



Test Report: ELG-300-24A

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

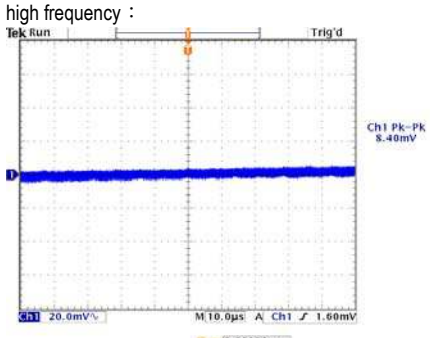
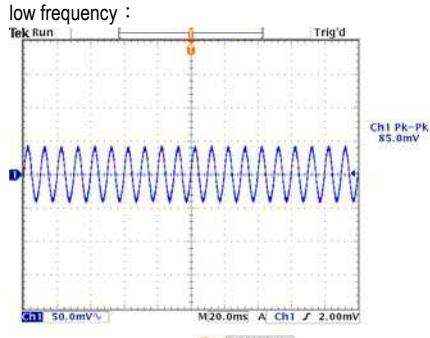
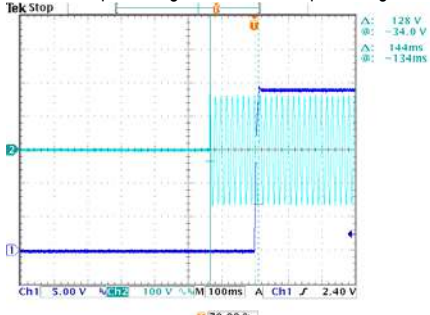
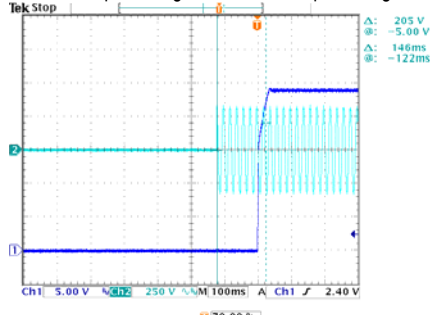
E.M.C. Test

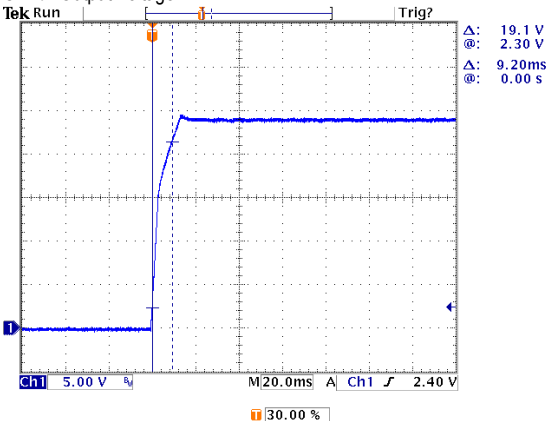
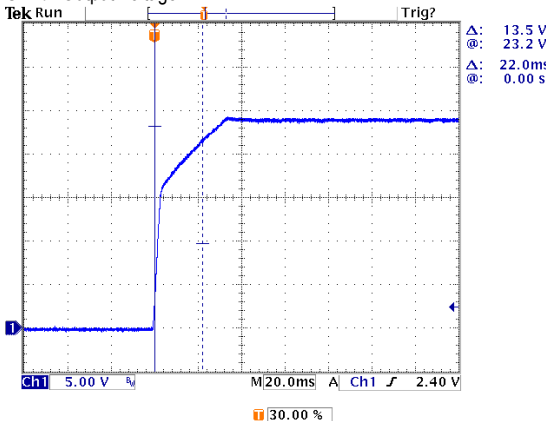
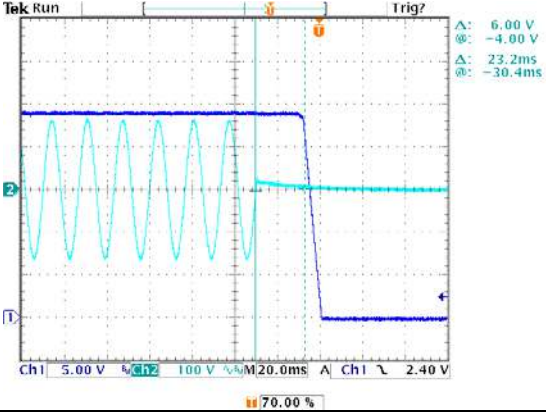
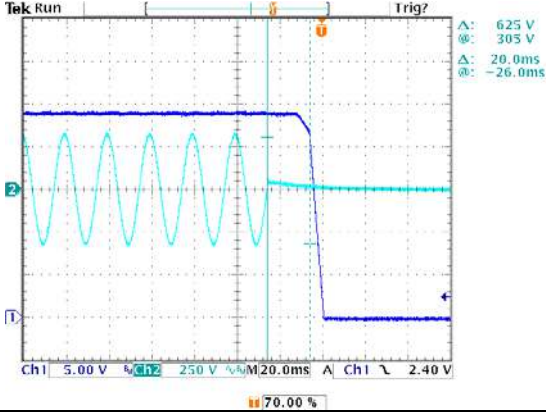
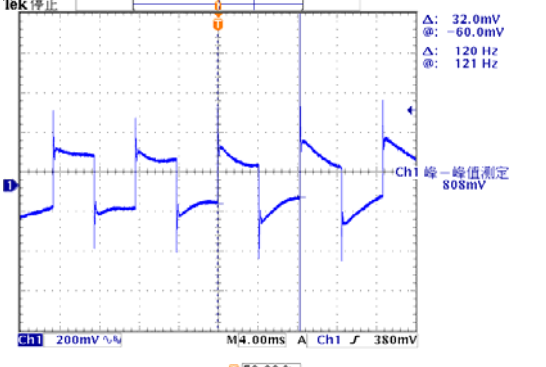
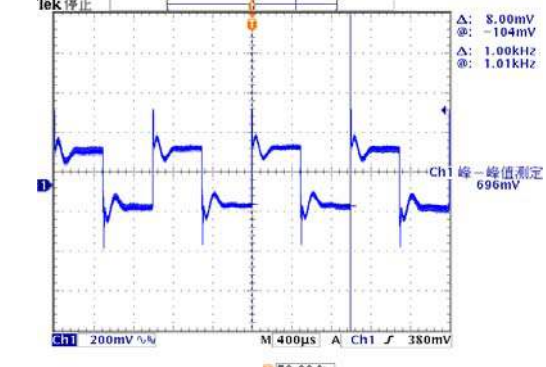
■ RELIABILITY TEST

Environment Test

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	14.4V~24V	I/P: 230VAC O/P: LED MODE Ta: 25°C	7.2 V~ 24 V
2	VOLTAGE ADJUST RANGE	22.4V~25.6V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	21.75V~ 26.4V
3	CURRENT ADJ. RANGE	6.25A~12.5A	I/P: 230VAC O/P: SETTING Ta: 25°C	5.86A~13.87A
4	VOLTAGE TOLERANCE	-2%~+2%	I/P: 100VAC / 305VAC O/P: FULL/ NO LOAD Ta: 25°C	-0.415%~ 0.625%
5	LINE REGULATION	-0.5%~+0.5%	I/P: 120VAC ~ 305VAC O/P: FULL LOAD Ta: 25°C	-0.004%~0.08%
6	LOAD REGULATION	-1%~+1%	I/P: 230VAC O/P: FULL ~NO LOAD Ta: 25°C	-0.415%~ 0.33%
7	OVER/UNDERSHOOT TEST	<± 5 %	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	±2.092%
8	RIPPLE & NOISE (Max)	240mVp-p	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	85mVp-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°C	115VAC/ 144 ms 230VAC/ 146 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 				

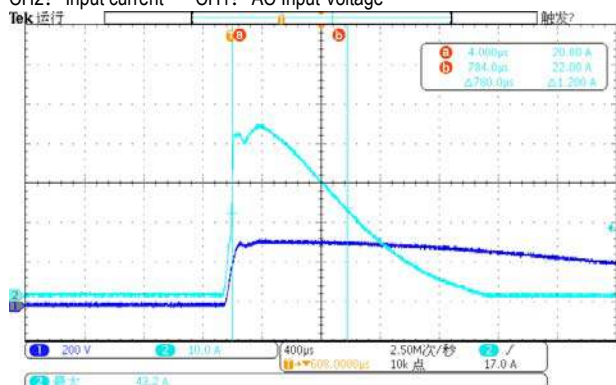
10	RISE TIME (Max)	115VAC/ 100ms 230VAC/ 100ms	I/P: 115 VAC I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	115VAC/ 9.2 ms 230VAC/ 22.0 ms
INPUT=115VAC/50HZ @ FULL LOAD CH1: Output Voltage				
INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage				
11	HOLD UP TIME(Typ)	115VAC/ 10ms 230VAC/ 10ms	I/P: 115 VAC I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	120VAC/ 23.2 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: 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) 808mVp-p (2) 696mVp-p
FULL /50% LOAD 50%DUTY / 120HZ				
FULL /50% LOAD 50%DUTY / 1KHZ				

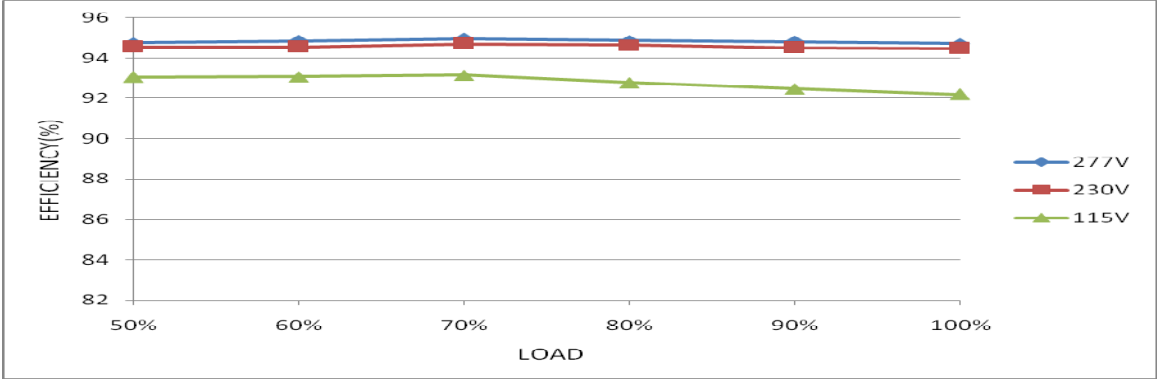
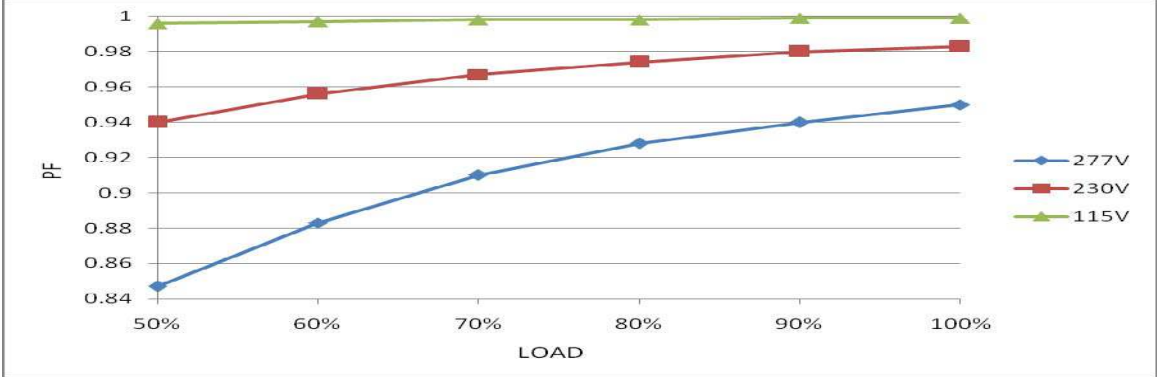
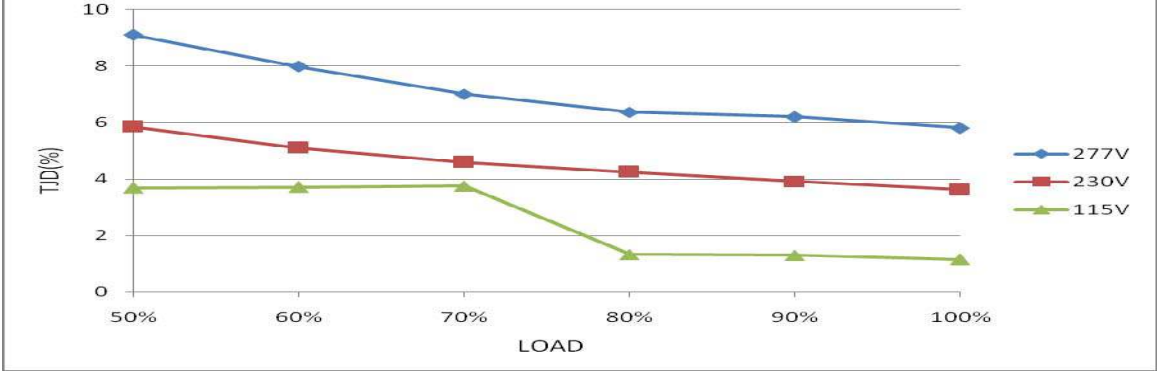
INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	100 V~ 305 V
			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~NO LOAD Ta: 25°C	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°C	I = 1.13 A/ 277VAC I = 1.33 A/ 230VAC I = 2.66 A/ 115VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.335 mA N-FG: 0.325 mA
5	INRUSH CURRENT(Typ)	230VAC/ 45A Twidh =1200us measured at 50% Ipeak COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I = 43.2A/ 277VAC Twidh =784 us/50% Ipeak

INPUT=277VAC/50HZ @ FULL LOAD

CH2: Input current CH1: AC Input Voltage



6	EFFICIENCY(Typ)	93%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	94.47 %
EFFICIENCY vs LOAD 				
7	POWER FACTOR	0.90/ 277VAC 0.93/ 230VAC 0.95/ 120VAC	I/P: 277 VAC I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	PF= 0.950 / 277VAC PF= 0.983 / 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°C	THD=3.69% @50% load /115VAC THD=5.85% @50% load /230VAC THD=6.56% @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°C	99.6 %/ 120VAC 99.2 %/ 230VAC 99.6 %/ 305VAC Constant Current Limiting, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	27V~34V	I/P: 100VAC I/P: 230VAC I/P: 305VAC O/P: NO LOAD Ta: 25°C	29.9 V/ 100VAC 29.9 V/ 230VAC 29.9 V/ 305VAC Shut down output voltage, re-power on to recovery
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 100VAC I/P: 230VAC 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°C	NO DAMAGE onstant Current Limiting, recovers automatically after fault condition is removed

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Power 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°C	(1) 528 V (2) 544 V (3) 523 V
2	O/P Diode (MOSFET)	Q100 Rated 80V/90A	I/P: High-Line +3V =308V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 59.6 V (2) 18 V (3) 56.4 V
3	Input Capacitor	C5 Rated 150u/ 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) 444 V (2) 446 V (3) 446 V
4	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°C	(1) 13.5 V (2) 13.4 V (3) 13.4 V (4) 13.5 V (5) 13.5 V
5	PFC Power Transistor	D2 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°C	(1) 438 V (2) 444 V (3) 435 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: 2.418 mA I/P-FG: 2.4 mA O/P-FG: 2.773 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℃	16 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 Test by certified Lab
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

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																				
1	TEMPERATURE RISE TEST	MODEL: ELG-300-24A 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=29.8 °C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=41.7 °C <table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=29.8 °C</th><th>HIGH AMBIENT Ta=41.7 °C</th></tr><tr><td>1</td><td>BD1</td><td>69.2°C</td><td>77.2°C</td></tr><tr><td>2</td><td>RY1</td><td>67.2°C</td><td>75.1°C</td></tr><tr><td>3</td><td>D1</td><td>67.9°C</td><td>76.0°C</td></tr><tr><td>4</td><td>Q1</td><td>66.7°C</td><td>74.8°C</td></tr><tr><td>5</td><td>L1</td><td>65.8°C</td><td>73.7°C</td></tr><tr><td>6</td><td>C5</td><td>65.1°C</td><td>73.0°C</td></tr><tr><td>7</td><td>C41</td><td>66.2°C</td><td>74.1°C</td></tr><tr><td>8</td><td>U2</td><td>66.1°C</td><td>74.2°C</td></tr><tr><td>9</td><td>Q5</td><td>66.6°C</td><td>74.8°C</td></tr><tr><td>10</td><td>Q6</td><td>67.3°C</td><td>75.5°C</td></tr><tr><td>11</td><td>C511</td><td>66.3°C</td><td>74.2°C</td></tr><tr><td>12</td><td>T1</td><td>83.0°C</td><td>90.9°C</td></tr><tr><td>13</td><td>Q100</td><td>70.0°C</td><td>78.1°C</td></tr><tr><td>14</td><td>Q101</td><td>69.9°C</td><td>78.0°C</td></tr><tr><td>15</td><td>U101</td><td>68.6°C</td><td>76.8°C</td></tr><tr><td>16</td><td>T500</td><td>67.3°C</td><td>75.0°C</td></tr><tr><td>17</td><td>LF100</td><td>68.7°C</td><td>77.1°C</td></tr><tr><td>18</td><td>C103</td><td>68.1°C</td><td>76.3°C</td></tr><tr><td>19</td><td>C105</td><td>66.2°C</td><td>74.4°C</td></tr><tr><td>20</td><td>C108</td><td>65.8°C</td><td>74.0°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta=29.8 °C	HIGH AMBIENT Ta=41.7 °C	1	BD1	69.2°C	77.2°C	2	RY1	67.2°C	75.1°C	3	D1	67.9°C	76.0°C	4	Q1	66.7°C	74.8°C	5	L1	65.8°C	73.7°C	6	C5	65.1°C	73.0°C	7	C41	66.2°C	74.1°C	8	U2	66.1°C	74.2°C	9	Q5	66.6°C	74.8°C	10	Q6	67.3°C	75.5°C	11	C511	66.3°C	74.2°C	12	T1	83.0°C	90.9°C	13	Q100	70.0°C	78.1°C	14	Q101	69.9°C	78.0°C	15	U101	68.6°C	76.8°C	16	T500	67.3°C	75.0°C	17	LF100	68.7°C	77.1°C	18	C103	68.1°C	76.3°C	19	C105	66.2°C	74.4°C	20	C108	65.8°C	74.0°C
NO	Position	ROOM AMBIENT Ta=29.8 °C	HIGH AMBIENT Ta=41.7 °C																																																																																					
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 305VAC/100VAC O/P: 100% LOAD/85% LOAD Ta= -45°C / -35°C	TEST: OK																																																																																				
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50°C NO DAMAGE	I/P: 305VAC O/P: FULL LOAD Ta=50°C HUMIDITY= 95 %R.H	TEST: OK																																																																																				
4	TEMPERATURE COEFFICIENT	±0.03 %/°C(0~60°C)	I/P: 230 VAC O/P: FULL LOAD	±0.007 %/°C(0~60°C)																																																																																				
5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature: -45°C ~ +85°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: Tcase=-45℃~ +90℃ 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-300-24: 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) 80310 HRS (2) 112621 HRS (3) 143208 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