



# Test Report: ELG-150-54

---

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

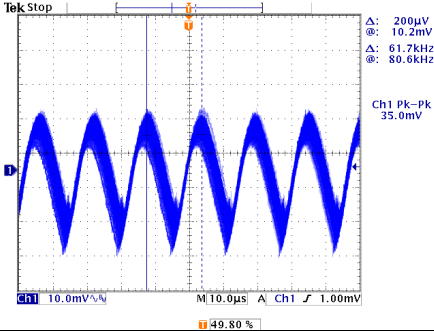
Environment Test

DESIGN VERIFY TEST

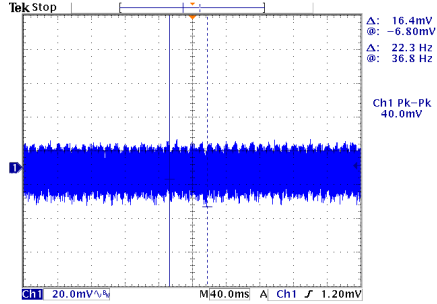
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	27V~54V	I/P: 230VAC O/P: LED MODE Ta: 25°C	17.84 V~ 54.12 V
2	OUTPUT VOLTAGE ADJUST RANGE	49V~58V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	45.07 V~ 59.23 V
3	OUTPUT CURRENT ADJUST RANGE	1.4A~2.8A	I/P: 230VAC O/P: SETTING Ta: 25°C	0.981 A~ 2.934 A
4	OUTPUT VOLTAGE TOLERANCE	-2%~+2%	I/P: 180VAC / 295VAC O/P: FULL/ NO LOAD Ta: 25°C	-0.02%~ 0.28%
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	-0.07%~ 0.02%
7	OVER/UNDERSHOOT TEST	<± 5 %	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	± 1.859%
8	RIPPLE & NOISE (Max)	350mVp-p	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	40.0 mVp-p

high frequency :



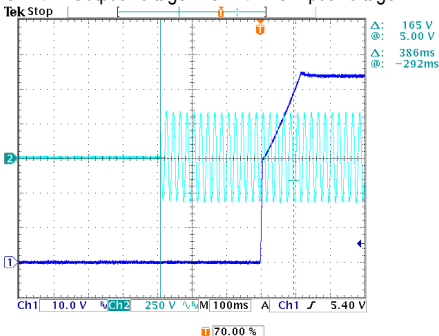
low frequency :



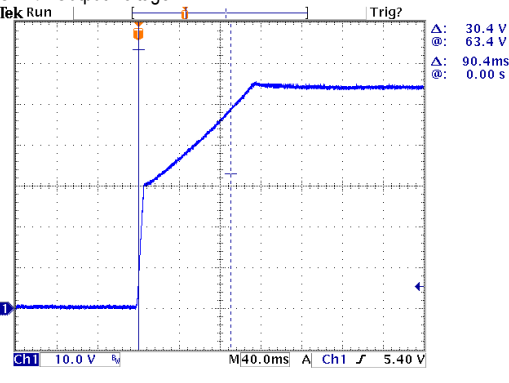
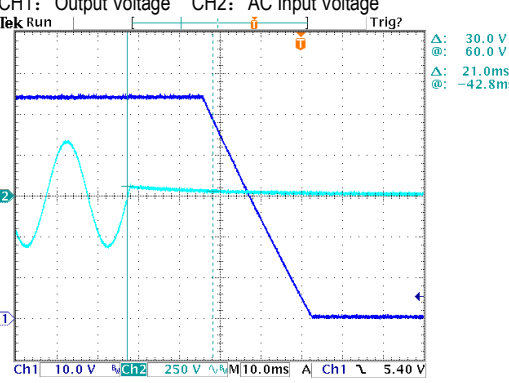
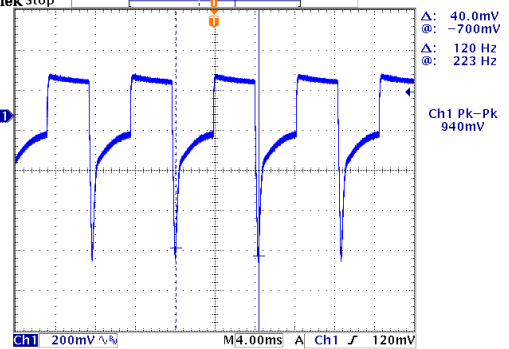
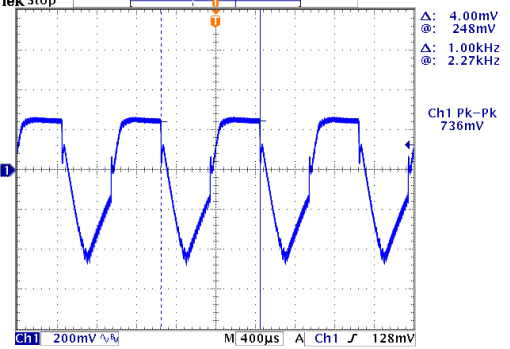
9	SET UP TIME(Max)	230VAC/ 500ms	I/P: 230 VAC O/P: 95% LOAD Ta: 25°C	230VAC/ 386 ms
---	------------------	---------------	---	----------------

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/ 90.4 ms
<p>INPUT=230VAC/50HZ @ 95% LOAD CH1: Output Voltage</p> 				
11	HOLD UP TIME(Typ)	230VAC/ 10ms	I/P: 230 VAC O/P: 95% LOAD Ta: 25°C	230VAC/ 21.0 ms
<p>INPUT=230VAC/50HZ @ 95% LOAD CH1: Output Voltage CH2: AC Input Voltage</p> 				
12	DYNAMIC LOAD	V1: 5400 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) 940mVp-p (2) 736mVp-p
<div style="display: flex; justify-content: space-around;"> <div data-bbox="151 1556 662 1948"> <p>FULL /50% LOAD 50%DUTY / 120HZ</p>  </div> <div data-bbox="869 1556 1380 1948"> <p>FULL /50% LOAD 50%DUTY / 1KHZ</p>  </div> </div>				

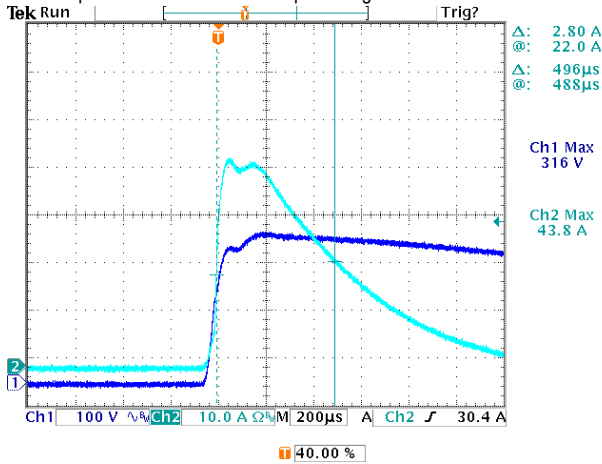
13	DIMMING TEST (For B-Type only)	SPEC:													
		※ Built-in 3 in 1 dimming function, IP67 rated. Output constant current level can be adjusted through output cable by connecting a resistance or 0 ~ 10Vdc or 10V PWM signal between DIM+ and DIM-.													
		※ Please DO NOT connect "DIM-" to "-V".													
		※ 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	0.352	0.632	0.911	1.192	1.474	1.755	2.038	2.320	2.608	2.812	2.814		
	Percentage of rated current	0%	12.57%	22.57%	32.54%	42.57%	52.64%	62.68%	72.79%	82.86%	93.14%	100.43%	100.50%		
2	Dimming value	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN		
	Output Current	0	0.361	0.638	0.902	1.183	1.457	1.743	2.023	2.285	2.566	2.812	2.815		
	Percentage of rated current	0%	12.89%	22.79%	32.21%	42.25%	52.04%	62.25%	72.25%	81.61%	91.64%	100.43%	100.54%		
3	Duty value	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN		
	Output Current	0	0.376	0.646	0.918	1.188	1.462	1.733	2.003	2.279	2.548	2.793	2.814		
	Percentage of rated current	0%	13.43%	23.07%	32.79%	42.43%	52.21%	61.89%	71.54%	81.39%	91.00%	99.75%	100.50%		

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: 0.381 mA N-FG: 0.352 mA
5	NO LOAD POWER CONSUMPTION	< 0.5W	I/P: 230VAC O/P: NO LOAD Ta: 25°C	0.183 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: 9.02 %
		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: 7.92 %
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 = 43.8 A/ 230VAC Twidth =496 us

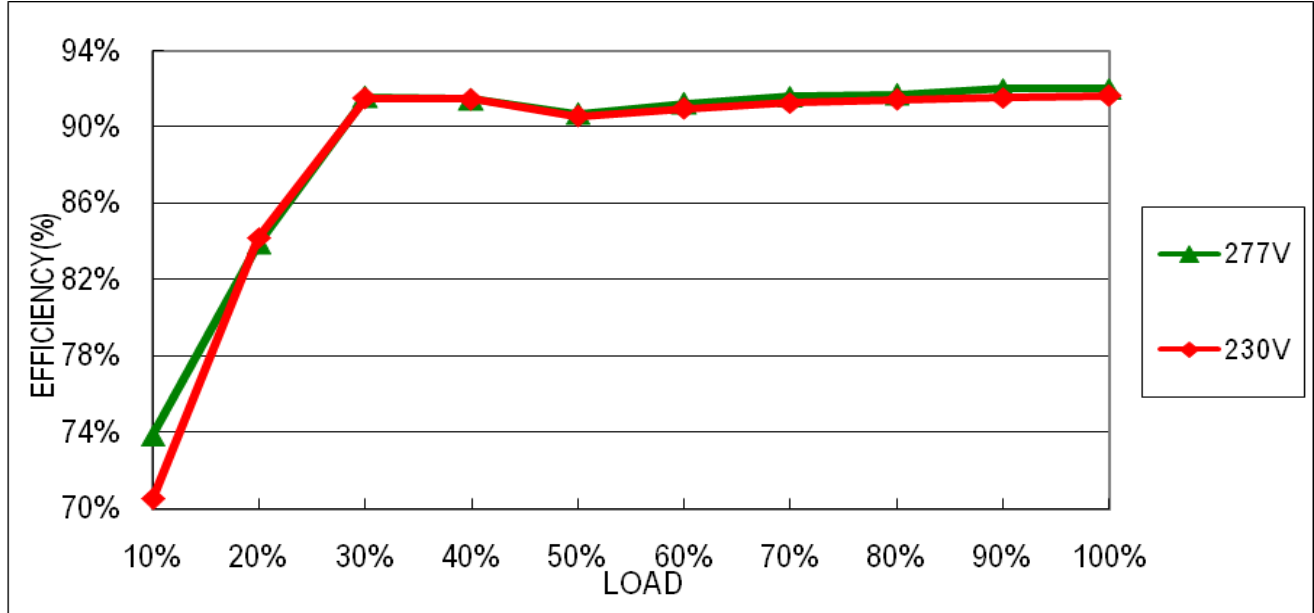
INPUT=230VAC/50HZ @ FULL LOAD

CH2: Input current CH1: AC Input Voltage



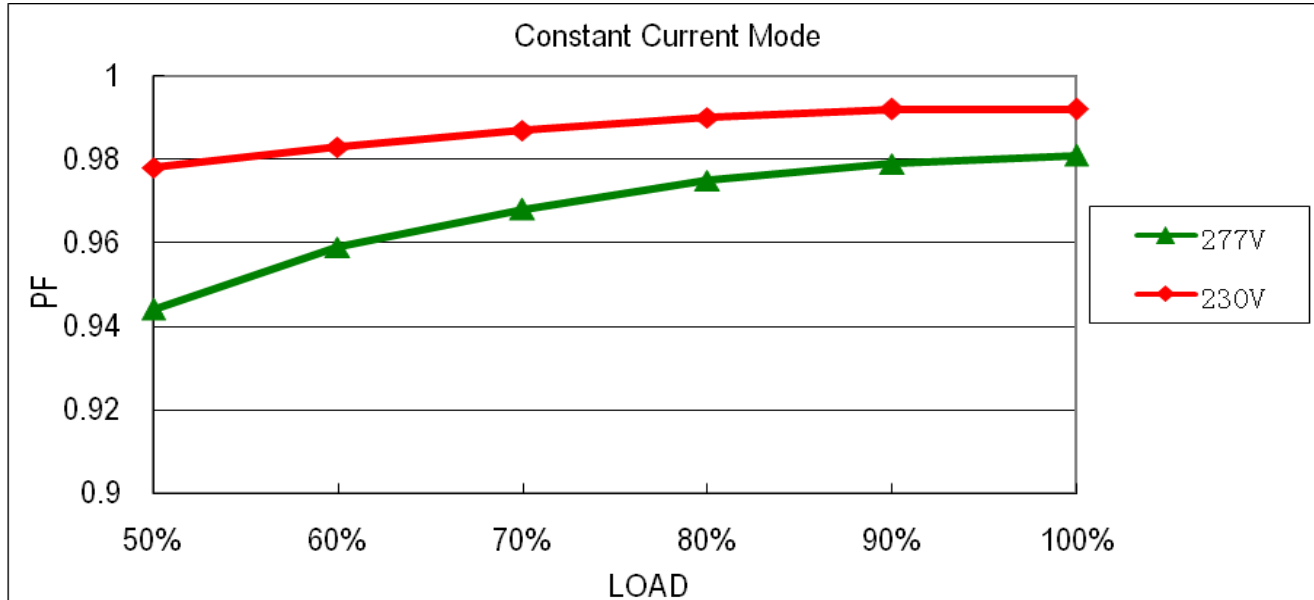
8	EFFICIENCY(Typ)	91%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	91.64 %
---	-----------------	-----	---	---------

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
---	--------------	------------------------------	--	--

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	101.22 %/ 200VAC 101.16 %/ 230VAC 101.16 %/ 295VAC Constant Current Limiting, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	59V~68V	I/P: 180VAC I/P: 230VAC I/P: 295VAC O/P: NO LOAD Ta: 25°C	62.98 V/ 180VAC 63.04 V/ 230VAC 62.98 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) 668 V (2) 554 V (3) 658 V
2	O/P Diode (MOSFET)	Q101 Rated 300V/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) 238 V (2) 175 V (3) 232 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) 444 V (2) 448 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) 17.2 V (2) 15.0 V (3) 11.1 V (4) 15.1 V (5) 17.3 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) 542 V (2) 514 V (3) 490 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) 606 V (2) 482 V
---	-------------	-----------------------	--	------------------------

### 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: 1.531 mA I/P-FG: 2.295 mA O/P-FG: 1.593 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

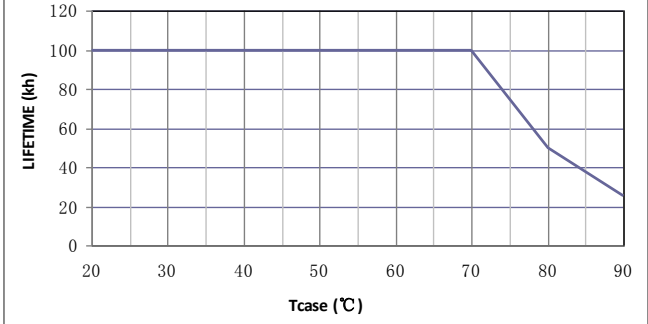
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P: 230VAC/50HZ O/P: FULL/50% LOAD Ta: 25°C	PASS
2	CONDUCTION	EN55015	I/P: 230 VAC (50HZ) O/P: FULL LOAD Ta: 25°C	PASS Test by certified Lab
3	RADIATION	EN55015	I/P: 230 VAC (50HZ) O/P: FULL LOAD Ta: 25°C	PASS Test by certified 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-150-54 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=34.7 °C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=60.8 °C																																																																																										
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=34.7 °C</th> <th>HIGH AMBIENT Ta=60.8 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>L3</td><td>68.6°C</td><td>95.2°C</td></tr> <tr><td>2</td><td>C11</td><td>71.6°C</td><td>99.2°C</td></tr> <tr><td>3</td><td>Q1</td><td>73.8°C</td><td>102.1°C</td></tr> <tr><td>4</td><td>Q2</td><td>79.3°C</td><td>107.7°C</td></tr> <tr><td>5</td><td>D6</td><td>74.9°C</td><td>103.5°C</td></tr> <tr><td>6</td><td>D10</td><td>83.4°C</td><td>113.7°C</td></tr> <tr><td>7</td><td>U1</td><td>67.3°C</td><td>95.1°C</td></tr> <tr><td>8</td><td>R7</td><td>83.6°C</td><td>112.8°C</td></tr> <tr><td>9</td><td>C5</td><td>70.9°C</td><td>97.5°C</td></tr> <tr><td>10</td><td>T1</td><td>76.9°C</td><td>105.0°C</td></tr> <tr><td>11</td><td>C45</td><td>68.6°C</td><td>96.4°C</td></tr> <tr><td>12</td><td>C12</td><td>72.4°C</td><td>100.6°C</td></tr> <tr><td>13</td><td>C15</td><td>79.0°C</td><td>107.5°C</td></tr> <tr><td>14</td><td>Q101</td><td>71.0°C</td><td>98.0°C</td></tr> <tr><td>15</td><td>Q102</td><td>72.0°C</td><td>98.9°C</td></tr> <tr><td>16</td><td>C201</td><td>68.0°C</td><td>95.0°C</td></tr> <tr><td>17</td><td>C105</td><td>61.7°C</td><td>88.1°C</td></tr> <tr><td>18</td><td>C106</td><td>66.0°C</td><td>92.8°C</td></tr> <tr><td>19</td><td>C110</td><td>61.5°C</td><td>88.0°C</td></tr> <tr><td>20</td><td>RTH2</td><td>66.2°C</td><td>93.0°C</td></tr> <tr><td>21</td><td>TC</td><td>60.3°C</td><td>85.4°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=34.7 °C	HIGH AMBIENT Ta=60.8 °C	1	L3	68.6°C	95.2°C	2	C11	71.6°C	99.2°C	3	Q1	73.8°C	102.1°C	4	Q2	79.3°C	107.7°C	5	D6	74.9°C	103.5°C	6	D10	83.4°C	113.7°C	7	U1	67.3°C	95.1°C	8	R7	83.6°C	112.8°C	9	C5	70.9°C	97.5°C	10	T1	76.9°C	105.0°C	11	C45	68.6°C	96.4°C	12	C12	72.4°C	100.6°C	13	C15	79.0°C	107.5°C	14	Q101	71.0°C	98.0°C	15	Q102	72.0°C	98.9°C	16	C201	68.0°C	95.0°C	17	C105	61.7°C	88.1°C	18	C106	66.0°C	92.8°C	19	C110	61.5°C	88.0°C	20	RTH2	66.2°C	93.0°C	21	TC	60.3°C	85.4°C
NO	Position	ROOM AMBIENT Ta=34.7 °C	HIGH AMBIENT Ta=60.8 °C																																																																																									
1	L3	68.6°C	95.2°C																																																																																									
2	C11	71.6°C	99.2°C																																																																																									
3	Q1	73.8°C	102.1°C																																																																																									
4	Q2	79.3°C	107.7°C																																																																																									
5	D6	74.9°C	103.5°C																																																																																									
6	D10	83.4°C	113.7°C																																																																																									
7	U1	67.3°C	95.1°C																																																																																									
8	R7	83.6°C	112.8°C																																																																																									
9	C5	70.9°C	97.5°C																																																																																									
10	T1	76.9°C	105.0°C																																																																																									
11	C45	68.6°C	96.4°C																																																																																									
12	C12	72.4°C	100.6°C																																																																																									
13	C15	79.0°C	107.5°C																																																																																									
14	Q101	71.0°C	98.0°C																																																																																									
15	Q102	72.0°C	98.9°C																																																																																									
16	C201	68.0°C	95.0°C																																																																																									
17	C105	61.7°C	88.1°C																																																																																									
18	C106	66.0°C	92.8°C																																																																																									
19	C110	61.5°C	88.0°C																																																																																									
20	RTH2	66.2°C	93.0°C																																																																																									
21	TC	60.3°C	85.4°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	±0.004 %/°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-150-54: 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) 382840 HRS (2) 32869 HRS (3) 51389 HRS (4) 66248 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