Test Report： ELG-150-12

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

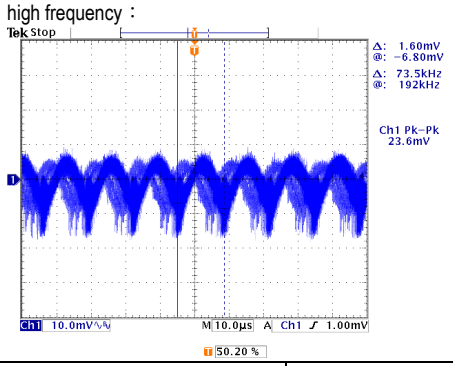
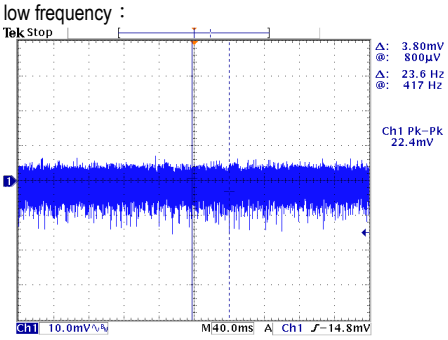
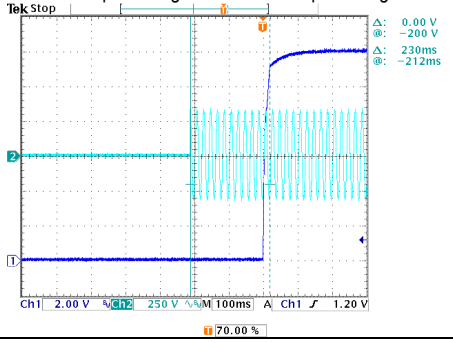
Safety Test
E.M.C. Test

■ RELIABILITY TEST

Environment Test

■ DESIGN VERIFY TEST

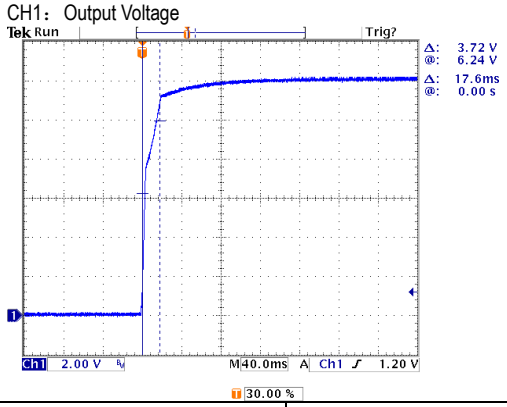
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	6V~12V	I/P： 230VAC O/P：LED MODE Ta：25℃	5.44 V~ 12.07 V
2	OUTPUT VOLTAGE ADJUST RANGE	10.8V~13.2V	I/P： 230VAC O/P：NO LOAD Ta：25℃	9.93 V~ 13.75 V
3	OUTPUT CURRENT ADJUST RANGE	5A~10A	I/P： 230VAC O/P：SETTING Ta：25℃	4.255 A~ 11.548 A
4	OUTPUT VOLTAGE TOLERANCE	-3%~+3%	I/P： 180VAC / 295VAC O/P：FULL/ NO LOAD Ta：25℃	-0.66%~ 1.66%
5	LINE REGULATION	-0.5%~+0.5%	I/P： 190VAC ~ 295VAC O/P：FULL LOAD Ta：25℃	0%~ 0%
6	LOAD REGULATION	-2%~+2%	I/P： 230VAC O/P：FULL ~NO LOAD Ta：25℃	-0.41%~ 0.41%
7	OVER/UNDERSHOOT TEST	<±5 %	I/P： 230VAC O/P：FULL LOAD Ta：25℃	±2.564%
8	RIPPLE & NOISE (Max)	150mVp-p	I/P： 230VAC O/P：FULL LOAD Ta：25℃	23.6 mVp-p
	high frequency：  low frequency： 			
9	SET UP TIME(Max)	230VAC/ 500ms	I/P： 230 VAC O/P：95% LOAD Ta：25℃	230VAC/ 230 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/ 17.6 ms

INPUT=230VAC/50HZ @ 95% LOAD

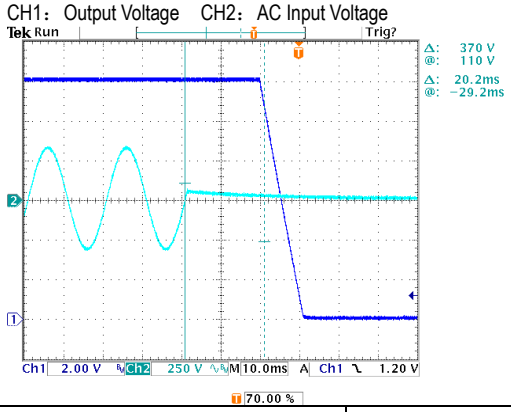
CH1： Output Voltage



11	HOLD UP TIME(Typ)	230VAC/ 10ms	I/P： 230 VAC O/P：95% LOAD Ta：25℃	230VAC/ 20.2 ms

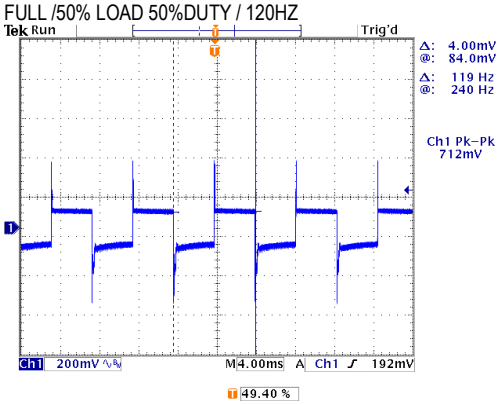
INPUT=230VAC/50HZ @ 95% LOAD

CH1： Output Voltage CH2： AC Input Voltage

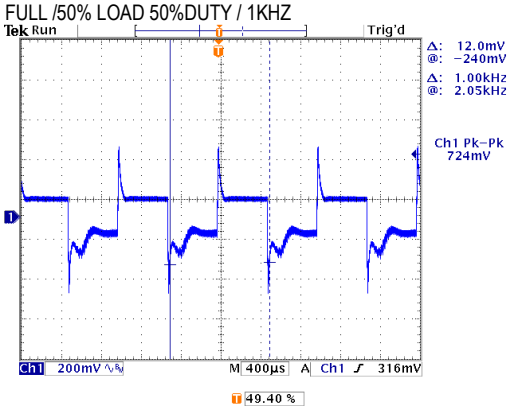


12	DYNAMIC LOAD	V1： 1200 mVp-p	I/P： 230VAC O/P： (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta：25℃	 (1) 712mVp-p (2) 724mVp-p

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℃

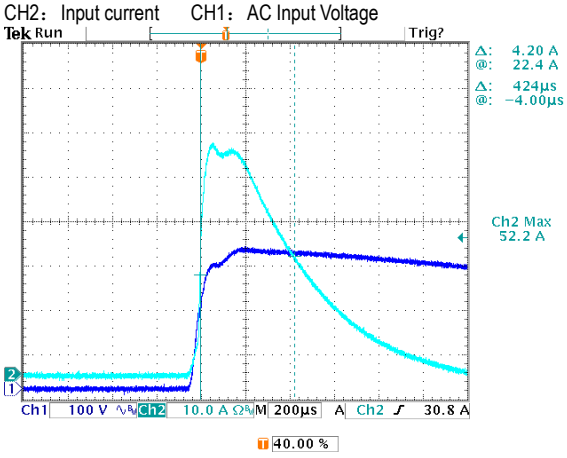
1	Resistance value	Short	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0	0.876	1.917	2.965	4.031	5.101	6.179	7.266	8.376	9.471	10.173	10.182
	Percentage of rated current	0%	8.76%	19.17%	29.65%	40.31%	51.01%	61.79%	72.66%	83.76%	94.71%	101.73%	101.82%
2	Dimming value	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
	Output Current	0	0.898	1.923	2.905	3.957	4.989	6.071	7.135	8.149	9.209	10.179	10.201
	Percentage of rated current	0%	8.98%	19.23%	29.05%	39.57%	49.89%	60.71%	71.35%	81.49%	92.09%	101.79%	102.01%
3	Duty value	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current	0	0.962	1.955	2.972	3.992	5.030	6.064	7.101	8.152	9.192	10.139	10.217
	Percentage of rated current	0%	9.62%	19.55%	29.72%	39.92%	50.30%	60.64%	71.01%	81.52%	91.92%	101.39%	102.17%

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℃	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℃	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℃	I = 0.47 A/ 277VAC I = 0.56 A/ 230VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P： 277 VAC O/P：NO LOAD Ta：25℃	L-FG： 0.385 mA N-FG： 0.345 mA
5	NO LOAD POWER CONSUMPTION	< 0.5W	I/P：230VAC O/P：NO LOAD Ta：25℃	0.147 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： 10.47 %
		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： 9.25 %
7	INRUSH CURRENT(Typ)	230V/ 65A Twidth =550us measured at 50% Ipeak COLD START	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I = 52.2 A/ 230VAC Twidth =424 us

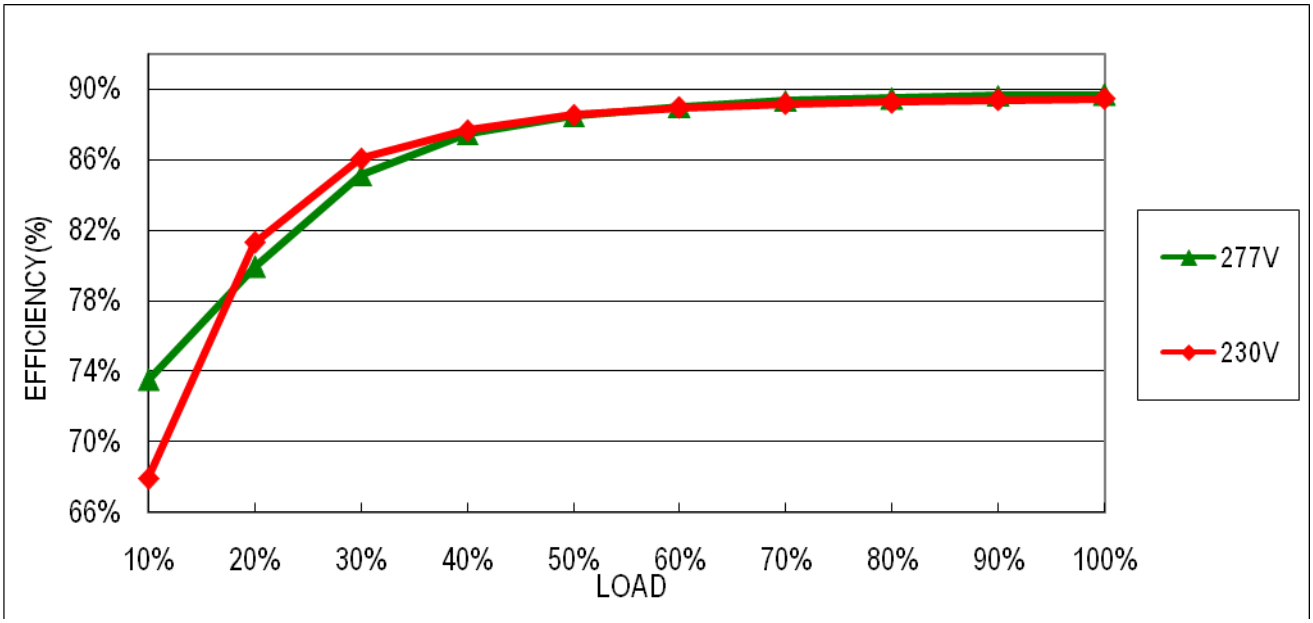
INPUT=230VAC/50HZ @ FULL LOAD

CH2：Input current CH1：AC Input Voltage



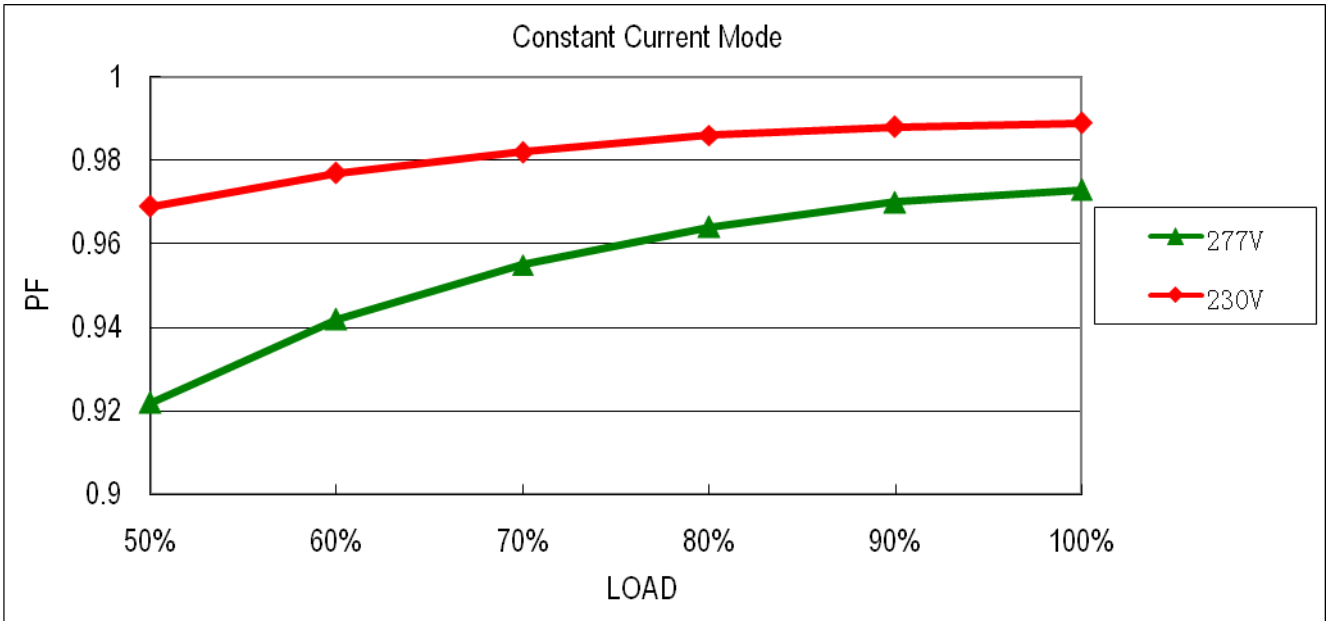
8	EFFICIENCY(Typ)	88%	I/P： 230VAC O/P：FULL LOAD Ta：25℃	89.44 %

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= 0.973 / 277VAC PF= 0.989 / 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℃	103.09 %/ 200VAC 102.81 %/ 230VAC 102.62 %/ 295VAC Constant Current Limiting，recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	14V~18V	I/P： 180VAC I/P： 230VAC I/P： 295VAC O/P：NO LOAD Ta：25℃	16.20 V/ 180VAC 16.20 V/ 230VAC 16.20 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℃	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℃	 (1) 652 V (2) 626 V (3) 644 V
2	O/P Diode (MOSFET)	Q101 Rated 75V/80A	I/P：High-Line +3V =298V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 71.6 V (2) 71.6 V (3) 70.2 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℃	 (1) 444 V (2) 444 V (3) 444 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℃	 (1) 17.3 V (2) 15.1 V (3) 15.7 V (4) 15.1 V (5) 17.0 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℃	 (1) 542 V (2) 496 V (3) 496 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℃	(1) 570 V (2) 480 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：1.535 mA I/P-FG： 2.275 mA O/P-FG：1.561 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

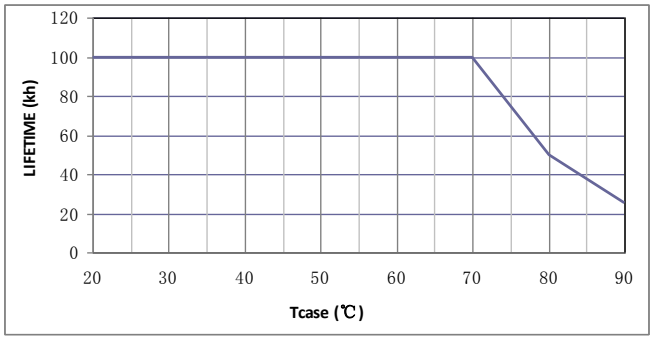
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P：230VAC/50HZ O/P：FULL/50% LOAD Ta：25℃	PASS
2	CONDUCTION	EN55015	I/P：230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
3	RADIATION	EN55015	I/P：230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
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：3KV L,N-PE：6KV	I/P： 230VAC/50HZ O/P：FULL LOAD L-N：4KV L,N-PE：8KV 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-150-12
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=31.7 ℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=63.5 ℃</td></tr>
<tr><td colspan="5"><table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=31.7 ℃</th><th>HIGH AMBIENT Ta=63.5 ℃</th></tr>
<tr><td>1</td><td>LF2</td><td>61.7℃</td><td>90.0℃</td></tr>
<tr><td>2</td><td>L1</td><td>66.9℃</td><td>92.1℃</td></tr>
<tr><td>3</td><td>L3</td><td>63.5℃</td><td>90.7℃</td></tr>
<tr><td>4</td><td>ZNR2</td><td>66.8℃</td><td>91.8℃</td></tr>
<tr><td>5</td><td>C11</td><td>64.7℃</td><td>93.7℃</td></tr>
<tr><td>6</td><td>Q1</td><td>70.1℃</td><td>96.4℃</td></tr>
<tr><td>7</td><td>Q2</td><td>72.5℃</td><td>103.4℃</td></tr>
<tr><td>8</td><td>D6</td><td>70.4℃</td><td>97.4℃</td></tr>
<tr><td>9</td><td>D10</td><td>77.0℃</td><td>107.5℃</td></tr>
<tr><td>10</td><td>U1</td><td>64.7℃</td><td>91.9℃</td></tr>
<tr><td>11</td><td>R7</td><td>81.1℃</td><td>109.5℃</td></tr>
<tr><td>12</td><td>C5</td><td>66.8℃</td><td>94.8℃</td></tr>
<tr><td>13</td><td>T1</td><td>72.8℃</td><td>99.1℃</td></tr>
<tr><td>14</td><td>C45</td><td>64.3℃</td><td>93.8℃</td></tr>
<tr><td>15</td><td>U100</td><td>61.6℃</td><td>87.4℃</td></tr>
<tr><td>16</td><td>U101</td><td>62.0℃</td><td>92.7℃</td></tr>
<tr><td>17</td><td>Q101</td><td>68.1℃</td><td>96.2℃</td></tr>
<tr><td>18</td><td>Q102</td><td>64.5℃</td><td>95.9℃</td></tr>
<tr><td>19</td><td>C205</td><td>65.0℃</td><td>93.4℃</td></tr>
<tr><td>20</td><td>C105</td><td>60.7℃</td><td>89.2℃</td></tr>
<tr><td>21</td><td>C106</td><td>64.9℃</td><td>94.0℃</td></tr>
<tr><td>22</td><td>C108</td><td>64.7℃</td><td>91.2℃</td></tr>
<tr><td>23</td><td>RTH2</td><td>61.7℃</td><td>90.0℃</td></tr>
<tr><td>24</td><td>TC</td><td>59.4℃</td><td>84.6℃</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： 295VAC/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>±0.027 %/℃(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-150-12：SUPPOSE C106 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) 319677 HRS (2) 37269 HRS (3) 49982 HRS (4) 112748 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℃	



TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	ZHANGZJ/ZHUOKB	SKY	LIUWY