Test Report： ELG-100-48

100W 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

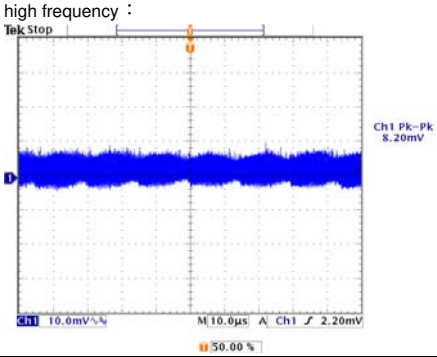
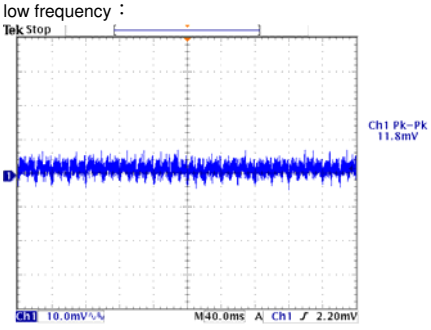
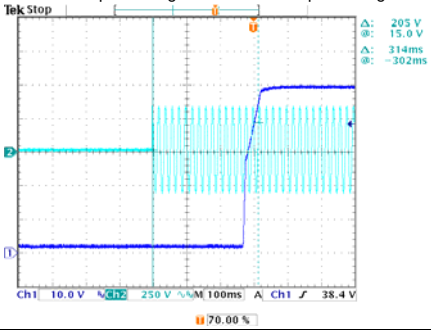
Safety Test
E.M.C. Test

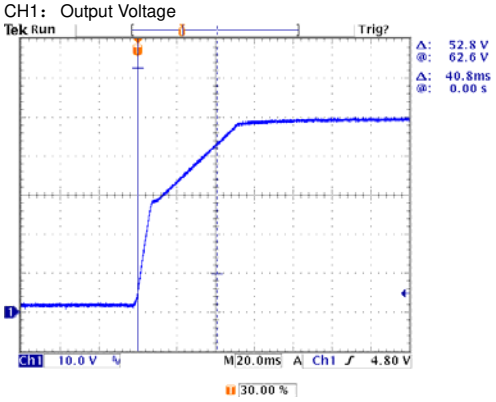
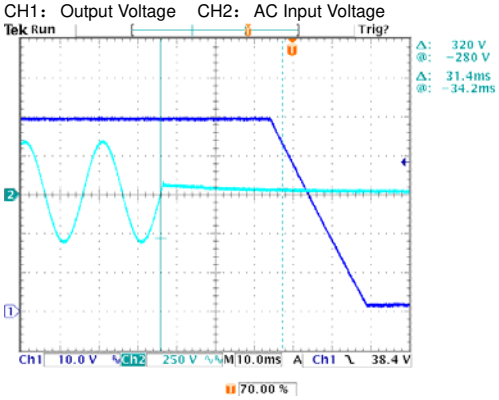
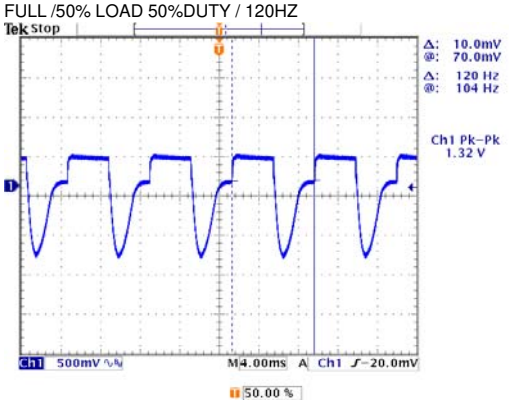
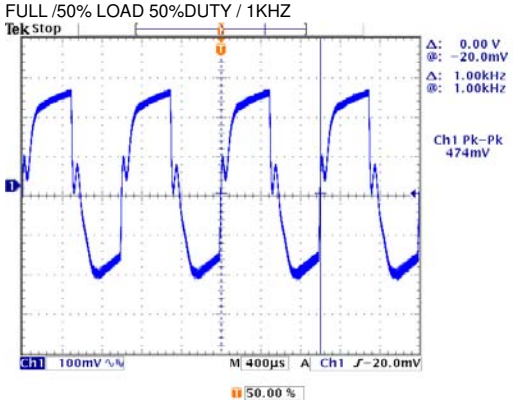
■ RELIABILITY TEST

Environment Test

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	24V~48V	I/P： 230VAC O/P：LED MODE Ta：25℃	12 V~ 48 V
2	OUTPUT VOLTAGE ADJUST RANGE	43.2V~52.8V	I/P： 230VAC O/P：NO LOAD Ta：25℃	41.6 V~ 54.4 V
3	OUTPUT CURRENT ADJUST RANGE	1A~2A	I/P： 230VAC O/P：SETTING Ta：25℃	0.605 A~ 2.178 A
4	OUTPUT VOLTAGE TOLERANCE	-2%~+2%	I/P： 100VAC / 305VAC O/P：FULL/ NO LOAD Ta：25℃	-0.08%~ 0.33%
5	LINE REGULATION	-0.5%~+0.5%	I/P： 200VAC ~ 305VAC O/P：FULL LOAD Ta：25℃	0%~ 0%
6	LOAD REGULATION	-0.5%~+0.5%	I/P： 230VAC O/P：FULL ~NO LOAD Ta：25℃	-0.08%~ 0.18%
7	OVER/UNDERSHOOT TEST	<±5 %	I/P： 230VAC O/P：FULL LOAD Ta：25℃	±1.681%
8	RIPPLE & NOISE (Max)	300mVp-p	I/P： 230VAC O/P：FULL LOAD Ta：25℃	11.8 mVp-p
	high frequency：  low frequency： 			
9	SET UP TIME(Max)	230VAC/ 500ms	I/P： 230 VAC O/P：95% LOAD Ta：25℃	230VAC/ 314 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℃	230VAC/ 40.8 ms
	INPUT=230VAC/50HZ @ 95% LOAD CH1： Output Voltage 			
11	HOLD UP TIME(Typ)	230VAC/ 10ms	I/P： 230 VAC O/P： 95% LOAD Ta： 25℃	230VAC/ 31.4 ms
	INPUT=230VAC/50HZ @ 95% LOAD CH1： Output Voltage CH2： AC Input Voltage 			
12	DYNAMIC LOAD	V1： 4800 mVp-p	I/P： 230VAC O/P： (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta： 25℃	(1) 1320mVp-p (2) 474mVp-p
	FULL /50% LOAD 50%DUTY / 120HZ 		FULL /50% LOAD 50%DUTY / 1KHZ 	

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℃

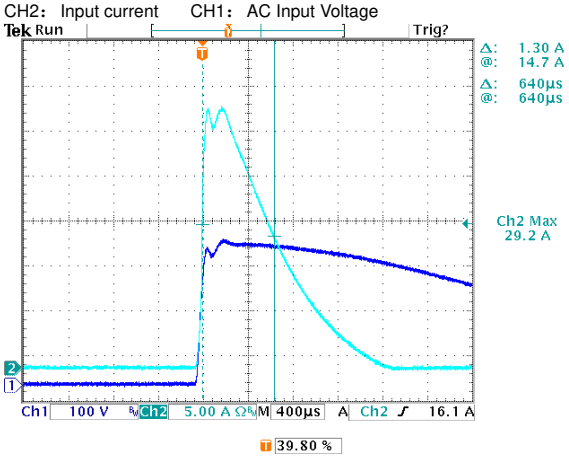
1	Resistance value	Short	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0	0.204	0.410	0.615	0.820	1.023	1.229	1.430	1.635	1.841	2.034	2.037
	Percentage of rated current	0%	10.20%	20.50%	30.75%	41.00%	51.15%	61.45%	71.50%	81.75%	92.05%	101.70%	101.85%
2	Dimming value	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
	Output Current	0	0.209	0.418	0.614	0.824	1.029	1.244	1.450	1.649	1.857	2.034	2.035
	Percentage of rated current	0%	10.45%	20.90%	30.70%	41.20%	51.45%	62.20%	72.50%	82.45%	92.85%	101.70%	101.75%
3	Duty value	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current	0	0.204	0.408	0.615	0.820	1.026	1.231	1.433	1.640	1.846	2.028	2.035
	Percentage of rated current	0%	10.20%	20.40%	30.75%	41.00%	51.30%	61.55%	71.65%	82.00%	92.30%	101.40%	101.75%

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC	I/P：TESTING O/P：FULL LOAD Ta：25℃	97 V~ 305 V
			I/P：LOW-LINE-3V=97 V HIGH-LINE+10V=315 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： 100 VAC ~305 VAC O/P：FULL~NO LOAD Ta：25℃	TEST： OK
3	AC CURRENT	0.5A/277VAC 0.6A/230VAC	I/P： 277 VAC I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I = 0.37 A/ 277VAC I = 0.43 A/ 230VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P： 277 VAC O/P：NO LOAD Ta：25℃	L-FG： 0.373 mA N-FG： 0.357 mA
5	NO LOAD POWER CONSUMPTION	< 0.5W	I/P：230VAC O/P：NO LOAD Ta：25℃	0.248 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： 13.84 %
		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： 12.63 %
7	INRUSH CURRENT(Typ)	230V/ 60A Twidth =850us measured at 50% Ipeak COLD START	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I = 29.2 A/ 230VAC Twidth =640 us

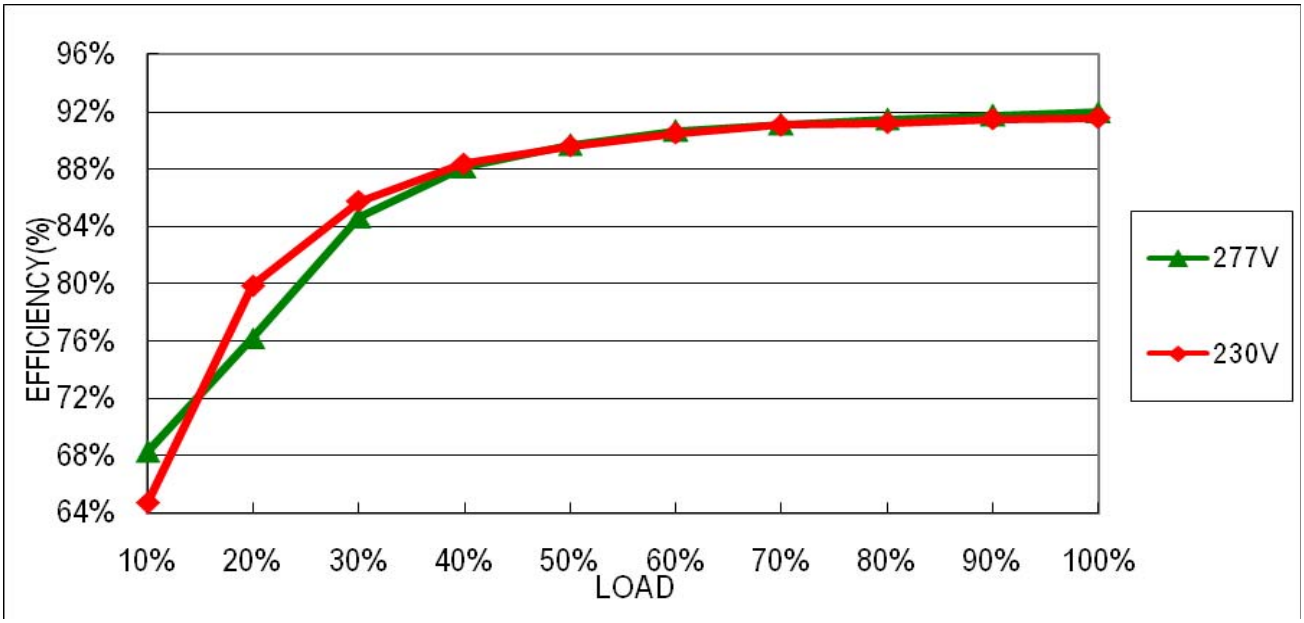
INPUT=230VAC/50HZ @ FULL LOAD

CH2： Input current CH1： AC Input Voltage



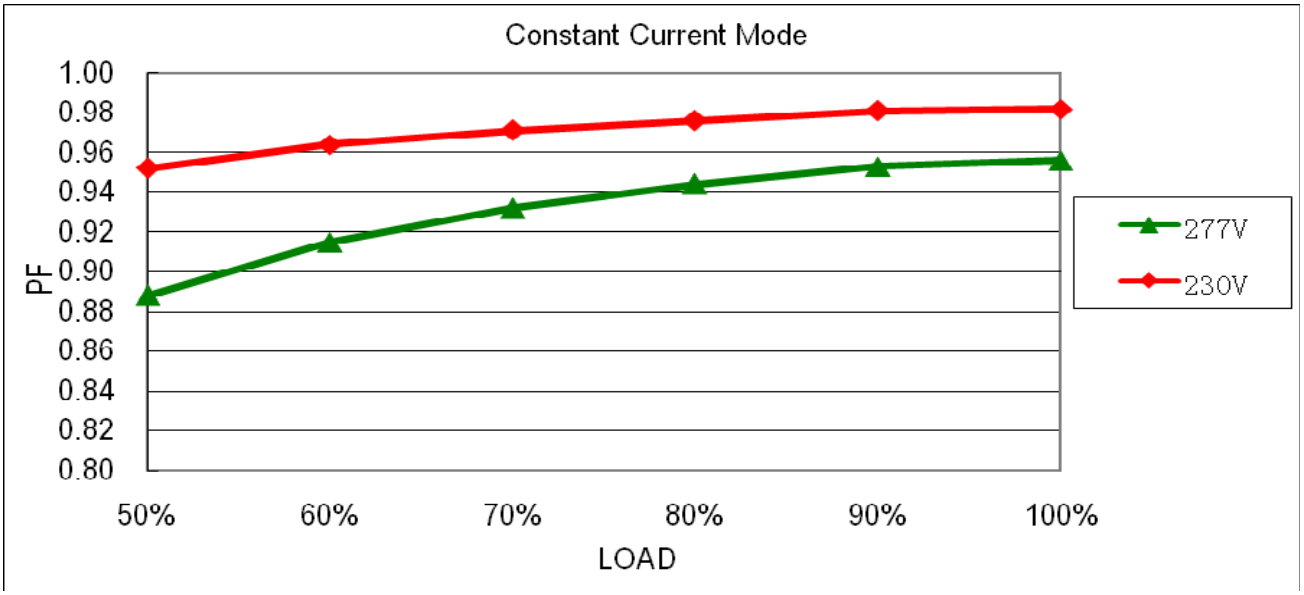
8	EFFICIENCY(Typ)	90%	I/P： 230VAC O/P： FULL LOAD Ta： 25℃	91.62 %

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℃	PF= 0.956 / 277VAC PF= 0.982 / 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： 305VAC O/P：TESTING Ta：25℃	100.73 %/ 200VAC 100.87 %/ 230VAC 100.82 %/ 305VAC Constant Current Limiting，recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	54V~62V	I/P： 100VAC I/P： 230VAC I/P： 305VAC O/P：NO LOAD Ta：25℃	57.17 V/ 100VAC 57.20 V/ 230VAC 57.18 V/ 305VAC Shut down o/p voltage，re-power on to recovery
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P： 200VAC I/P： 230VAC I/P： 305VAC 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： 305VAC O/P：FULL LOAD Ta：25℃	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 800V/5.7A	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	(1) 662 V (2) 486 V (3) 654 V
2	O/P Diode (MOSFET)	Q101 Rated 300V/20A	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	(1) 175 V (2) 118 V (3) 172 V
3	Input Capacitor	C5 Rated 100u/ 450V	I/P：High-Line +3V =308 V O/P：(1) Full Load input on/off (2) NO LOAD input on /Off (3) Full Load /NO LOAD Change Ta：25℃	(1) 440 V (2) 448 V (3) 446 V
4	Control IC	U1 Rated 28V (MAX.)	I/P：High-Line +3V =308 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℃	(1) 17.6 V (2) 15.2 V (3) 11.2 V (4) 15.2 V (5) 17.2 V
5	PFC Power Transistor	Q 1 Rated 600V/10A	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	(1) 476 V (2) 424 V (3) 470 V
6	Clamp Diode	D10 Rated 800V/2A	I/P：High-Line +3V = 308V O/P: (1) Full Load input on/off (2) Output Short Ta：25℃	(1) 630 V (2) 470 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℃	I/P-O/P：2.622 mA I/P-FG： 2.158 mA O/P-FG：1.605 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℃	I/P-O/P：>9999 MΩ I/P-FG： >9999 MΩ O/P-FG：>9999 MΩ

E.M.C TEST

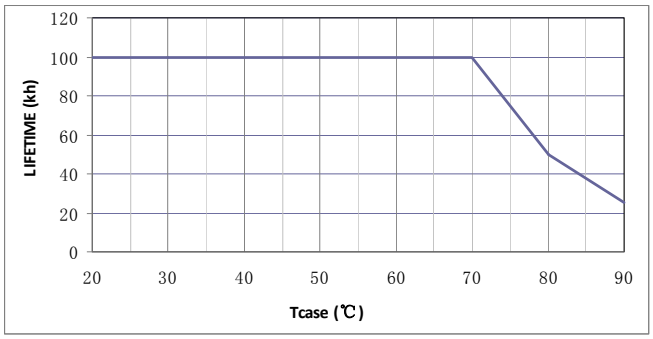
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P：230VAC/50HZ O/P：FULL/50% LOAD Ta：25℃	PASS
2	CONDUCTION	EN55015	I/P：230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
3	RADIATION	EN55015	I/P：230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
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：1KV	I/P： 230VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA A
6	SURGE	EN61000-4-5 INDUSTRY L-N：4KV L,N-PE：6KV	I/P： 230VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA A
7	Test by certified Lab ＆ Test Report Prepare			

■ RELIABILITY TEST

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： ELG-100-48
1. ROOM AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=31.1 ℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=61.6 ℃</td></tr>
<tr><td colspan="5">
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=31.1 ℃</th><th>HIGH AMBIENT Ta=61.6 ℃</th></tr>
<tr><td>1</td><td>ZNR1</td><td>54.4℃</td><td>79.8℃</td></tr>
<tr><td>2</td><td>LF2</td><td>55.9℃</td><td>82.1℃</td></tr>
<tr><td>3</td><td>C10</td><td>57.1℃</td><td>83.7℃</td></tr>
<tr><td>4</td><td>C11</td><td>57.4℃</td><td>84.1℃</td></tr>
<tr><td>5</td><td>L2</td><td>57.8℃</td><td>83.9℃</td></tr>
<tr><td>6</td><td>L1</td><td>35.6℃</td><td>82.7℃</td></tr>
<tr><td>7</td><td>Q1</td><td>58.0℃</td><td>84.7℃</td></tr>
<tr><td>8</td><td>Q2</td><td>59.6℃</td><td>86.3℃</td></tr>
<tr><td>9</td><td>D6</td><td>58.8℃</td><td>85.5℃</td></tr>
<tr><td>10</td><td>D10</td><td>63.1℃</td><td>90.6℃</td></tr>
<tr><td>11</td><td>C5</td><td>56.2℃</td><td>82.3℃</td></tr>
<tr><td>12</td><td>C45</td><td>58.0℃</td><td>83.9℃</td></tr>
<tr><td>13</td><td>U1</td><td>57.6℃</td><td>84.3℃</td></tr>
<tr><td>14</td><td>T1</td><td>62.8℃</td><td>88.7℃</td></tr>
<tr><td>15</td><td>Q101</td><td>58.8℃</td><td>85.3℃</td></tr>
<tr><td>16</td><td>Q105</td><td>53.6℃</td><td>80.3℃</td></tr>
<tr><td>17</td><td>C205</td><td>57.7℃</td><td>83.9℃</td></tr>
<tr><td>18</td><td>C105</td><td>58.1℃</td><td>84.4℃</td></tr>
<tr><td>19</td><td>C106</td><td>55.8℃</td><td>82.3℃</td></tr>
<tr><td>20</td><td>C108</td><td>55.3℃</td><td>81.8℃</td></tr>
<tr><td>21</td><td>LF100</td><td>52.7℃</td><td>79.7℃</td></tr>
<tr><td>22</td><td>RTH2</td><td>55.5℃</td><td>81.6℃</td></tr>
<tr><td>23</td><td>U100</td><td>52.9℃</td><td>79.7℃</td></tr>
<tr><td>24</td><td>TC</td><td>51.2℃</td><td>77.5℃</td></tr>
</table>
</td></tr>
<tr><td>2</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P： 305VAC/200VAC
O/P： FULL LOAD
Ta= -45℃</td><td>TEST： OK</td></tr>
<tr><td>3</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 60℃
NO DAMAGE</td><td>I/P： 305VAC
O/P： FULL LOAD
Ta=60℃
HUMIDITY= 95 %R.H</td><td>TEST： OK</td></tr>
<tr><td>4</td><td>TEMPERATURE
COEFFICIENT</td><td>±0.03 %/℃(0~50℃)</td><td>I/P： 230 VAC
O/P： FULL LOAD</td><td>±0.002 %/℃(0~50℃)</td></tr>
<tr><td>5</td><td>STORAGE TEMPERATURE TEST</td><td colspan="2">1. Thermal shock Temperature： -45℃~ +90℃
2. Temperature change rate ： 25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle： 5 CYCLE
5. Input/Output condition： STATIC</td><td>TEST： OK</td></tr>
</table>

6	THERMAL SHOCK TEST	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： 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℃	TEST： OK
8	CAPACITOR LIFE CYCLE	ELG-100-48： SUPPOSE C108 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P： FULL LOAD Ta= 25 ℃ LIFE TIME (2) I/P： 230VAC O/P： FULL LOAD Ta= 60 ℃ LIFE TIME (3) I/P： 230VAC O/P： 75% LOAD Ta= 60 ℃ LIFE TIME (4) I/P： 230VAC O/P： 50% LOAD Ta= 60 ℃ LIFE TIME	(1) 453181 HRS (2) 52859 HRS (3) 60597 HRS (4) 79217 HRS
9	MTBF	MIL-HDBK-217F TOTAL FAILURE RATE： 282.9K HRS	
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life)： Above 50000 hours @ Tc 80℃	



TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	ZHANGZJ/ZHUOKB	SKY	LIUWY