



Test Report: ELG-100-24

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

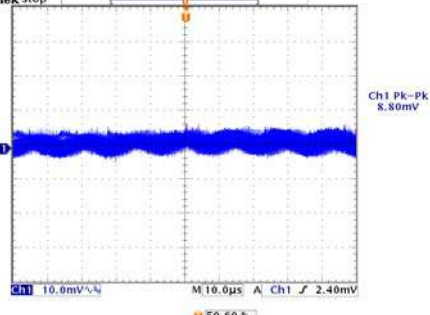
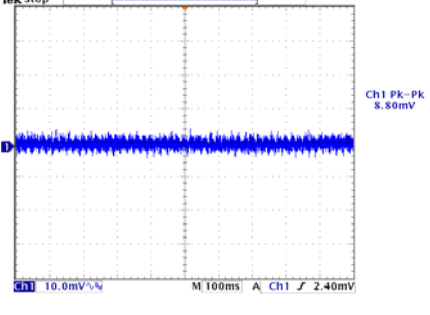
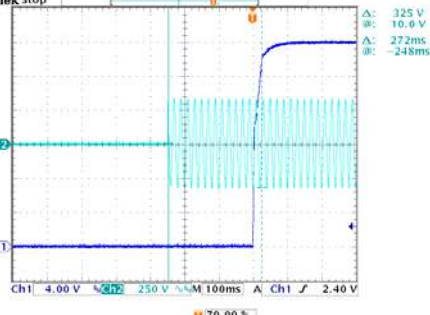
E.M.C. Test

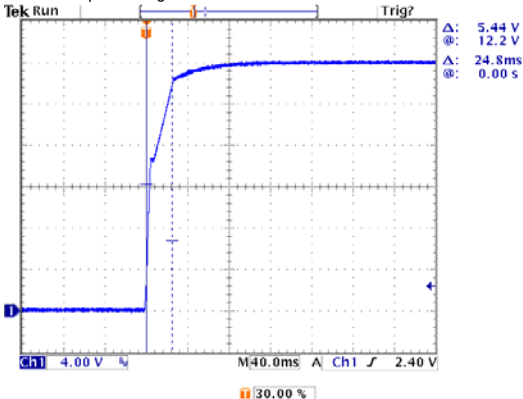
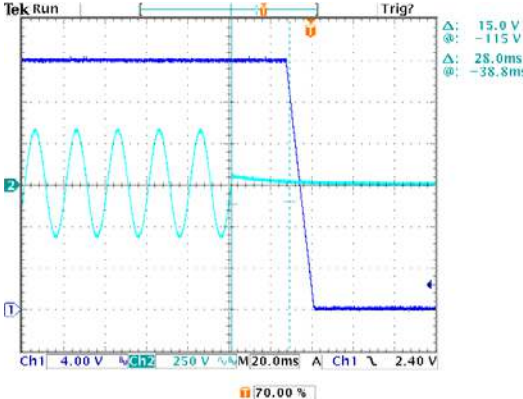
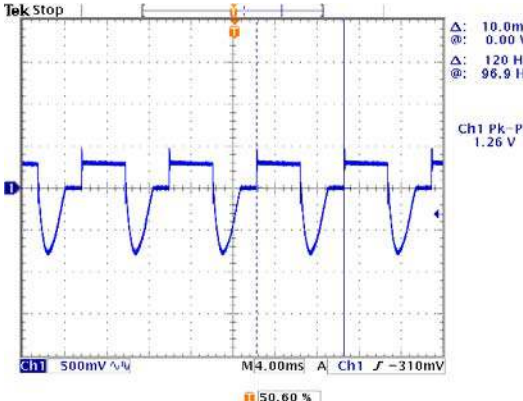
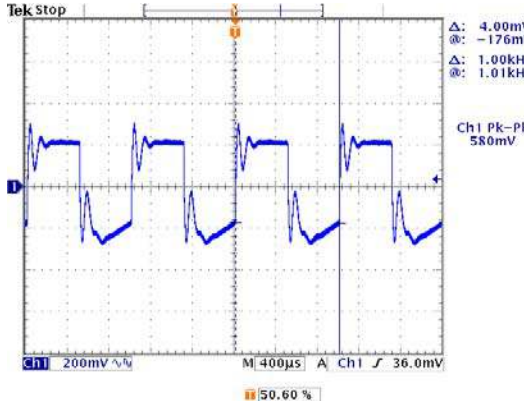
■ RELIABILITY TEST

Environment Test

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	12V~24V	I/P: 230VAC O/P: LED MODE Ta: 25°C	6 V~ 24 V
2	OUTPUT VOLTAGE ADJUST RANGE	21.6V~26.4V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	20.76 V~ 27.61 V
3	OUTPUT CURRENT ADJUST RANGE	2A~4A	I/P: 230VAC O/P: SETTING Ta: 25°C	1.733 A~ 4.262 A
4	OUTPUT VOLTAGE TOLERANCE	-3%~+3%	I/P: 100VAC / 305VAC O/P: FULL/ NO LOAD Ta: 25°C	-0.29%~ 0.79%
5	LINE REGULATION	-0.5%~+0.5%	I/P: 200VAC ~ 305VAC O/P: FULL LOAD Ta: 25°C	0%~ 0%
6	LOAD REGULATION	-1%~+1%	I/P: 230VAC O/P: FULL ~NO LOAD Ta: 25°C	-0.29%~ 0.42%
7	OVER/UNDERSHOOT TEST	<± 5 %	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	± 1.667%
8	RIPPLE & NOISE (Max)	200mVp-p	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	8.8 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/ 272 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/ 24.8 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°C	230VAC/ 28.0 ms
INPUT=230VAC/50HZ @ 95% LOAD CH1: Output Voltage CH2: AC Input Voltage 				
12	DYNAMIC LOAD	V1: 2400 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) 1260mVp-p (2) 580mVp-p
FULL /50% LOAD 50%DUTY / 120HZ  FULL /50% LOAD 50%DUTY / 1KHZ 				

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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℃

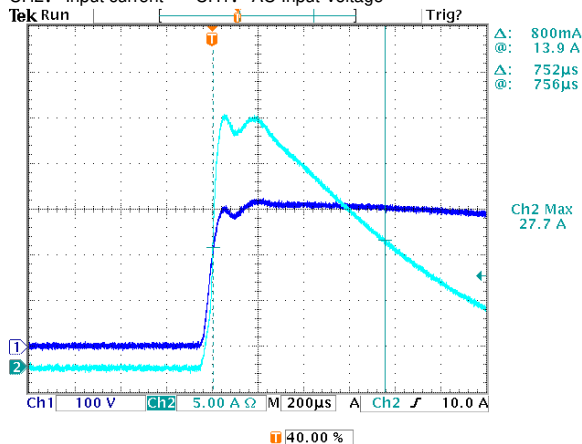
1	Resistance value	Short	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0	0.449	0.850	1.268	1.681	2.092	2.507	2.920	3.341	3.763	4.028	4.030
	Percentage of rated current	0%	11.23%	21.25%	31.70%	42.03%	52.30%	62.68%	73.00%	83.53%	94.08%	100.70%	100.75%
2	Dimming value	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
	Output Current	0	0.458	0.865	1.251	1.664	2.065	2.484	2.894	3.282	3.691	4.027	4.030
	Percentage of rated current	0%	11.45%	21.63%	31.28%	41.60%	51.63%	62.10%	72.35%	82.05%	92.28%	100.68%	100.75%
3	Duty value	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current	0	0.445	0.850	1.255	1.656	2.061	2.464	2.864	3.271	3.674	4.017	4.024
	Percentage of rated current	0%	11.13%	21.25%	31.38%	41.40%	51.53%	61.60%	71.60%	81.78%	91.85%	100.43%	100.60%

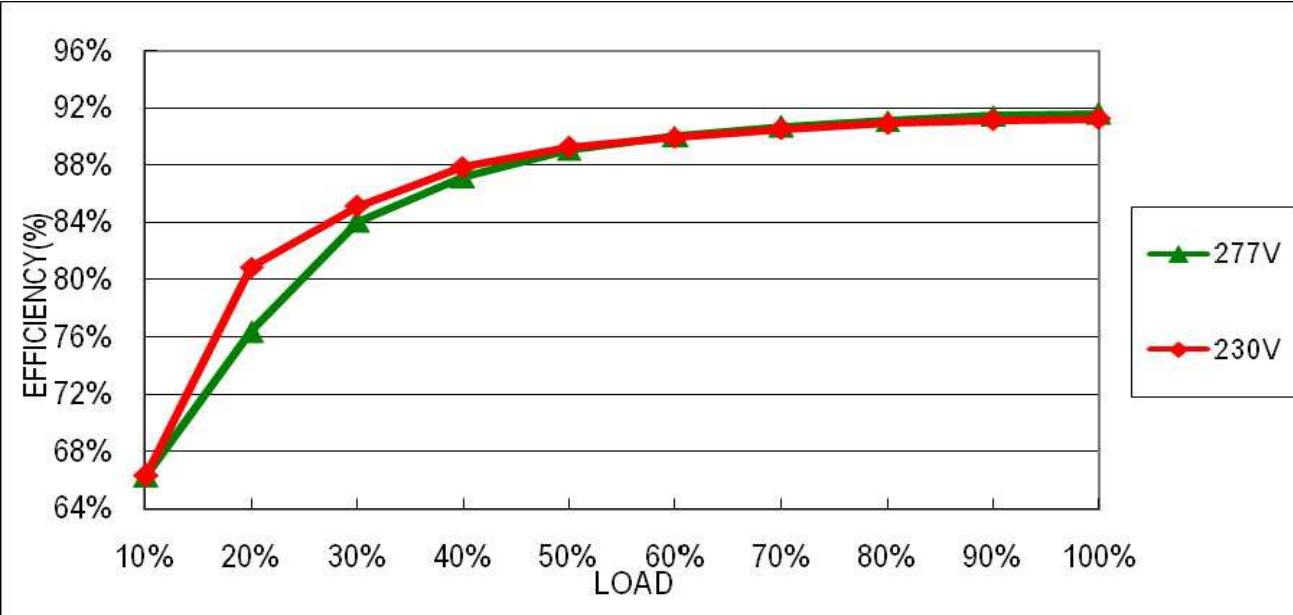
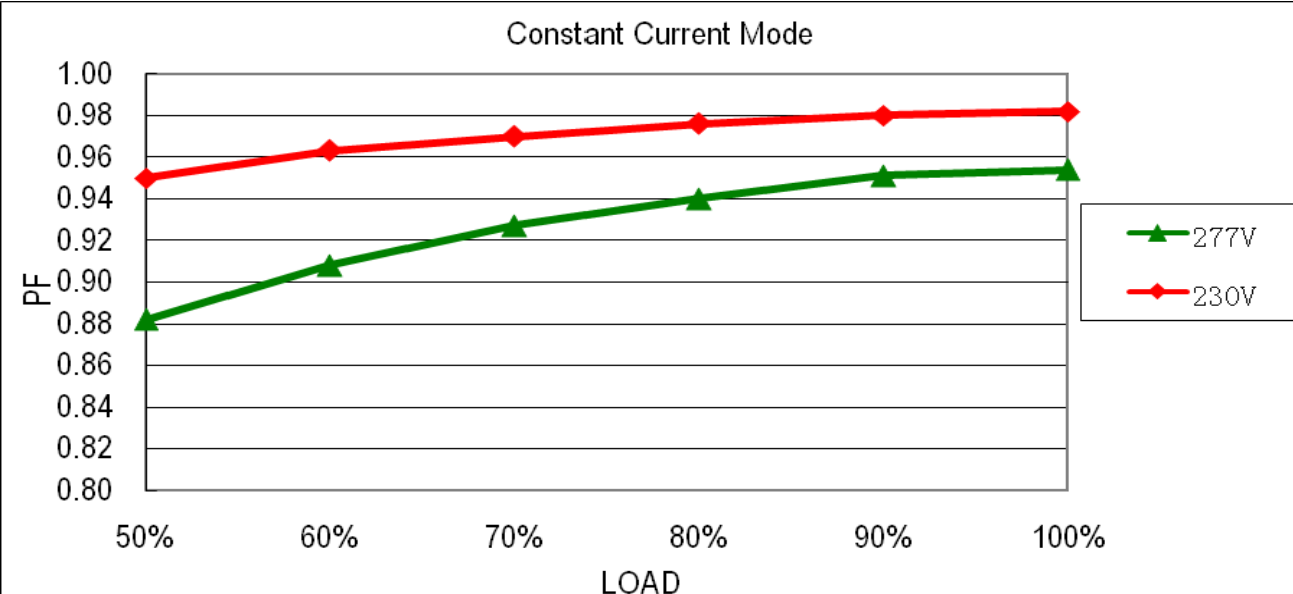
INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	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°C	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°C	I = 0.37 A/ 277VAC I = 0.44 A/ 230VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.437 mA N-FG: 0.420 mA
5	NO LOAD POWER CONSUMPTION	< 0.5W	I/P: 230VAC O/P: NO LOAD Ta: 25°C	0.233 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: 13.88 %
		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: 12.37 %
7	INRUSH CURRENT(Typ)	230V/ 60A Twidth =850us measured at 50% Ipeak COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I = 27.7 A/ 230VAC Twidth =752 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°C	91.25 %																																	
EFFICIENCY vs LOAD <table><caption>Efficiency vs Load Data (Approximate)</caption><thead><tr><th>LOAD</th><th>277V</th><th>230V</th></tr></thead><tbody><tr><td>10%</td><td>65%</td><td>66%</td></tr><tr><td>20%</td><td>76%</td><td>81%</td></tr><tr><td>30%</td><td>84%</td><td>86%</td></tr><tr><td>40%</td><td>87%</td><td>89%</td></tr><tr><td>50%</td><td>89%</td><td>90%</td></tr><tr><td>60%</td><td>90%</td><td>91%</td></tr><tr><td>70%</td><td>91%</td><td>91.5%</td></tr><tr><td>80%</td><td>91.2%</td><td>91.8%</td></tr><tr><td>90%</td><td>91.5%</td><td>92%</td></tr><tr><td>100%</td><td>91%</td><td>91.25%</td></tr></tbody></table>					LOAD	277V	230V	10%	65%	66%	20%	76%	81%	30%	84%	86%	40%	87%	89%	50%	89%	90%	60%	90%	91%	70%	91%	91.5%	80%	91.2%	91.8%	90%	91.5%	92%	100%	91%	91.25%
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90%	91.5%	92%																																			
100%	91%	91.25%																																			
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= 0.954 / 277VAC PF= 0.982 / 230VAC																																	
P.F vs LOAD Constant Current Mode <table><caption>P.F vs Load Data (Approximate)</caption><thead><tr><th>LOAD</th><th>277V</th><th>230V</th></tr></thead><tbody><tr><td>50%</td><td>0.88</td><td>0.95</td></tr><tr><td>60%</td><td>0.91</td><td>0.96</td></tr><tr><td>70%</td><td>0.93</td><td>0.97</td></tr><tr><td>80%</td><td>0.94</td><td>0.975</td></tr><tr><td>90%</td><td>0.95</td><td>0.98</td></tr><tr><td>100%</td><td>0.95</td><td>0.982</td></tr></tbody></table>					LOAD	277V	230V	50%	0.88	0.95	60%	0.91	0.96	70%	0.93	0.97	80%	0.94	0.975	90%	0.95	0.98	100%	0.95	0.982												
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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°C	102.75 %/ 200VAC 102.75 %/ 230VAC 102.75 %/ 305VAC Constant Current Limiting, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	28V~34V	I/P: 100VAC I/P: 230VAC I/P: 305VAC O/P: NO LOAD Ta: 25°C	30.11 V/ 100VAC 30.18 V/ 230VAC 30.18 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°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 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°C	(1) 666 V (2) 486 V (3) 662 V
2	O/P Diode (MOSFET)	Q101 Rated 120V/56A	I/P: High-Line +3V =308V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 87.2 V (2) 106 V (3) 86.8 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°C	(1) 448 V (2) 446 V (3) 448 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°C	(1) 17.4 V (2) 15.1 V (3) 11.3 V (4) 17.4 V (5) 17.3 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°C	(1) 476 V (2) 426 V (3) 476 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°C	(1) 622 V (2) 632 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: 2.573 mA I/P-FG: 2.474 mA O/P-FG: 1.938 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

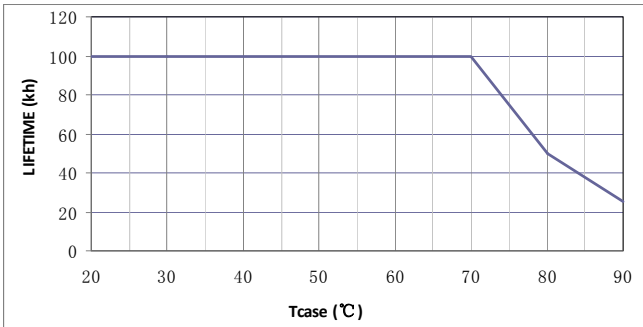
E.M.C TEST

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: 4KV L,N-PE: 6KV	I/P: 230VAC/50HZ O/P: FULL LOAD 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-100-24 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=39.7 °C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=60.7 °C <table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=39.7 °C</th><th>HIGH AMBIENT Ta=60.7 °C</th></tr><tr><td>1</td><td>LF2</td><td>62.6°C</td><td>82.3°C</td></tr><tr><td>2</td><td>C11</td><td>65.9°C</td><td>85.6°C</td></tr><tr><td>3</td><td>L2</td><td>64.5°C</td><td>84.3°C</td></tr><tr><td>4</td><td>L1</td><td>64.6°C</td><td>84.1°C</td></tr><tr><td>5</td><td>Q1</td><td>66.7°C</td><td>86.4°C</td></tr><tr><td>6</td><td>Q2</td><td>69.5°C</td><td>89.5°C</td></tr><tr><td>7</td><td>D6</td><td>68.0°C</td><td>87.5°C</td></tr><tr><td>8</td><td>D10</td><td>73.7°C</td><td>93.7°C</td></tr><tr><td>9</td><td>R7</td><td>73.8°C</td><td>93.8°C</td></tr><tr><td>10</td><td>C5</td><td>66.8°C</td><td>86.4°C</td></tr><tr><td>11</td><td>C45</td><td>66.6°C</td><td>86.6°C</td></tr><tr><td>12</td><td>U1</td><td>64.9°C</td><td>84.7°C</td></tr><tr><td>13</td><td>T1</td><td>71.3°C</td><td>92.0°C</td></tr><tr><td>14</td><td>Q101</td><td>65.7°C</td><td>86.0°C</td></tr><tr><td>15</td><td>C105</td><td>66.0°C</td><td>86.3°C</td></tr><tr><td>16</td><td>C106</td><td>64.0°C</td><td>84.1°C</td></tr><tr><td>17</td><td>C108</td><td>63.7°C</td><td>83.7°C</td></tr><tr><td>18</td><td>RTH2</td><td>63.6°C</td><td>83.4°C</td></tr><tr><td>19</td><td>TC</td><td>59.5°C</td><td>79.1°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta=39.7 °C	HIGH AMBIENT Ta=60.7 °C	1	LF2	62.6°C	82.3°C	2	C11	65.9°C	85.6°C	3	L2	64.5°C	84.3°C	4	L1	64.6°C	84.1°C	5	Q1	66.7°C	86.4°C	6	Q2	69.5°C	89.5°C	7	D6	68.0°C	87.5°C	8	D10	73.7°C	93.7°C	9	R7	73.8°C	93.8°C	10	C5	66.8°C	86.4°C	11	C45	66.6°C	86.6°C	12	U1	64.9°C	84.7°C	13	T1	71.3°C	92.0°C	14	Q101	65.7°C	86.0°C	15	C105	66.0°C	86.3°C	16	C106	64.0°C	84.1°C	17	C108	63.7°C	83.7°C	18	RTH2	63.6°C	83.4°C	19	TC	59.5°C	79.1°C
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4	L1	64.6°C	84.1°C																																																																																	
5	Q1	66.7°C	86.4°C																																																																																	
6	Q2	69.5°C	89.5°C																																																																																	
7	D6	68.0°C	87.5°C																																																																																	
8	D10	73.7°C	93.7°C																																																																																	
9	R7	73.8°C	93.8°C																																																																																	
10	C5	66.8°C	86.4°C																																																																																	
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13	T1	71.3°C	92.0°C																																																																																	
14	Q101	65.7°C	86.0°C																																																																																	
15	C105	66.0°C	86.3°C																																																																																	
16	C106	64.0°C	84.1°C																																																																																	
17	C108	63.7°C	83.7°C																																																																																	
18	RTH2	63.6°C	83.4°C																																																																																	
19	TC	59.5°C	79.1°C																																																																																	
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 305VAC/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: $-45^{\circ}\text{C} \sim +65^{\circ}\text{C}$ 2. Temperature change rate : $25^{\circ}\text{C} / \text{MIN}$ 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-100-24: SUPPOSE C108 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) 500520 HRS (2) 47368 HRS (3) 64020 HRS (4) 103392 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°C 	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	ZHANGZJ/ZHUOKB	SKY	LIUWY