Test Report：　ELG-300-12A

300W Constant Voltage+Constant Current LED Driver

■ DESIGN VERIFY TEST

Output Function Test
Input Function Test
Protection Function Test
Component Stress Test

■ SAFETY & E.M.C. TEST

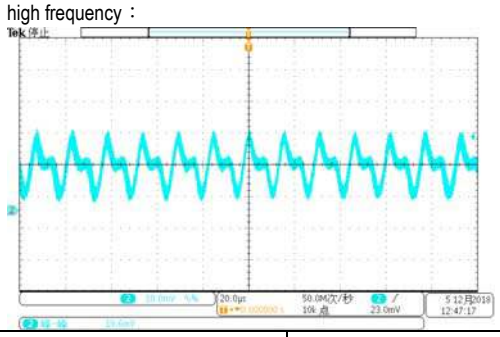
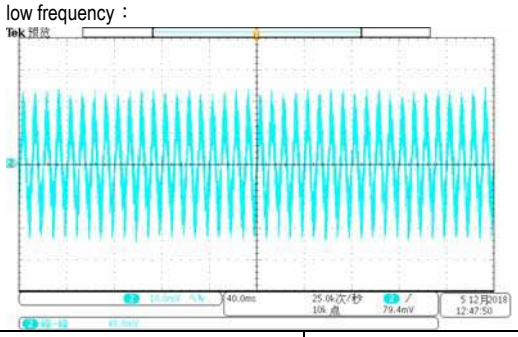
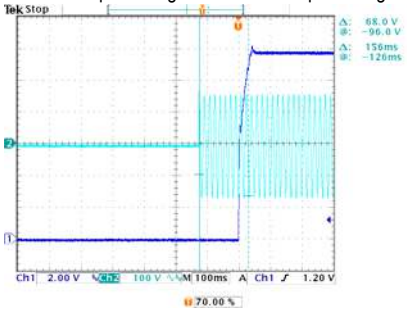
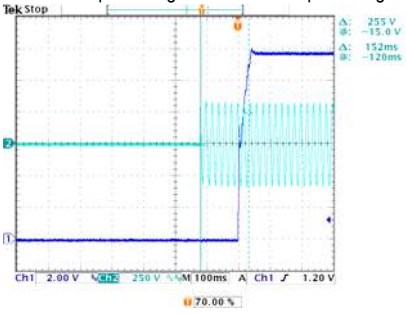
Safety Test
E.M.C. Test

■ RELIABILITY TEST

Environment Test

■ DESIGN VERIFY TEST

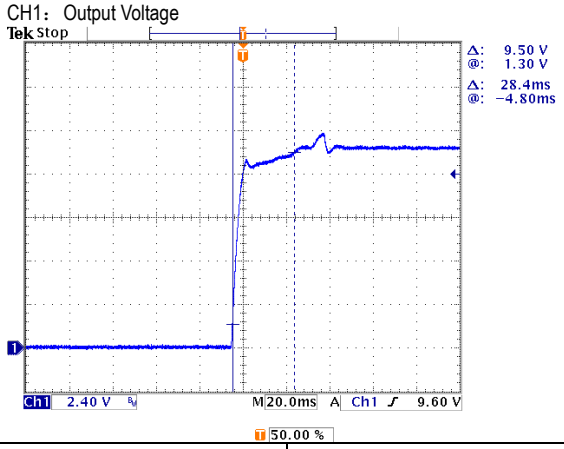
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	10.0V~12.0V	I/P： 230VAC O/P：LED MODE Ta：25℃	9.0 V~ 12.8 V
2	VOLTAGE ADJUST RANGE	11.2V~12.8V	I/P： 230VAC O/P：MIN LOAD Ta：25℃	10.78V~13.01V
3	CURRENT ADJ. RANGE	11A~22A	I/P： 230VAC O/P：SETTING Ta：25℃	10.21A~25.18A
4	VOLTAGE TOLERANCE	-3.0% ~3.0%	I/P： 100VAC / 305VAC O/P：FULL/ MIN LOAD Ta：25℃	-1%~+ 0.83%
5	LINE REGULATION	-0.5%~+0.5%	I/P： 120VAC ~ 305VAC O/P：FULL LOAD Ta：25℃	-0.084 %~0%
6	LOAD REGULATION	-2.0% ~2.0%	I/P： 230VAC O/P：FULL ~NO LOAD Ta：25℃	-0.91%~ +0.08%
7	OVER/UNDERSHOOT TEST	<±5 %	I/P： 230VAC O/P：FULL LOAD Ta：25℃	<5 %
8	RIPPLE & NOISE (Max)	150mVp-p	I/P： 230VAC O/P：FULL LOAD Ta：25℃	48.8mVp-p
	high frequency： 		low frequency： 	
9	SET UP TIME(Max)	115VAC/ 500ms 230VAC/ 500ms	I/P： 115 VAC I/P： 230 VAC O/P：FULL LOAD Ta：25℃	115VAC/ 156 ms 230VAC/ 152 ms
	INPUT=115VAC/50HZ @ FULL LOAD CH1： Output Voltage CH2：AC Input Voltage 		INPUT=230VAC/50HZ @ FULL LOAD CH1： Output Voltage CH2：AC Input Voltage 	

10	RISE TIME (Max)	115VAC/ 100ms 230VAC/ 100ms	I/P：115 VAC I/P：230 VAC O/P：FULL LOAD Ta：25℃	115VAC/ 28.4 ms 230VAC/ 31.6 ms

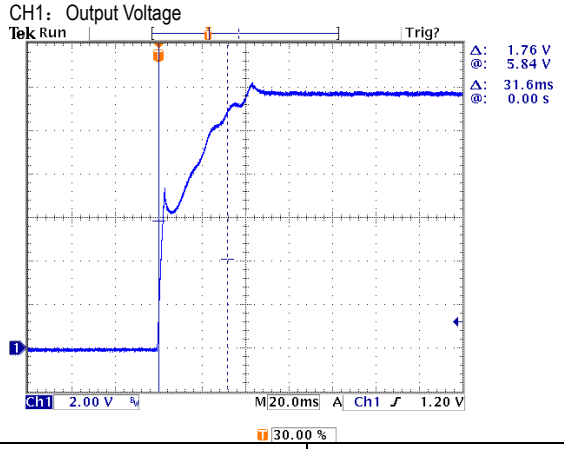
INPUT=115VAC/50HZ @ FULL LOAD

CH1：Output Voltage



INPUT=230VAC/50HZ @ FULL LOAD

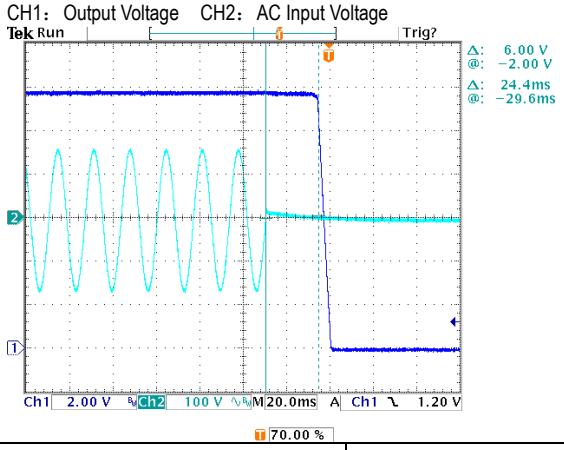
CH1：Output Voltage



11	HOLD UP TIME(Typ)	115VAC/ 10ms 230VAC/ 10ms	I/P： 115 VAC I/P： 230 VAC O/P：FULL LOAD Ta：25℃	115VAC/ 24.4 ms 230VAC/ 20.0 ms

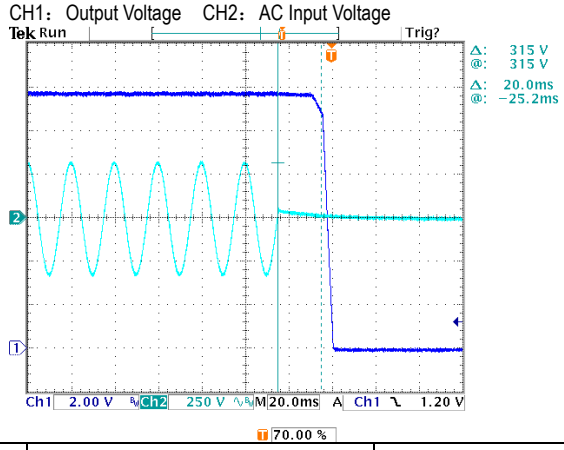
INPUT=115VAC/50HZ @ FULL LOAD

CH1：Output Voltage CH2：AC Input Voltage



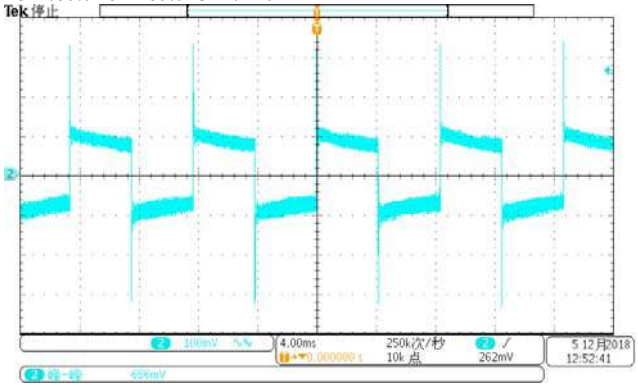
INPUT=230VAC/50HZ @ FULL LOAD

CH1：Output Voltage CH2：AC Input Voltage

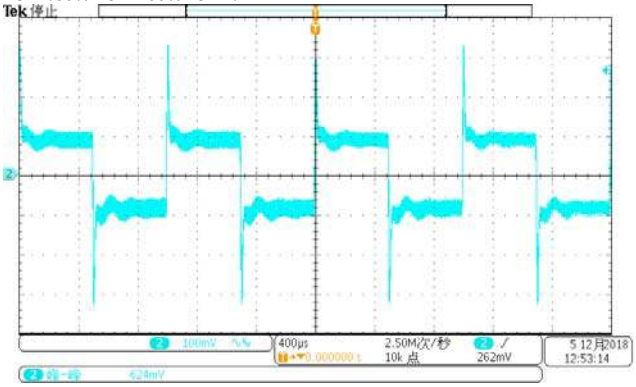


12	DYNAMIC LOAD	V1： 1200 mVp-p	I/P： 230VAC O/P： (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta：25℃	(1) 656mVp-p (2) 624mVp-p

FULL /50% LOAD 50%DUTY / 120HZ



FULL /50% LOAD 50%DUTY / 1KHZ

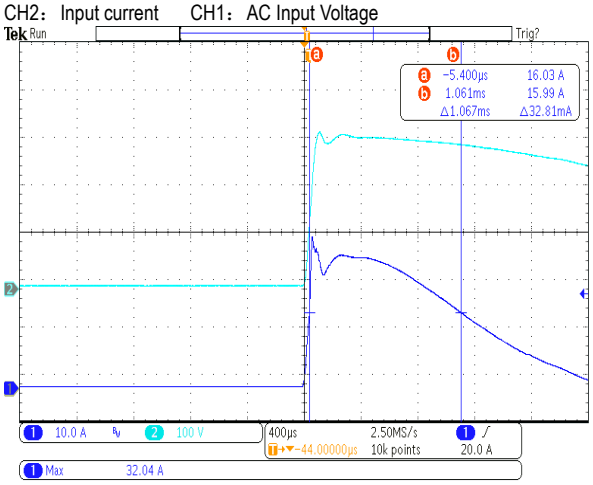


INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC	I/P：TESTING O/P：FULL LOAD Ta：25℃	100 V~ 305 V
			I/P： (1)LOW-LINE-3V=97 V HIGH-LINE+10V=315 V O/P：FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) 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	1.3A/277VAC 1.6A/230VAC 3.0A/115VAC	I/P： 277 VAC I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	I = 1.07 A/ 277VAC I = 1.25 A/ 230VAC I = 2.51 A/ 115VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P： 277 VAC O/P：NO LOAD Ta：25℃	L-FG： 0.280 mA N-FG： 0.280 mA
5	INRUSH CURRENT(Typ)	230 V/ 45A COLD START (twidth=1200us measured at 50% Ipeak) COLD START at 230V	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I=32.04A/ 230VAC Twidth = 1067us

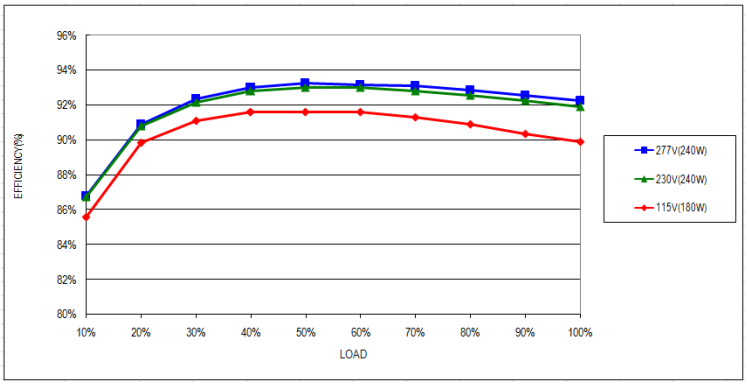
INPUT=277VAC/50HZ @ FULL LOAD

CH2： Input current CH1： AC Input Voltage



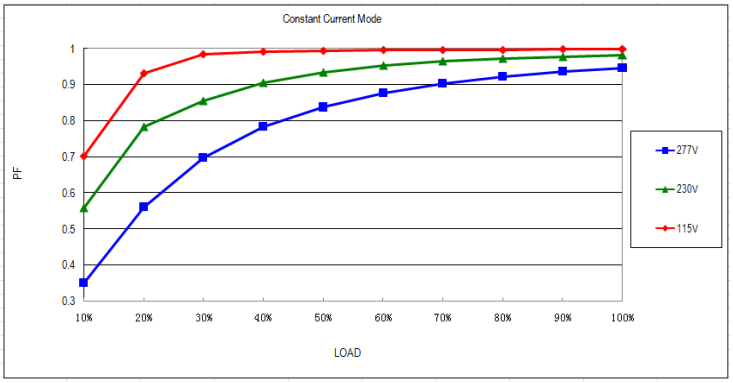
6	EFFICIENCY(Typ)	91%	I/P： 230VAC O/P： FULL LOAD Ta： 25℃	91.89 %

EFFICIENCY vs LOAD



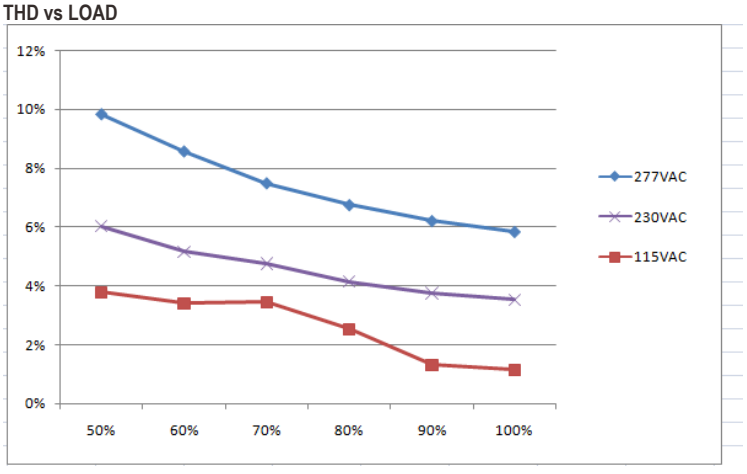
7	POWER FACTOR	0.90/ 277VAC 0.93/ 230VAC 0.95/ 115VAC	I/P： 277 VAC I/P： 230 VAC I/P： 115 VAC O/P： FULL LOAD Ta： 25℃	PF= 0.946 / 277VAC PF= 0.981 / 230VAC PF= 0.999 / 115VAC

P.F vs LOAD



8	TOTAL HARMONIC DISTORTION	THD＜10% （@load≥50%/120VAC， @load≥50%/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=3.78% @50% load /115VAC THD=6.03% @50% load /230VAC THD=7.49% @75% load /277VAC

THD vs LOAD



PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER CURRENT PROTECTION	95%~108%	I/P： 100VAC I/P： 230VAC I/P： 305VAC O/P： TESTING Ta：25℃	104%/ 100VAC 103.6%/ 230VAC 104%/ 305VAC Constant Current Limiting，recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	13.5V~17V	I/P： 100VAC I/P： 230VAC I/P： 305VAC O/P： MIN LOAD Ta：25℃	14.2 V/ 100VAC 15.3 V/ 230VAC 15.6V/ 305VAC Shut down output voltage，re-power on to recovery
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P： 100VAC I/P： 305VAC O/P： FULL LOAD	O.T.P. Active Shut down output voltage，re-power on to recovery
4	SHORT CIRCUIT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P： 100VAC I/P： 305VAC O/P： FULL LOAD Ta：25℃	NO DAMAGE Constant Current Limiting，recovers automatically after fault condition is removed

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor	Q 6 Rated 600V/23.9A	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 464 V (2) 520 V (3) 462 V
2	O/P Diode (MOSFET)	Q100 Rated 40V/120A	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 30.54 V (2) 11.77 V (3) 28.53 V
3	P.F.C DIODE	D2 Rated 3A/600V	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 468 V (2) 468 V (3) 464 V
4	Input Capacitor	C5 Rated 150u/ 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 /NO LOAD Change (4)Full load continue Ta：25℃	 (1) 448 V (2) 444 V (3) 446 V (4)446 V
5	Control IC	U2 Rated 50V (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) 14.64 V (2) 14.61 V (3) 14.64 V (4) 14.62 V (5) 14.61 V

6	PFC Transistor	Q1 Rated 600V/22A	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 496 V (2) 532 V (3) 492 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：4.125 KVAC/min I/P-FG： 2.4 KVAC/min O/P-FG：1.8 KVAC/min Ta：25℃	I/P-O/P：3.032 mA I/P-FG： 3.134 mA O/P-FG：2.702 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
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	17 mΩ

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℃	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℃	PASS
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT：2KV	I/P： 230VAC/50HZ O/P：FULL LOAD Ta：25℃	PASS
6	SURGE	EN61000-4-5 LIGHT INDUSTRY L-N：4KV L,N-PE：6KV	I/P： 230VAC/50HZ O/P：FULL LOAD Ta：25℃	PASS
7	Test by certified Lab ＆ Test Report Prepare. Any contradictions of the test results please refer to the latest EMC test report.			

■ 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-300-12A
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=27.6 ℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=42.7 ℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=27.6 ℃</th><th>HIGH AMBIENT Ta=42.7 ℃</th></tr>
<tr><td>1</td><td>BD1</td><td>62.1℃</td><td>77.2℃</td></tr>
<tr><td>2</td><td>RY1</td><td>61.7℃</td><td>76.6℃</td></tr>
<tr><td>3</td><td>D1</td><td>65.2℃</td><td>80.4℃</td></tr>
<tr><td>4</td><td>Q1</td><td>62.9℃</td><td>78.2℃</td></tr>
<tr><td>5</td><td>L1</td><td>61.2℃</td><td>76.6℃</td></tr>
<tr><td>6</td><td>C5</td><td>61.9℃</td><td>77.2℃</td></tr>
<tr><td>7</td><td>C41</td><td>62.6℃</td><td>78.1℃</td></tr>
<tr><td>8</td><td>U2</td><td>63.1℃</td><td>78.0℃</td></tr>
<tr><td>9</td><td>Q5</td><td>65.4℃</td><td>81.1℃</td></tr>
<tr><td>10</td><td>Q6</td><td>64.4℃</td><td>79.8℃</td></tr>
<tr><td>11</td><td>C511</td><td>63.2℃</td><td>78.5℃</td></tr>
<tr><td>12</td><td>T1</td><td>75.3℃</td><td>91.1℃</td></tr>
<tr><td>13</td><td>Q100</td><td>75.1℃</td><td>90.9℃</td></tr>
<tr><td>14</td><td>Q101</td><td>74.6℃</td><td>90.4℃</td></tr>
<tr><td>15</td><td>U101</td><td>75.8℃</td><td>88.0℃</td></tr>
<tr><td>16</td><td>T500</td><td>67.9℃</td><td>83.3℃</td></tr>
<tr><td>17</td><td>C103</td><td>71.4℃</td><td>86.9℃</td></tr>
<tr><td>18</td><td>C105</td><td>67.4℃</td><td>83.0℃</td></tr>
<tr><td>19</td><td>C108</td><td>67.7℃</td><td>83.4℃</td></tr>
<tr><td>20</td><td>LF100</td><td>72.1℃</td><td>88.3℃</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： 100% LOAD/85% LOAD
Ta= -45℃/ -35℃</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 40℃
NO DAMAGE</td><td>I/P： 305VAC
O/P： FULL LOAD
Ta=40℃
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>±0.011 %/℃(0~60℃)</td></tr>
<tr><td>5</td><td>STORAGE TEMPERATURE TEST</td><td>-40~+80℃</td><td colspan="2">1. Thermal shock Temperature： -45℃~ +85℃
2. Temperature change rate ： 25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle： 200 CYCLE
5. Input/Output condition： STATIC
TEST：OK</td></tr>
</table>

6	THERMAL SHOCK TEST	-40~+40℃	1. Thermal shock Temperature： -45℃~ +45℃ 2. Temperature change rate ： 25℃ / MIN 3. Dwell time low and high temperature ： 30 MIN/EACH 4. Total test cycle：16CYCLE 5. Input/Output condition： 15cycle:230VAC/ FULL LOAD AC on 3 sec/AC off 1 sec TEST 1cycle:230VAC/ FULL LOAD Burn In Test TEST：OK
7	VIBRATION TEST	10~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform： Sine Wave (2) Frequency：10~500Hz (3) Sweep Time：10min/sweep cycle (4) Acceleration：6G (5) Test Time：180min in each axis (X.Y.Z) (6) Ta：25℃ TEST：OK
8	CAPACITOR LIFE CYCLE	ELG-300-12：SUPPOSE C103 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Tc= 70 ℃ LIFE TIME (2) I/P： 230VAC O/P：75% LOAD Tc= 70 ℃ LIFE TIME (3) I/P： 230VAC O/P：50% LOAD Tc= 70 ℃ LIFE TIME	(1) 57712 HRS (2) 81650 HRS (3) 117751 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 609K hrs min. Telcordia SR-332 (Bellcore) 191K hrs min. MIL-HDBK-217F (25℃)	
10	Ongoing Reliability Test	I/P：230VAC O/P：FULL LOAD TA=50℃ Demonstration Mean Time Between Failure : 50,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQ/ZHOUB	WENF	LIUWY