Test Report： ELG-200-C1400

200W Constant Current Mode LED Driver

■ 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

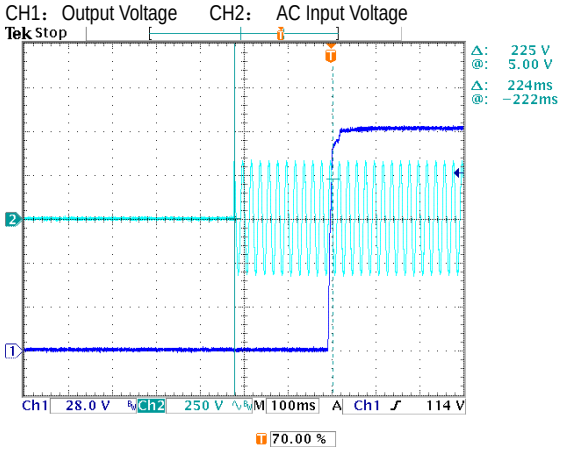
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	71V~142V	I/P： 230VAC O/P：LED MODE Ta：25℃	60V~142V
2	OUTPUT CURRENT ADJUST RANGE (For A-Type only)	700~1400mA	I/P： 230VAC O/P：SETTING Ta：25℃	0.571 A~ 1.465 A
3	CURRENT RIPPLE	5.0% max.@rated current	I/P： 230VAC O/P：FULL/MIN LOAD Ta：25℃	3.40%
4	CURRENT TOLERANCE	±5.0%	I/P： 230VAC O/P：FULL/MIN LOAD Ta：25℃	±1.01%
5	OPEN CIRCUIT VOLTAGE (max)	160V	I/P： 230VAC O/P：NO LOAD Ta：25℃	145.5V
6	SET UP TIME	500ms/230VAC 800ms/115VAC	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD/75% LOAD Ta：25℃	224ms/230VAC 174ms/115VAC

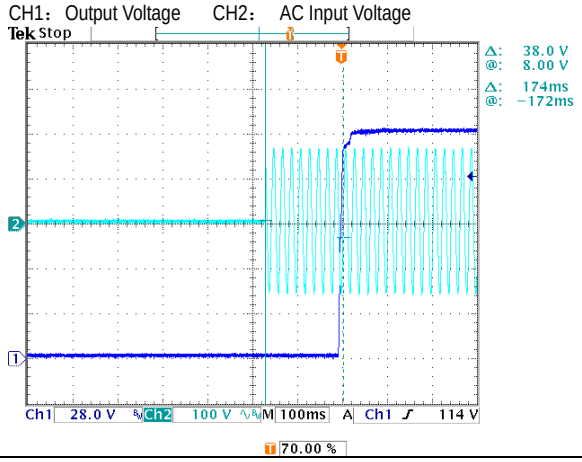
INPUT=230VAC/50HZ @ FULL LOAD

CH1：Output Voltage CH2： AC Input Voltage



INPUT=115VAC/60HZ @ 75% LOAD

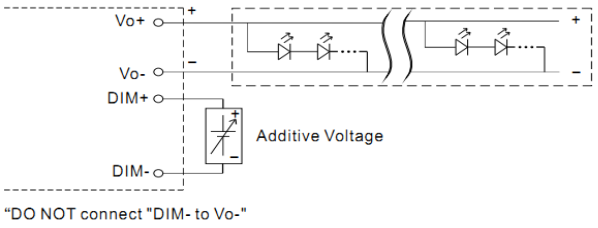
CH1：Output Voltage CH2： AC Input Voltage



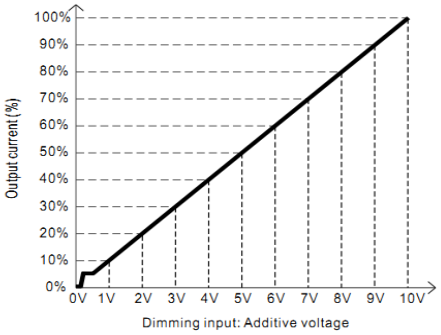
7 DIMMING OPERATION (for B-Type)

- Output constant current level can be adjusted by applying one of the three methodologies between DIM+ and DIM-: 0 ~ 10Vdc， or 10V PWM signal or resistance.
- Direct connecting to LEDs is suggested.It is not suitable to be used with additional drivers.
- Dimming source current from power supply:100uA(typ.)

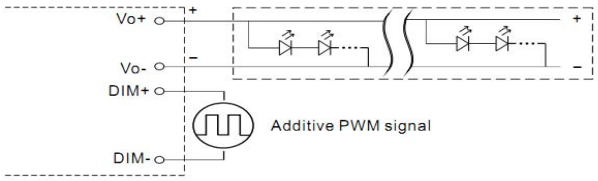
◎ Applying additive 0 ~ 10VDC



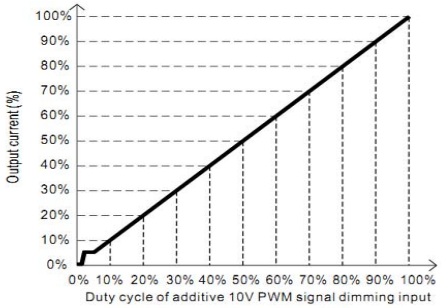
"DO NOT connect "DIM- to Vo-"



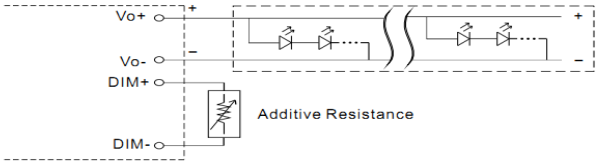
◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



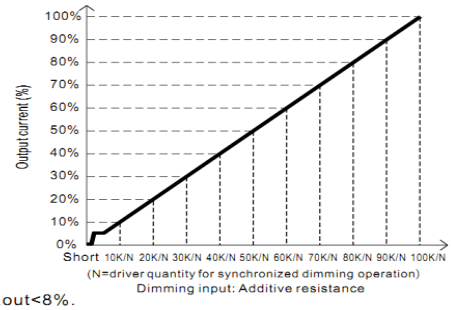
"DO NOT connect "DIM- to Vo-"



◎ Applying additive resistance:



"DO NOT connect "DIM- to Vo-"



Note : 1. Min. dimming level is about 8% and the output current is not defined when 0%< Iout<8%.
2. The output current could drop down to 0% when dimming input is about 0kΩ or 0Vdc, or 10V PWM signal with 0% duty cycle.

I/P： 230 VAC

O/P：DIMMING TEST

Ta：25℃

	V	Short	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
1	Output Current	0	0.146	0.288	0.430	0.573	0.715	0.858	1.000	1.143	1.285	1.403	1.406
	%	0%	10.43%	20.57%	30.71%	40.93%	51.07%	61.29%	71.43%	81.64%	91.79%	100.21%	100.43%
2	PWM(100Hz)	0V	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current	0	0.182	0.323	0.458	0.599	0.734	0.874	1.010	1.15	1.286	1.403	1.406
	%	0%	13.00%	23.07%	32.71%	42.79%	52.43%	62.43%	72.14%	82.14%	91.86%	100.21%	100.43%
3	R	0%	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0	0.150	0.295	0.443	0.589	0.738	0.886	1.036	1.186	1.286	1.403	1.406
	%	0%	10.71%	21.07%	31.64%	42.07%	52.71%	63.29%	74.00%	84.71%	91.86%	100.21%	1.41%

TEST RESULT：OK

8 DIMMING OPERATION (primary side;for DA-Type)

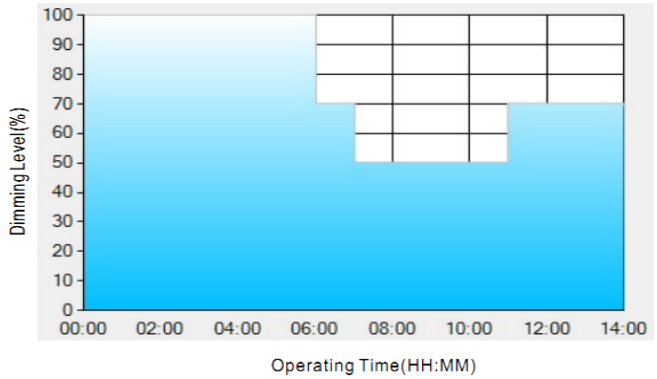
※DALI Interface
·Apply DALI signal between DA+ and DA-.
·DALI protocol comprises 16 groups and 64 addresses.
·Firse step is fixed at 8% of output.Please contact MEAN WELL for other setup.

I/P： 230 VAC
O/P：DIMMING TEST
Ta：25℃
TEST RESULT：OK

9 DIMMING OPERATION (for DXX-Type by User definition)

※Smart timer dimming function
·MEAN WELL Smart timer dimming primarily provides the adaptive proportion dimming profile for the output constant current level to perform up to 14 consecutive hours.3 dimming profiles hereunder are defined accounting for the most frequently seen applications.If other options may be needed,Please contact MEAN WELL for other setup.

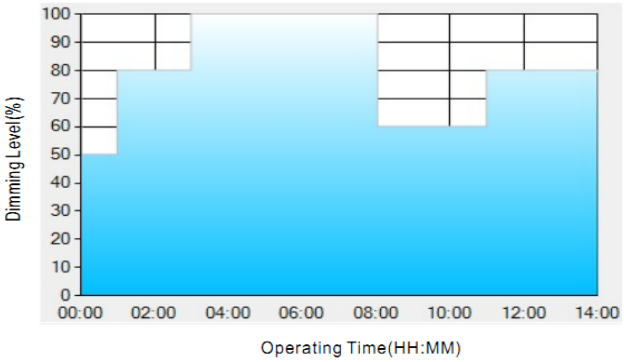
Ex : ◎ D01-Type: the profile recommended for residential lighting



Set up for D01-Type in Smart timer dimming software program:

	T1	T2	T3	T4
TIME**	06:00	07:00	11:00	---
LEVEL**	100%	70%	50%	70%

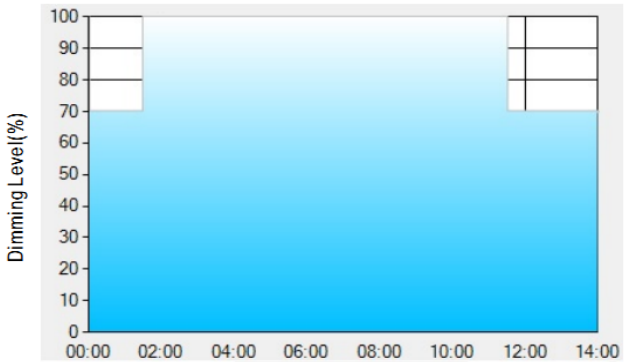
Ex: ◎ D02-Type: the profile recommended for street lighting



Set up for D02-Type in Smart timer dimming software program:

	T1	T2	T3	T4	T5
TIME**	01:00	03:00	8:00	11:00	---
LEVEL**	50%	80%	100%	60%	80%

Ex: ◎ D03-Type: the profile recommended for tunnel lighting



Set up for D03-Type in Smart timer dimming software program:

	T1	T2	T3
TIME**	01:30	11:00	---
LEVEL**	70%	100%	70%

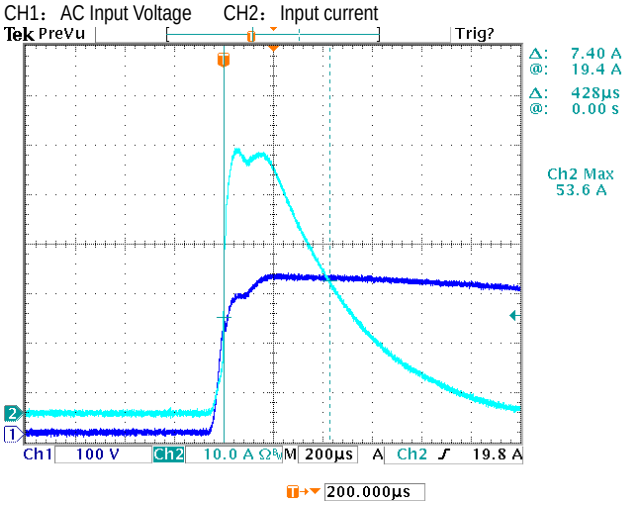
I/P： 230 VAC
O/P：DIMMING TEST
Ta：25℃
TEST RESULT：OK

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℃	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 (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℃	TEST：OK
3	AC CURRENT	1.8A/115VAC 1.0A/230VAC 0.8A/277VAC	I/P： 115 VAC I/P： 230 VAC I/P： 277 VAC O/P：FULL LOAD/75% LOAD Ta：25℃	I =1.436A/ 115VAC I =0.928A/ 230VAC I =0.778A/ 277VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P： 277 VAC O/P：NO LOAD Ta：25℃	L-CASE： 0.428 mA N-CASE： 0.402 mA
5	NO LOAD/STANDBY POWER CONSUMPTION	＜0.5W	I/P：230VAC O/P：NO LOAD/STANDBY Ta：25℃	0.447W
6	INRUSH CURRENT(Typ)	65A/230VAC Twidth =450 us measured at 50% Ipeak COLD START	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I =53.6A/ 230VAC Twidth =428us

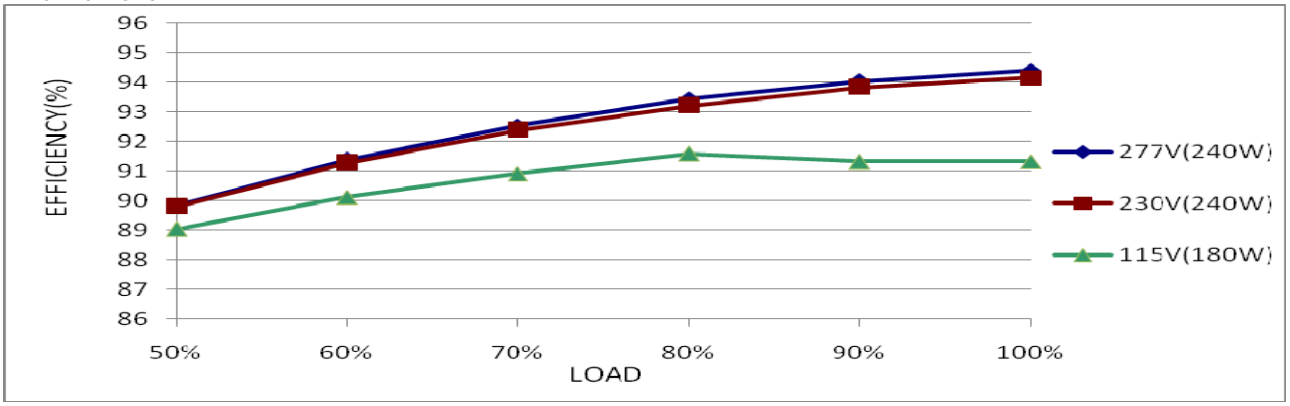
INPUT=230VAC/50HZ @ FULL LOAD

CH1：AC Input Voltage CH2：Input current



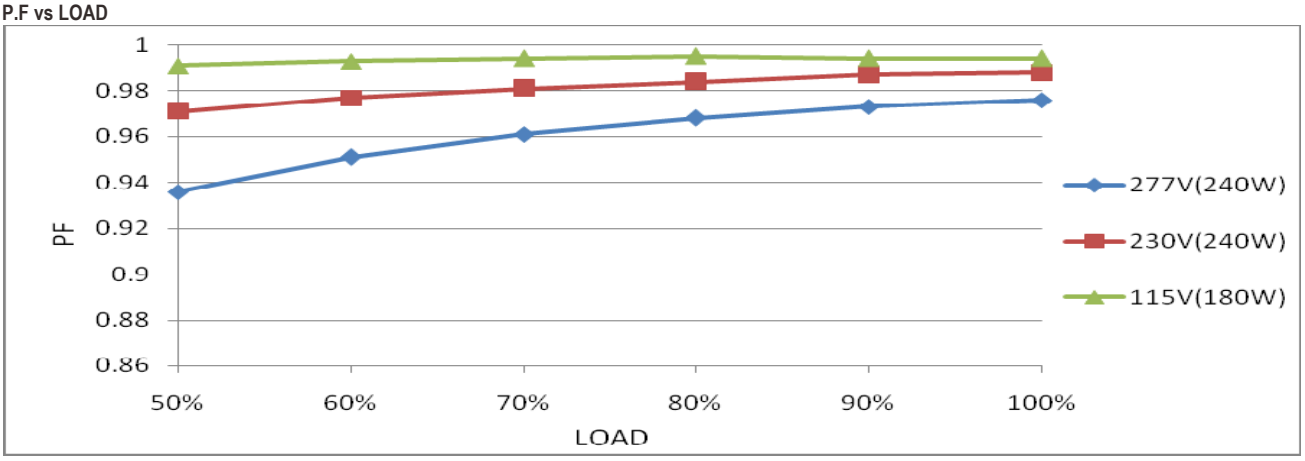
7	EFFICIENCY(Typ)	92%	I/P： 230VAC O/P： FULL LOAD Ta： 25℃	94.15%

EFFICIENCY vs LOAD



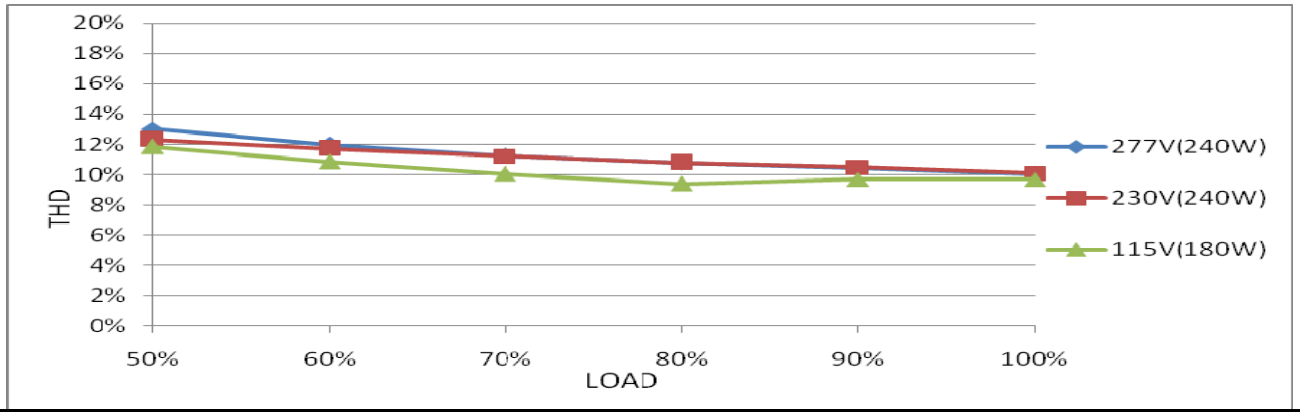
8	POWER FACTOR	0.97/ 115VAC 0.95/ 230VAC 0.92/ 277VAC	I/P： 115 VAC I/P： 230 VAC I/P： 277 VAC O/P： FULL LOAD/75% LOAD Ta： 25℃	PF=0.994 /115VAC PF=0.988 /230VAC PF=0.976 /277VAC

P.F vs LOAD



9	TOTAL HARMONIC DISTORTION	THD＜20% （@load≥50%/115VAC，230VAC； @load≥75%/277VAC）	I/P：115 VAC/50% LOAD I/P：230 VAC/50% LOAD I/P：277 VAC/75% LOAD Ta：25℃	THD=11.85% @50% load /115VAC THD=12.30% @50% load /230VAC THD=10.98% @75% load /277VAC

THD vs LOAD



PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	160V~180V	I/P： 100VAC I/P： 230VAC I/P： 305VAC O/P：NO LOAD Ta：25℃	169.14 V/ 100VAC 169.14 V/ 230VAC 169.30 V/ 305VAC Shut down o/p voltage，re-power on to recovery
2	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
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P： 100VAC 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 600V/11A	I/P：High-Line +3V =308V O/P： (1) FULL LOAD Turn on (2) Output Short (3) FULL LOAD continue Ta：25℃	(1) 522 V (2) 510 V (3) 444 V
2	O/P Diode (MOSFET)	D105 Rated 600V/3A	I/P：High-Line +3V =308V O/P： (1) FULL LOAD Turn on (2) Output Short (3) FULL LOAD continue Ta：25℃	(1) 155 V (2) 28.2 V (3) 153 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) 444 V (2) 444 V (3) 446 V
4	Control IC	U3 Rated 20V (MAX.)	I/P：High-Line +3V =308 V O/P：((1) FULL LOAD (2) Output Short (3) O.V.P Ta：25℃	(1) 16.0 V (2) 16.0 V (3) 16.1 V
5	PFC Power Transistor	Q 3 Rated 600V/20A	I/P：High-Line +3V =308V O/P： (1) FULL LOAD Turn on (2) Output Short (3) FULL LOAD continue Ta：25℃	(1) 546 V (2) 466 V (3) 474 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：4.2 KVAC/min I/P-FG： 2.4 KVAC/min O/P-FG：1.8 KVAC/min Ta：25℃	I/P-O/P：2.894 mA I/P-FG： 3.335 mA O/P-FG：2.591 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

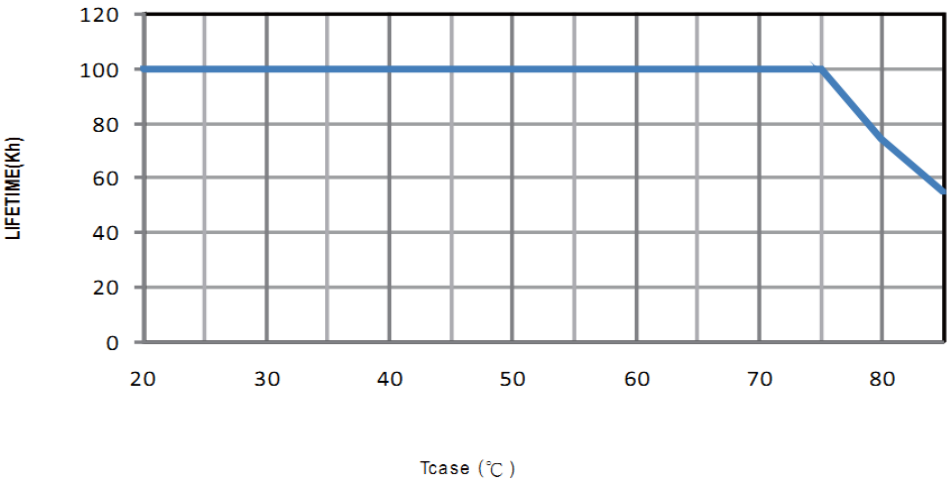
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P：230VAC/50HZ O/P：FULL /50% LOAD Ta：25℃	PASS
2	CONDUCTION	EN55015	I/P：230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
3	RADIATION	EN55015	I/P：230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
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 L-N：4KV L,N-PE：6KV 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-200-C700
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P：FULL LOAD Ta=32.4 ℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P：FULL LOAD Ta=59.6 ℃</td></tr>
<tr><td colspan="5"><table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=32.4 ℃</th><th>HIGH AMBIENT Ta=59.6 ℃</th></tr>
<tr><td>1</td><td>BD1</td><td>60.7℃</td><td>84.4℃</td></tr>
<tr><td>2</td><td>C7</td><td>58.7℃</td><td>82.4℃</td></tr>
<tr><td>3</td><td>L2</td><td>59.6℃</td><td>83.4℃</td></tr>
<tr><td>4</td><td>Q3</td><td>60.2℃</td><td>84.1℃</td></tr>
<tr><td>5</td><td>D3</td><td>58.1℃</td><td>82.1℃</td></tr>
<tr><td>6</td><td>Q2</td><td>57.3℃</td><td>81.8℃</td></tr>
<tr><td>7</td><td>Q1</td><td>57.7℃</td><td>82.0℃</td></tr>
<tr><td>8</td><td>C5</td><td>55.9℃</td><td>79.3℃</td></tr>
<tr><td>9</td><td>L3</td><td>59.6℃</td><td>83.3℃</td></tr>
<tr><td>10</td><td>C16</td><td>57.3℃</td><td>80.5℃</td></tr>
<tr><td>11</td><td>T1</td><td>63.4℃</td><td>87.0℃</td></tr>
<tr><td>12</td><td>D104</td><td>62.5℃</td><td>86.5℃</td></tr>
<tr><td>13</td><td>D105</td><td>61.0℃</td><td>85.1℃</td></tr>
<tr><td>14</td><td>C102</td><td>58.8℃</td><td>82.4℃</td></tr>
<tr><td>15</td><td>C103</td><td>51.6℃</td><td>75.7℃</td></tr>
<tr><td>16</td><td>U3</td><td>56.8℃</td><td>82.6℃</td></tr>
<tr><td>17</td><td>C45</td><td>56.4℃</td><td>80.1℃</td></tr>
<tr><td>18</td><td>Q100</td><td>53.0℃</td><td>77.4℃</td></tr>
<tr><td>19</td><td>RTH2</td><td>56.9℃</td><td>81.0℃</td></tr>
<tr><td>20</td><td>TC</td><td>50.9℃</td><td>75.0℃</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/100VAC
O/P：FULL LOAD/75% LOAD
Ta= -45℃ / -30℃</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 %/℃(0~60℃)</td><td>I/P： 230 VAC
O/P：FULL LOAD</td><td>±0.005 %/℃(0~60℃)</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-200-C700：SUPPOSE C103 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：MIN LOAD Ta= 60 ℃ LIFE TIME	(1) 972807 HRS (2) 83428 HRS (3) 96731 HRS (4) 106555 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 958.9K hrs min. Telcordia SR-332 (Bellcore) 235K hrs min. MIL-HDBK-217F (25℃)	
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life)： Above 50000 hours @ Tc 85℃	



TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	CHENZH/ZHUOKB	SKY	LIUWY