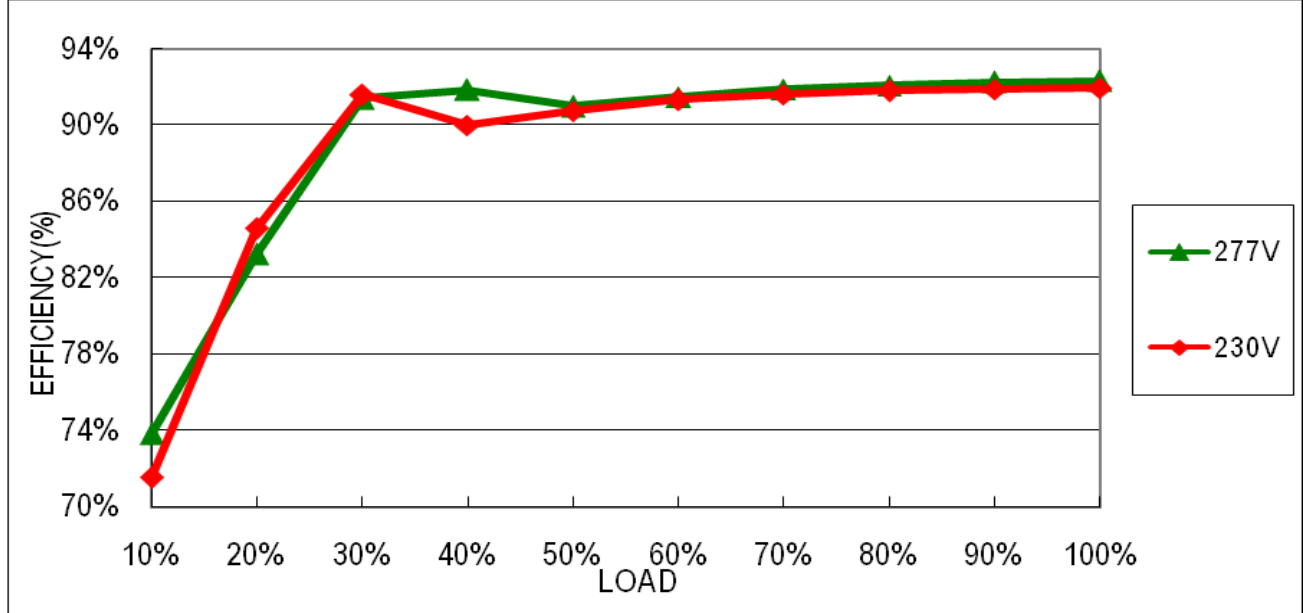
INPUT=230VAC/50HZ @ FULL LOAD

CH2: Input current CH1: AC Input Voltage



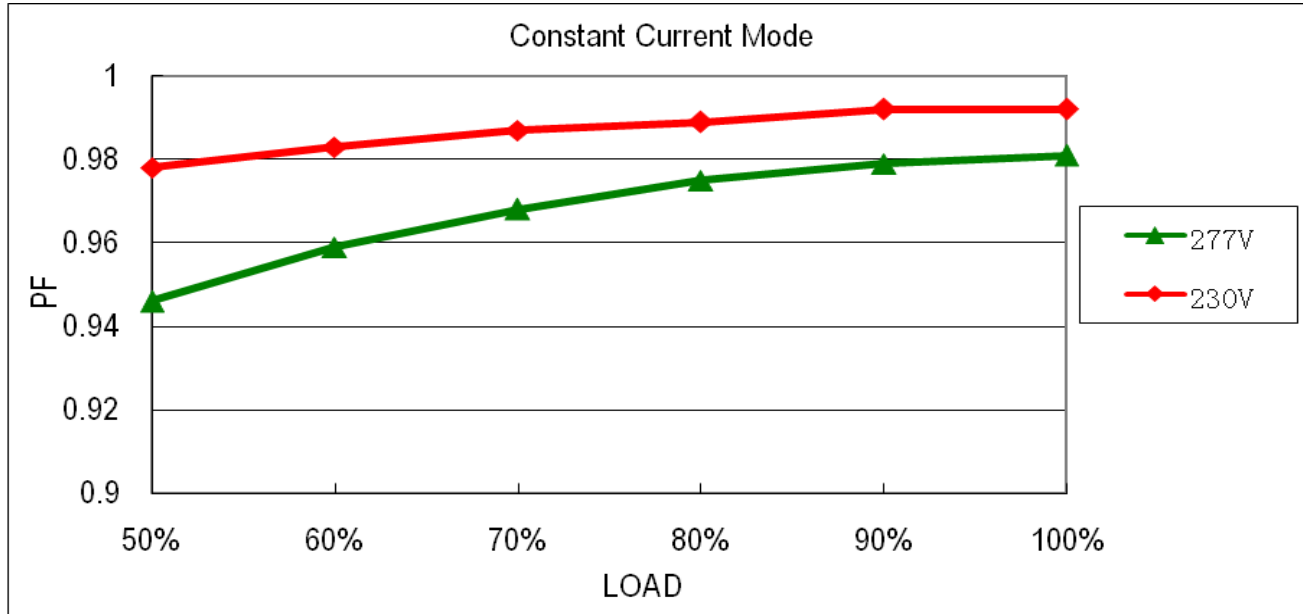
8	EFFICIENCY(Typ)	90%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	91.95%
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EFFICIENCY vs LOAD



9	POWER FACTOR	0.92/ 277VAC 0.95/ 230VAC	I/P: 277 VAC I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	PF= 0.981 / 277VAC PF= 0.992 / 230VAC
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P.F vs LOAD



PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	95%~108%	I/P: 200VAC I/P: 230VAC I/P: 295VAC O/P: TESTING Ta: 25°C	101.97 %/ 200VAC 101.96 %/ 230VAC 101.95 %/ 295VAC Constant Current Limiting, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	47V~54V	I/P: 180VAC I/P: 230VAC I/P: 295VAC O/P: NO LOAD Ta: 25°C	49.75 V/ 180VAC 49.75 V/ 230VAC 49.75 V/ 295VAC Shut down o/p voltage, re-power on to recovery
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 200VAC I/P: 230VAC I/P: 295VAC O/P: FULL LOAD	O.T.P. Active Shut down o/p voltage, re-power on to recovery
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 200VAC I/P: 295VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Hiccup mode, recovers automatically after fault condition is removed

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Power Transistor	Q 2 Rated 730V/10A	I/P: High-Line +3V =298V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 670 V (2) 544 V (3) 654 V
2	O/P Diode (MOSFET)	Q101 Rated 200V/20A	I/P: High-Line +3V =298V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 188 V (2) 137 V (3) 182 V
3	Input Capacitor	C5 Rated 100u/ 450V	I/P: High-Line +3V =298 V O/P: (1) Full Load input on/off (2) NO LOAD input on /Off (3) Full Load /NO LOAD Change Ta: 25°C	(1) 442 V (2) 444 V (3) 446 V
4	Control IC	U1 Rated 28V (MAX.)	I/P: High-Line +3V =298 V O/P: ((1) FULL LOAD (2) Output Short (3) O.L.P (4) O.V.P (5) Low Line No Load Vo(min) Ta: 25°C	(1) 17.5 V (2) 15.3 V (3) 11.1 V (4) 15.2 V (5) 17.2 V
5	PFC Power Transistor	Q 1 Rated 600V/10A	I/P: High-Line +3V =298V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 530 V (2) 508 V (3) 488 V



6	Clamp Diode	D 10 Rated 800V/2A	I/P: High-Line +3V = 298V O/P: (1) Full Load input on/off (2) Output Short Ta: 25°C	(1) 612 V (2) 468 V
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SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC/min I/P-FG: 2.0KVAC/min O/P-FG: 1.5KVAC/min	I/P-O/P: 4.2KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 1.8 KVAC/min Ta: 25°C	I/P-O/P: 1.345 mA I/P-FG: 2.048 mA O/P-FG: 1.367 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°C	I/P-O/P: >9999 MΩ I/P-FG: >9999 MΩ O/P-FG: >9999 MΩ

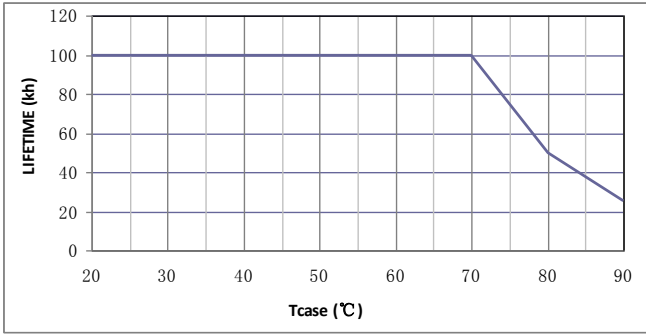
E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P: 230VAC/50HZ O/P: 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: 1KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA A
6	SURGE	EN61000-4-5 INDUSTRY L-N: 3KV L,N-PE: 6KV	I/P: 230VAC/50HZ O/P: FULL LOAD L-N: 4KV L,N-PE: 8KV Ta: 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare			

■ **RELIABILITY TEST**

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																																								
1	TEMPERATURE RISE TEST	MODEL: ELG-150-48 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=32.8 °C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=62.2 °C																																																																																																										
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=32.8 °C</th> <th>HIGH AMBIENT Ta=62.2 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF2</td><td>65.6°C</td><td>91.1°C</td></tr> <tr><td>2</td><td>L1</td><td>69.1°C</td><td>94.1°C</td></tr> <tr><td>3</td><td>L3</td><td>68.2°C</td><td>93.2°C</td></tr> <tr><td>4</td><td>ZNR2</td><td>68.9°C</td><td>93.8°C</td></tr> <tr><td>5</td><td>C11</td><td>70.8°C</td><td>96.2°C</td></tr> <tr><td>6</td><td>Q1</td><td>73.6°C</td><td>99.7°C</td></tr> <tr><td>7</td><td>Q2</td><td>76.5°C</td><td>103.3°C</td></tr> <tr><td>8</td><td>D6</td><td>75.5°C</td><td>102.0°C</td></tr> <tr><td>9</td><td>D10</td><td>80.4°C</td><td>108.5°C</td></tr> <tr><td>10</td><td>U1</td><td>66.7°C</td><td>93.1°C</td></tr> <tr><td>11</td><td>R7</td><td>79.2°C</td><td>106.4°C</td></tr> <tr><td>12</td><td>U100</td><td>70.7°C</td><td>96.5°C</td></tr> <tr><td>13</td><td>C5</td><td>76.4°C</td><td>103.8°C</td></tr> <tr><td>14</td><td>T1</td><td>69.1°C</td><td>95.7°C</td></tr> <tr><td>15</td><td>C45</td><td>60.9°C</td><td>87.4°C</td></tr> <tr><td>16</td><td>Q101</td><td>71.5°C</td><td>97.5°C</td></tr> <tr><td>17</td><td>Q102</td><td>71.9°C</td><td>98.1°C</td></tr> <tr><td>18</td><td>Q105</td><td>60.9°C</td><td>87.7°C</td></tr> <tr><td>19</td><td>C205</td><td>68.0°C</td><td>94.2°C</td></tr> <tr><td>20</td><td>C105</td><td>61.4°C</td><td>87.6°C</td></tr> <tr><td>21</td><td>C106</td><td>66.7°C</td><td>93.0°C</td></tr> <tr><td>22</td><td>C108</td><td>63.6°C</td><td>89.5°C</td></tr> <tr><td>23</td><td>RTH2</td><td>66.7°C</td><td>92.9°C</td></tr> <tr><td>24</td><td>U500</td><td>57.7°C</td><td>84.3°C</td></tr> <tr><td>25</td><td>TC</td><td>59.3°C</td><td>86.7°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=32.8 °C	HIGH AMBIENT Ta=62.2 °C	1	LF2	65.6°C	91.1°C	2	L1	69.1°C	94.1°C	3	L3	68.2°C	93.2°C	4	ZNR2	68.9°C	93.8°C	5	C11	70.8°C	96.2°C	6	Q1	73.6°C	99.7°C	7	Q2	76.5°C	103.3°C	8	D6	75.5°C	102.0°C	9	D10	80.4°C	108.5°C	10	U1	66.7°C	93.1°C	11	R7	79.2°C	106.4°C	12	U100	70.7°C	96.5°C	13	C5	76.4°C	103.8°C	14	T1	69.1°C	95.7°C	15	C45	60.9°C	87.4°C	16	Q101	71.5°C	97.5°C	17	Q102	71.9°C	98.1°C	18	Q105	60.9°C	87.7°C	19	C205	68.0°C	94.2°C	20	C105	61.4°C	87.6°C	21	C106	66.7°C	93.0°C	22	C108	63.6°C	89.5°C	23	RTH2	66.7°C	92.9°C	24	U500	57.7°C	84.3°C	25	TC	59.3°C	86.7°C
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9	D10	80.4°C	108.5°C																																																																																																									
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11	R7	79.2°C	106.4°C																																																																																																									
12	U100	70.7°C	96.5°C																																																																																																									
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22	C108	63.6°C	89.5°C																																																																																																									
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24	U500	57.7°C	84.3°C																																																																																																									
25	TC	59.3°C	86.7°C																																																																																																									
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 295VAC/200VAC O/P: FULL LOAD Ta= -45°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 (0~50°C)	I/P: 230 VAC O/P: FULL LOAD	±0.009 %/°C (0~50°C)																																																																																																								
5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature: -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle: 5 CYCLE 5. Input/Output condition: STATIC		TEST: OK																																																																																																								

6	THERMAL SHOCK TEST	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: 10 CYCLE 5. Input/Output condition: 230VAC/Full Load AC ON/OFF TEST AC on 3 sec/AC off 1 sec TEST	TEST: OK
7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency: 10~500Hz (3) Sweep Time: 12min/sweep cycle (4) Acceleration: 5G (5) Test Time: 72min in each axis (X.Y.Z) (6) Ta: 25°C	TEST: OK
8	CAPACITOR LIFE CYCLE	ELG-150-48: SUPPOSE C106 IS THE MOST CRITICAL COMPONENT (1) I/P: 230VAC O/P: FULL LOAD Ta= 25 °C LIFE TIME (2) I/P: 230VAC O/P: FULL LOAD Ta= 60 °C LIFE TIME (3) I/P: 230VAC O/P: 75% LOAD Ta= 60 °C LIFE TIME (4) I/P: 230VAC O/P: 50% LOAD Ta= 60 °C LIFE TIME	(1) 263305 HRS (2) 32009 HRS (3) 39901 HRS (4) 64509 HRS
9	MTBF	MIL-HDBK-217F TOTAL FAILURE RATE: 313.66K HRS	
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 50000 hours @ Tc 80°C 	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	ZHANGZJ/ZHUOKB	SKY	LIUWY