



Test Report: ELG-150-C500

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

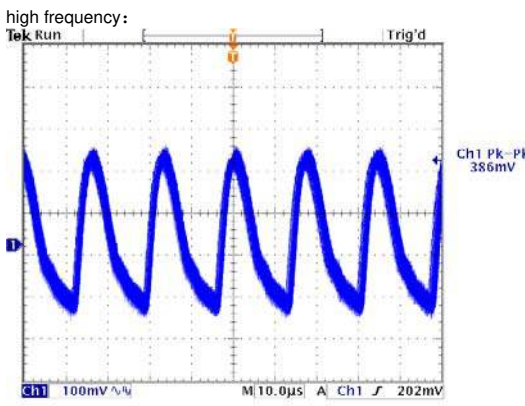
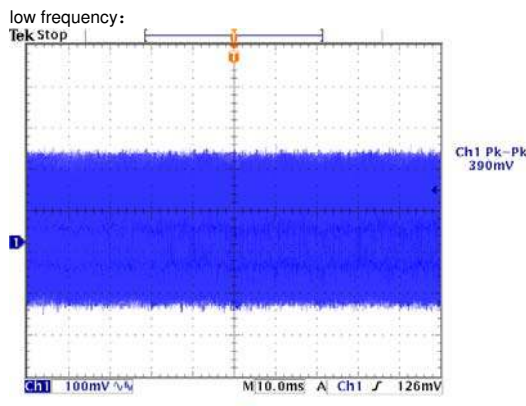
E.M.C. Test

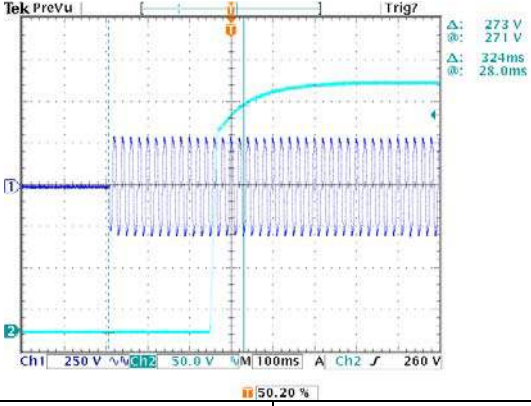
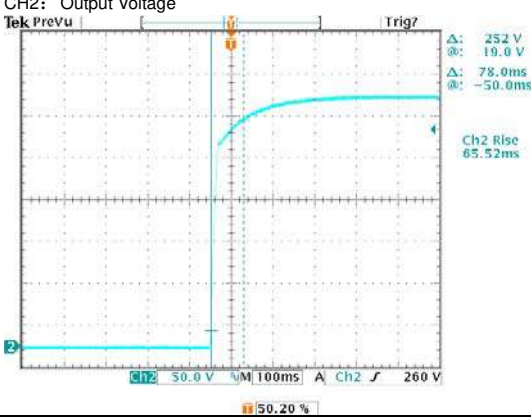
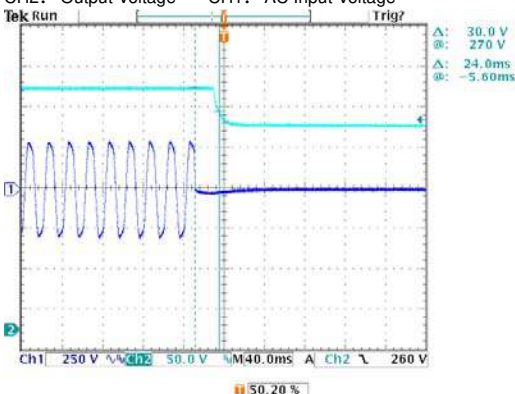
■ RELIABILITY TEST

Environment Test

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT CURRENT ADJUST RANGE	250mA~500mA	I/P: 230VAC O/P: LED MODE Ta: 25°C	0.1651A~0.5451A
2	OUTPUT CURRENT TOLERANCE	±5%	I/P: 230VAC O/P: FULL/ MIN LOAD Ta: 25°C	±1.90 %
3	RIPPLE CURRENT	±5%	I/P: 230VAC O/P: LED MODE Ta: 25°C	3.20%
4	CONSTANT CURRENT REGION	150V~300V	I/P: 230VAC O/P: LED MODE Ta: 25°C	52V~300V
5	NO LOAD OUTPUT VOLTAGE (Max)	315V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	305V
6	OVER/UNDERSHOOT TEST	<±5 %	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	<5 %
7	RIPPLE & NOISE (Max)	2Vp-p	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	0.39Vp-p
high frequency:  Ch1 Pk-Pk 386mV low frequency:  Ch1 Pk-Pk 390mV				
8	SET UP TIME(Max)	230VAC/ 500ms	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	230VAC/ 324ms

INPUT=230VAC/50HZ @ FULL LOAD CH2: Output Voltage CH1: AC Input Voltage 				
9	RISE TIME (Max)	230VAC/ 85ms	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	230VAC/65ms
INPUT=230VAC/50HZ @ FULL LOAD CH2: Output Voltage 				
10	HOLD UP TIME(Typ)	230VAC/ 10ms	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	230VAC/24ms
INPUT=230VAC/50HZ @ FULL LOAD CH2: Output Voltage CH1: AC Input Voltage 				

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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℃

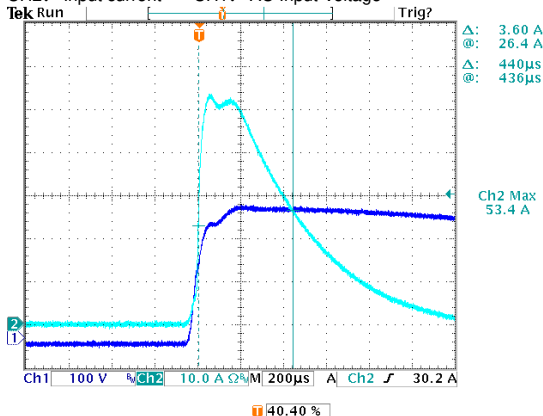
1	Resistance value	Short	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0	0.045	0.098	0.151	0.204	0.257	0.312	0.366	0.42	0.474	0.509	0.514
	Percentage of rated current	0%	9.00%	19.60%	30.20%	40.80%	51.40%	62.40%	73.20%	84.00%	94.80%	101.80%	102.80%
2	Dimming value	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
	Output Current	0	0.045	0.097	0.146	0.197	0.249	0.301	0.351	0.401	0.452	0.501	0.514
	Percentage of rated current	0%	9.00%	19.40%	29.20%	39.40%	49.80%	60.20%	70.20%	80.20%	90.40%	100.20%	102.80%
3	Duty value	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current	0	0.049	0.1	0.151	0.202	0.253	0.303	0.354	0.405	0.455	0.501	0.514
	Percentage of rated current	0%	9.80%	20.00%	30.20%	40.40%	50.60%	60.60%	70.80%	81.00%	91.00%	100.20%	102.80%

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	97V~305V
			I/P: (1)LOW-LINE-3V=97 V HIGH-LINE+10V=315 V O/P: FULL/MIN LOAD ON: 30 Sec OFF: 30 Sec 10MIN (2)230VAC ON: 0.5 Sec OFF: 0.5 Sec 20MIN (3)230VAC ON: 3Sec OFF: 3Sec 12HOURS (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~MIN 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 =0.585A/ 277VAC I =0.712A/ 230VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.406 mA N-FG: 0.368 mA
5	NO LOAD POWER CONSUMPTION	< 0.5W	I/P: 230VAC O/P: NO LOAD Ta: 25°C	0.292W/ 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: 10.80 %
		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: 9.56 %
7	INRUSH CURRENT(Typ)	230V/ 65A Twidh =485 us measured at 50% Ipeak COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I =53.4A/ 230VAC Twidh =440us

INPUT=230VAC/50HZ @ FULL LOAD

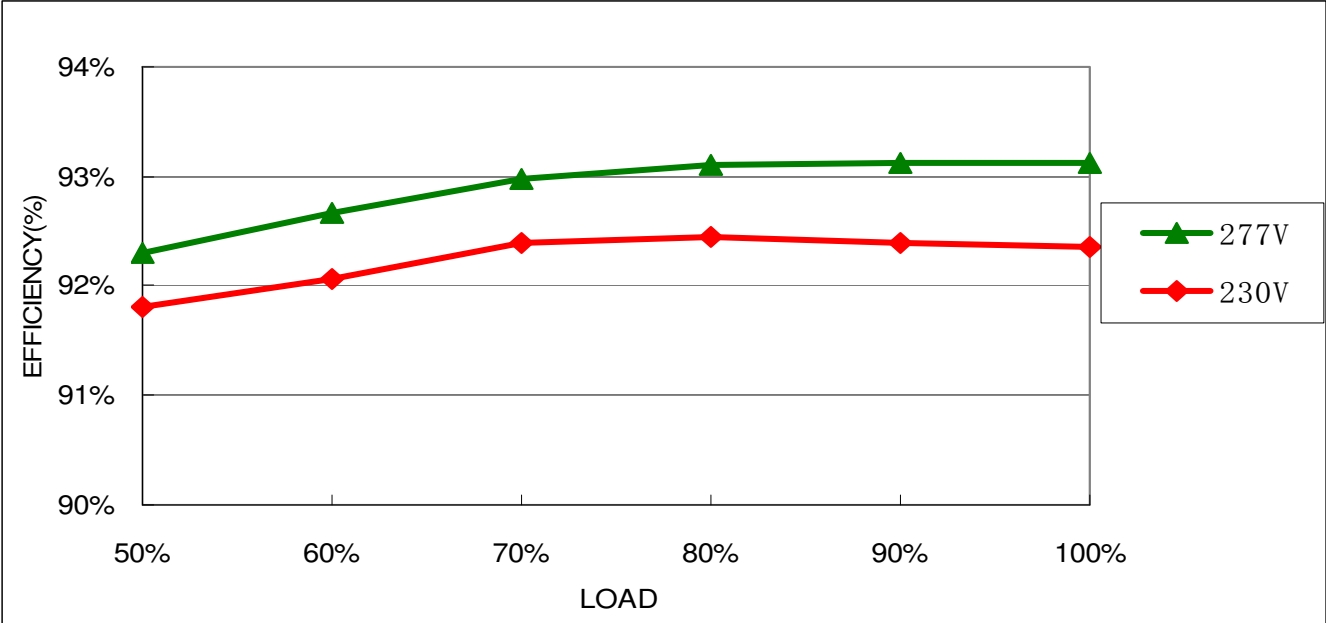
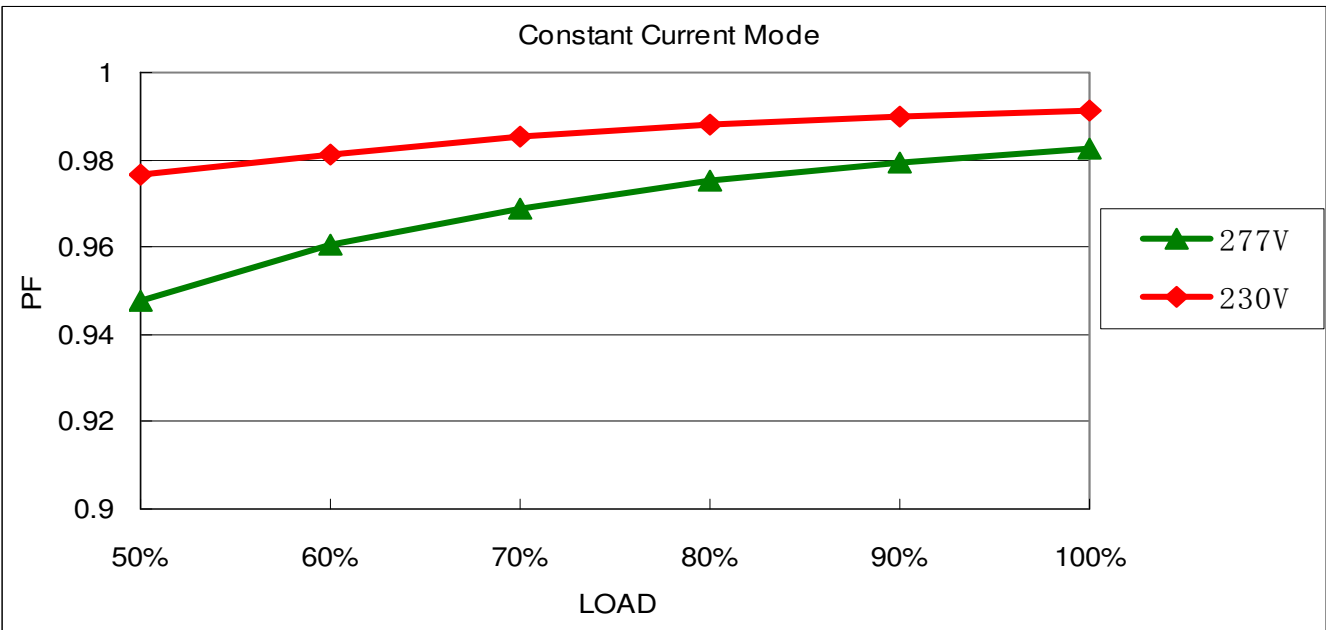
CH2: Input current CH1: AC Input Voltage





150W Single Output Switching Power Supply

ELG-150-C series

8	EFFICIENCY(Typ)	92%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	92.35%																				
	EFFICIENCY vs LOAD  <table><caption>Efficiency vs Load Data</caption><tr><th>LOAD</th><th>277V Efficiency (%)</th><th>230V Efficiency (%)</th></tr><tr><td>50%</td><td>92.3</td><td>91.8</td></tr><tr><td>60%</td><td>92.7</td><td>92.1</td></tr><tr><td>70%</td><td>93.0</td><td>92.4</td></tr><tr><td>80%</td><td>93.2</td><td>92.5</td></tr><tr><td>90%</td><td>93.2</td><td>92.4</td></tr><tr><td>100%</td><td>93.2</td><td>92.4</td></tr></table>				LOAD	277V Efficiency (%)	230V Efficiency (%)	50%	92.3	91.8	60%	92.7	92.1	70%	93.0	92.4	80%	93.2	92.5	90%	93.2	92.4	100%	93.2
LOAD	277V Efficiency (%)	230V Efficiency (%)																						
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90%	93.2	92.4																						
100%	93.2	92.4																						
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=0.983/ 277VAC PF=0.991/ 230VAC																				
	P.F vs LOAD Constant Current Mode  <table><caption>P.F vs Load Data</caption><tr><th>LOAD</th><th>277V P.F.</th><th>230V P.F.</th></tr><tr><td>50%</td><td>0.948</td><td>0.978</td></tr><tr><td>60%</td><td>0.961</td><td>0.981</td></tr><tr><td>70%</td><td>0.969</td><td>0.985</td></tr><tr><td>80%</td><td>0.976</td><td>0.988</td></tr><tr><td>90%</td><td>0.980</td><td>0.990</td></tr><tr><td>100%</td><td>0.982</td><td>0.991</td></tr></table>				LOAD	277V P.F.	230V P.F.	50%	0.948	0.978	60%	0.961	0.981	70%	0.969	0.985	80%	0.976	0.988	90%	0.980	0.990	100%	0.982
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100%	0.982	0.991																						

**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	320V~360V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	335.6V/ 230VAC Shut down o/p voltage, re-power on to recover
2	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 230 VAC O/P: FULL LOAD	O.T.P. Active Shut down o/p voltage, re-power on to recover
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 305VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Hiccup mode, recovers automatically after fault condition is removed

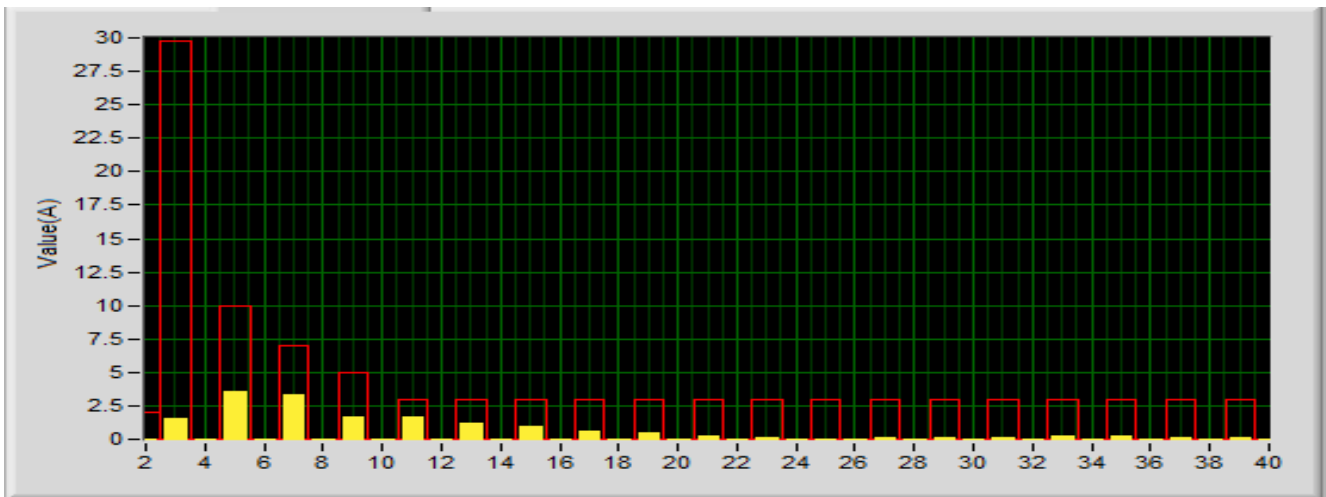
COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q 2 Rated 800V/9A	I/P: High-Line +3V =308V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 742V (2) 504V (3) 726V
2	Diode Peak Voltage	D100 Rated 1000V/3A	I/P: High-Line +3V =308V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 836V (2) 504V (3) 828V
3	Input Capacitor Voltage	C5 Rated 100u/ 450V	I/P: High-Line +3V =308 V O/P: (1) Full Load input on/off (2) Min load input on /Off (3) Full Load /Min load Change Ta: 25°C	(1) 452V (2) 440V (3) 444V
4	Control IC Voltage Test	U1 Rated 28V (MAX.)	I/P: High-Line +3V =308 V O/P: (1) Full Load input on/off (2) Min load input on /Off (3) Full Load /Min load Change Ta: 25°C	(1) 17.6V (2) 15.1V (3) 17.3V
5	PFC Transistor (D to S) or (C to E) Peak Voltage	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) 456V (2) 428V (3) 458V

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: 4.2 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 1.8 KVAC/min Ta: 25°C	I/P-O/P: 1.834mA I/P-FG: 2.387mA O/P-FG: 1.756mA 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: >9999MΩ I/P-FG: >9999MΩ O/P-FG: >9999MΩ

E.M.C TEST

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

■ RELIABILITY TEST

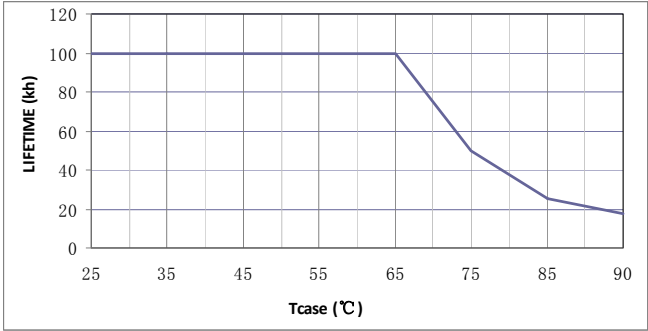
ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																
1	TEMPERATURE RISE TEST	MODEL: ELG-150-C500 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 21.9℃ 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 61.7℃ <table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 21.9 ℃</th><th>HIGH AMBIENT Ta=61.7 ℃</th></tr><tr><td>1</td><td>ZNR1</td><td>46.2℃</td><td>80.1℃</td></tr><tr><td>2</td><td>BD1</td><td>57.6℃</td><td>89.9℃</td></tr><tr><td>3</td><td>C11</td><td>56.8℃</td><td>89.7℃</td></tr><tr><td>4</td><td>L3</td><td>54.8℃</td><td>86.9℃</td></tr><tr><td>5</td><td>D6</td><td>58.9℃</td><td>92.0℃</td></tr><tr><td>6</td><td>R5</td><td>58.8℃</td><td>91.9℃</td></tr><tr><td>7</td><td>Q1</td><td>58.6℃</td><td>92.0℃</td></tr><tr><td>8</td><td>Q2</td><td>60.4℃</td><td>94.3℃</td></tr><tr><td>9</td><td>D10</td><td>63.2℃</td><td>97.8℃</td></tr><tr><td>10</td><td>R4</td><td>66.6℃</td><td>99.7℃</td></tr><tr><td>11</td><td>C5</td><td>57.1℃</td><td>89.8℃</td></tr><tr><td>12</td><td>C45</td><td>55.3℃</td><td>87.8℃</td></tr><tr><td>13</td><td>U1</td><td>53.0℃</td><td>86.1℃</td></tr><tr><td>14</td><td>T1</td><td>64.3℃</td><td>96.0℃</td></tr><tr><td>15</td><td>D100</td><td>54.2℃</td><td>87.9℃</td></tr><tr><td>16</td><td>C102</td><td>45.7℃</td><td>79.2℃</td></tr><tr><td>17</td><td>LF100</td><td>44.1℃</td><td>78.4℃</td></tr><tr><td>18</td><td>RTH2</td><td>53.3℃</td><td>86.4℃</td></tr><tr><td>19</td><td>TC</td><td>47.9℃</td><td>81.3℃</td></tr></table>			NO	Position	ROOM AMBIENT Ta= 21.9 ℃	HIGH AMBIENT Ta=61.7 ℃	1	ZNR1	46.2℃	80.1℃	2	BD1	57.6℃	89.9℃	3	C11	56.8℃	89.7℃	4	L3	54.8℃	86.9℃	5	D6	58.9℃	92.0℃	6	R5	58.8℃	91.9℃	7	Q1	58.6℃	92.0℃	8	Q2	60.4℃	94.3℃	9	D10	63.2℃	97.8℃	10	R4	66.6℃	99.7℃	11	C5	57.1℃	89.8℃	12	C45	55.3℃	87.8℃	13	U1	53.0℃	86.1℃	14	T1	64.3℃	96.0℃	15	D100	54.2℃	87.9℃	16	C102	45.7℃	79.2℃	17	LF100	44.1℃	78.4℃	18	RTH2	53.3℃	86.4℃	19	TC	47.9℃	81.3℃
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9	D10	63.2℃	97.8℃																																																																																	
10	R4	66.6℃	99.7℃																																																																																	
11	C5	57.1℃	89.8℃																																																																																	
12	C45	55.3℃	87.8℃																																																																																	
13	U1	53.0℃	86.1℃																																																																																	
14	T1	64.3℃	96.0℃																																																																																	
15	D100	54.2℃	87.9℃																																																																																	
16	C102	45.7℃	79.2℃																																																																																	
17	LF100	44.1℃	78.4℃																																																																																	
18	RTH2	53.3℃	86.4℃																																																																																	
19	TC	47.9℃	81.3℃																																																																																	
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 305VAC/200VAC O/P: FULL LOAD Ta= -45℃	TEST: OK																																																																																
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 ℃ NO DAMAGE	I/P: 305VAC O/P: FULL LOAD Ta=60 ℃ HUMIDITY= 95 %R.H	TEST: OK																																																																																
4	TEMPERATURE COEFFICIENT	±0.03 %/℃(0~50℃)	I/P: 230 VAC O/P: FULL LOAD	±0.003%/℃(0~50℃)																																																																																
5	STORAGE TEMPERATURE TEST	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		TEST: OK																																																																																



150W Single Output Switching Power Supply

ELG-150-C series

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 turn on 58 sec; turn off 2 sec	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-C500: SUPPOSE C102 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) 730323 HRS (2) 96525 HRS (3) 100534 HRS (4) 108553 HRS
9	MTBF	MIL-HDBK-217F TOTAL FAILURE RATE: 308.5K HRS	
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 50000 hours @ Tc 75°C 	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	ZHANGZJ/ZHUOKB	SKY	LIUWY