



# Test Report: XLG-240-48-ABV

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200W Constant Voltage 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

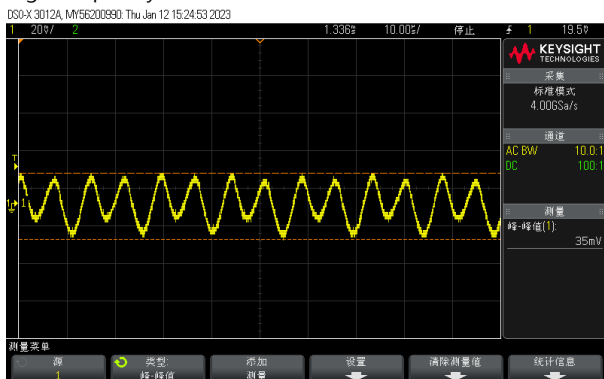
ENVIRONMENT TEST

■ DESIGN VERIFY TEST

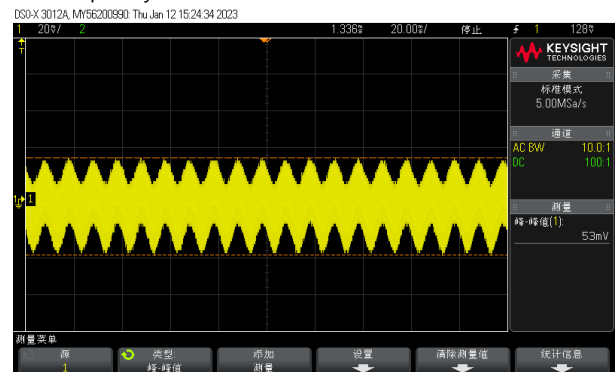
**OUTPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 43.2 V~ 52.8 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	41.93V~54.12V/230VAC 42.02V~54.20V/115VAC
2	OUTPUT VOLTAGE TOLERANCE (Max)	V1: -2 % ~ 2 %	I/P:100VAC /305AC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.1%~ 0.1 %
3	LINE REGULATION (Max)	V1: -0.5 % ~0.5%	I/P:100VAC~305AC O/P:FULL LOAD Ta:25°C	V1: -0.02%~ 0%
4	LOAD REGULATION (Max)	V1: -0.5 % ~0.5%	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.1%~ 0.1 %
5	OVER/UNDERSHOOT TEST	< +5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C <b>CCH MODE TEST</b>	TEST: 1.6 %
6	RIPPLE & NOISE (Max)	V1: 250 mVp-p	I/P: 230 VAC O/P:(1) FULL LOAD (2) 0%~100% LOAD Ta:25°C <b>CCH MODE TEST</b>	Vo=48V (1) 53 mVp-p (Max) (2) 53 mVp-p(Max) &&LOAD= 100 %

high frequency :



low frequency :

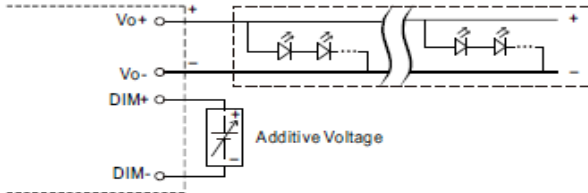


7	SET UP TIME (Max)	230VAC/ 500ms 115VAC/ 1200ms	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	230VAC/ 226ms 115 VAC/ 390 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage DSO-X 3012A, MY56200990, Thu Jan 12 15:39:55 2023		INPUT = 115VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage DSO-X 3012A, MY56200990, Thu Jan 12 15:43:38 2023		
8	DYNAMIC LOAD	V1: 4800mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C	630mVp-p 640mVp-p
FULL /50% LOAD 50%DUTY / 120HZ		FULL /50% LOAD 50%DUTY / 1KHZ		

9 DIMMING OPERATION (for ABV-Type)

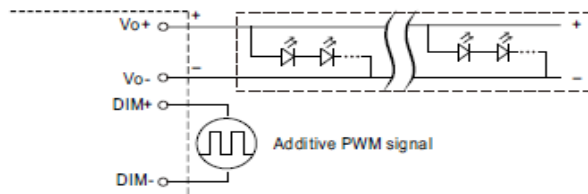
※ 3 in 1 dimming function (for ABV-Type)

- Output constant voltage 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: 100μA (typ.)
- ◎ Applying additive 0 ~ 10VDC



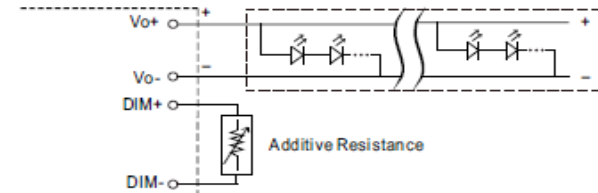
"DO NOT connect DIM- to Vo-"

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

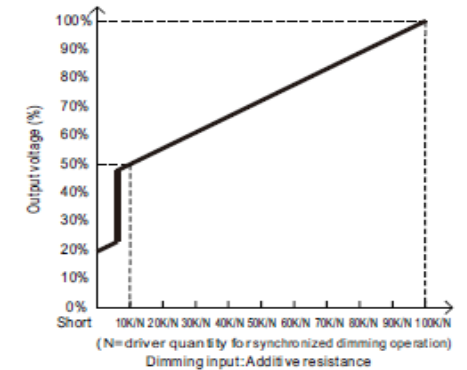
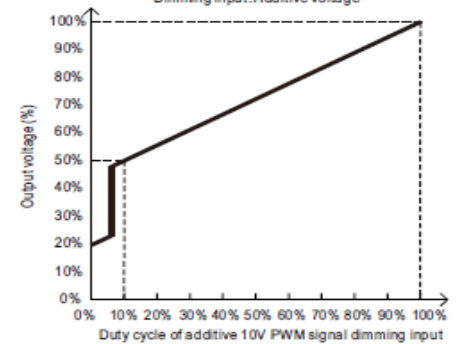
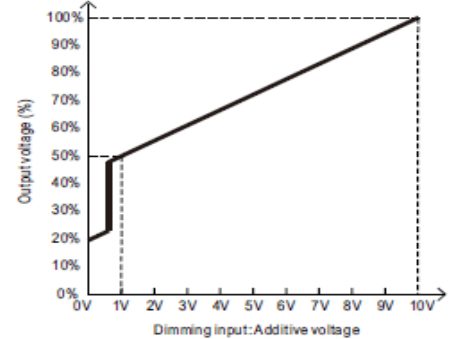


"DO NOT connect DIM- to Vo-"

◎ Applying additive resistance:



"DO NOT connect DIM- to Vo-"



Note : 1. Min. dimming level is about 50% of output voltage and the output voltage is not defined when  $V_{out} < 50\%$   
 2. The output voltage could drop down to 0V when dimming input is about 0k or 0Vdc, or 10V PWM signal with 0% duty cycle.

I/P : 230 VAC O/P : DIMMING TEST

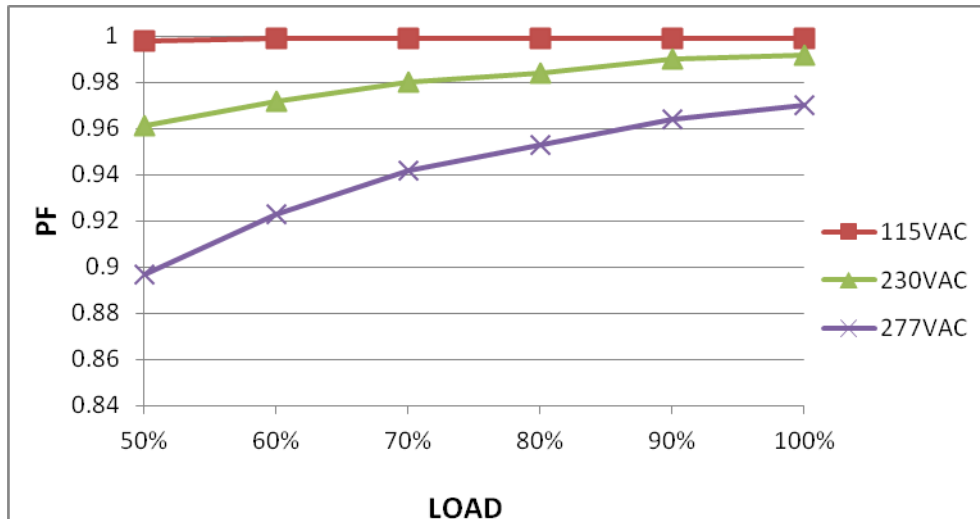
1	V	SHORT	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	8.90	26.99	29.24	32.34	35.41	38.46	41.48	44.48	47.49	50.59	52.62	52.63
%	16.9%	51.1%	55.4%	61.3%	67.1%	72.8%	78.6%	84.3%	89.9%	95.8%	99.7%	99.7%	
2	PWM	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
	Output Current	8.92	26.07	29.15	32.18	35.19	38.29	41.16	44.13	47.09	50.10	52.62	52.63
	%	16.9%	49.4%	55.2%	60.9%	66.7%	72.3%	78.0%	83.6%	89.2%	94.9%	99.7%	99.7%
3	R	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current (100Hz)	8.90	26.56	29.19	32.29	35.37	38.38	41.41	44.47	47.47	50.59	52.62	52.62
	%	16.9%	50.3%	55.3%	61.2%	67.0%	72.7%	78.4%	84.2%	89.9%	95.8%	99.7%	99.7%

TEST RESULT : OK

### INPUT FUNCTION TEST

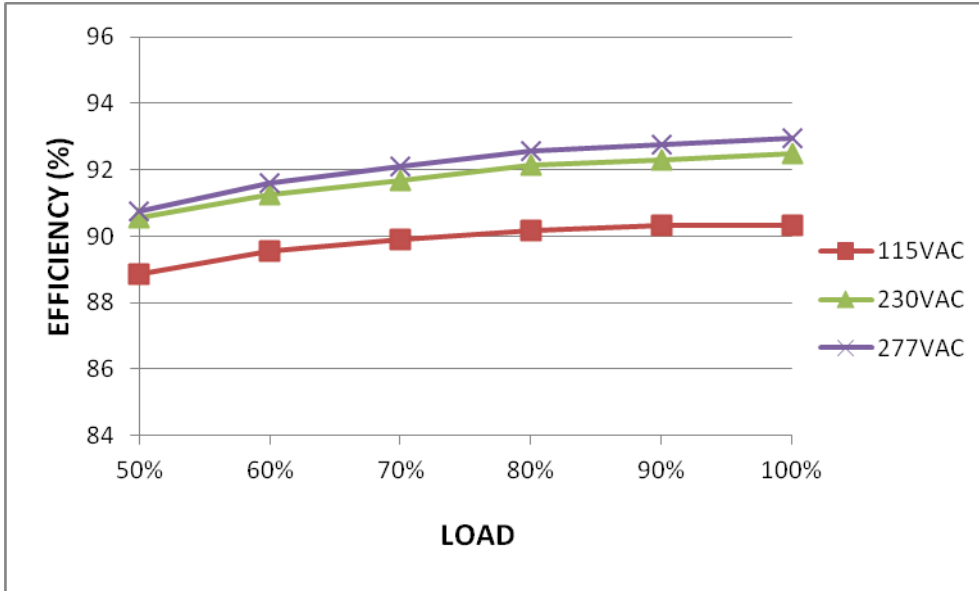
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	110VAC~305 VAC 156VDC~431VDC	(1) I/P:TESTING O/P:FULL LOAD (2) I/P:DC TESTING(L:+ N:-) O/P: FULL / 50% LOAD (3) I/P:DC TESTING(L:- N:+) O/P: FULL / 50% LOAD (4) I/P: LOW-LINE=156VDC HIGH-LINE=431VDC O/P: Dimming on/off 【for Dimming type】 Ta:25°C	(1) 97V~308V (2) 138Vdc~431Vdc/FULL LOAD (3)138 Vdc~431Vdc/FULL LOAD  (4) OK
			I/P: LOW-LINE-3V=87 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: 110 VAC ~305VAC O/P:FULL~MIN LOAD Ta:25°C	OK
3	INPUT CURRENT (TYP)	277VAC/ 1.1A 230 VAC/ 1.3A 115 VAC/ 2.7A	I/P: 277VAC/230 VAC/115 VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	I= 0.95A/277VAC I = 1.12A/ 230VAC I = 2.28A/ 115VAC
4	POWER FACTOR(TYP)	0.95/230 VAC FULL LOAD 0.97/115 VAC FULL LOAD 0.92/277 VAC FULL LOAD	I/P: 230 VAC/115VAC/277VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	PF= 0.992/230V/100%LOAD PF= 0.999/115V/100%LOAD PF= 0.97/277V/100%LOAD

P.F vs LOAD



5	EFFICIENCY (TYP)	91 %	I/P: 230 VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	92.49 %
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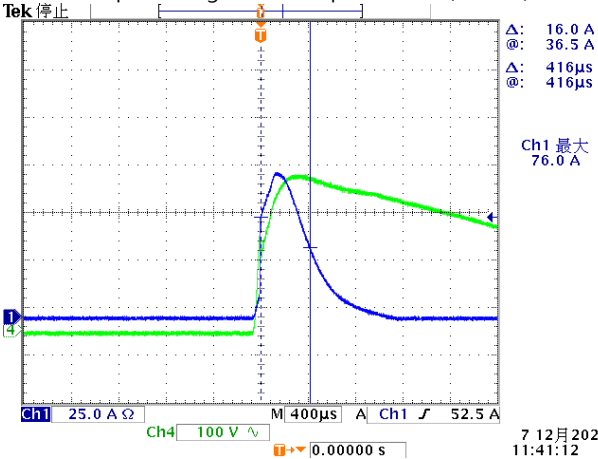
EFFICIENCY vs LOAD



6	INRUSH CURRENT (TYP)  (twidh=500us measured at 50% Ipeak) COLD START	230 V/ 45 A COLD START	I/P: 230 VAC  O/P:FULL LOAD Ta:25°C CCH MODE TEST	I = 76A/ 230VAC  T50= 416 us
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INPUT=230VAC/50HZ @ FULL LOAD

CH4 : AC Input Voltage CH1 : Input current (1V=1A)



7	TOTAL HARMONIC DISTORTION	THD < 10% (@ load ≥ 50% at 115VAC/230VAC, @load ≥ 75% at 277VAC	I/P : 230VAC/115VAC/277VAC O/P : 50% LOAD 75%LOAD Ta : 25°C CCH MODE TEST	THD : 8.3%230V /50% THD : 3.43%115V /50% THD : 7.72%277V /75%																												
<p>THD&amp;LOAD</p> <table border="1"> <caption>THD (%) vs LOAD Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>115VAC (%)</th> <th>230VAC (%)</th> <th>277VAC (%)</th> </tr> </thead> <tbody> <tr> <td>50%</td> <td>3.5</td> <td>8.3</td> <td>10.0</td> </tr> <tr> <td>60%</td> <td>2.5</td> <td>7.5</td> <td>9.0</td> </tr> <tr> <td>70%</td> <td>2.3</td> <td>6.0</td> <td>8.0</td> </tr> <tr> <td>80%</td> <td>2.4</td> <td>6.5</td> <td>7.8</td> </tr> <tr> <td>90%</td> <td>2.5</td> <td>3.2</td> <td>6.8</td> </tr> <tr> <td>100%</td> <td>2.7</td> <td>3.4</td> <td>7.7</td> </tr> </tbody> </table>					LOAD (%)	115VAC (%)	230VAC (%)	277VAC (%)	50%	3.5	8.3	10.0	60%	2.5	7.5	9.0	70%	2.3	6.0	8.0	80%	2.4	6.5	7.8	90%	2.5	3.2	6.8	100%	2.7	3.4	7.7
LOAD (%)	115VAC (%)	230VAC (%)	277VAC (%)																													
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8	STANDBY POWER CONSUMPTION	Standby power consumption <0.5W for ABV/BV-Type(Dimming OFF)(for standard version)	I/P : 230VAC O/P : NO LOAD Ta : 25°C	0.3358W																												
9	LEAKAGE CURRENT	EN61347-1 < 0.75mA / 277VAC	I/P: 277 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.224mA N-FG: 0.210mA																												

### PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~135%	I/P: 305VAC I/P: 230VAC I/P: 110VAC O/P:TESTING Ta:25°C	%/ 305VAC 120%/ 230VAC %/110VAC PROTECTION TYPE : Hiccup mode or Constant current limiting, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	V1: 54V~60V	I/P: 308VAC I/P: 230VAC I/P: 110VAC O/P:MIN LOAD Ta:25°C	56.69V/ 308VAC 56.72V/ 230VAC 56.32V/ 110VAC PROTECTION TYPE : Shut down output voltage, re-power on to recover

3	OVER TEMPERATURE PROTECTION	PROTECTION TYPE :	I/P: 305 VAC I/P: 110 VAC O/P:FULL LOAD	O.T.P Active PROTECTION TYPE : Shut down output voltage, re-power on to recover
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 308VAC I/P: 110 VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE PROTECTION TYPE : Hiccup mode or Constant current limiting, 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) <b>Peak Voltage</b>	Q3 Rated 12 A/ 600 V	AC ON/OFF  I/P:High-Line +3V =308V VDS: O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8) No Load  I/P:Low-Line -3V = 110V O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8) No Load Ta:25°C	VDS: (1) 456V (2) 480V (3) 444V (4) 452V (5) 456V (6) 452V (7) 440V (8) 448V  VDS: (1) 456V (2) 460V (3) 156V (4) 456V (5) 460V (6) 456V (7) 492V (8) 456V



## SAFETY & EMC TEST REPORT

### SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC/min I/P-FG: 2 KVAC/min O/P-FG:1.5KVAC/min	I/P-O/P: 4.125 KVAC/min I/P-FG: 2.4KVAC/min O/P-FG: 1.8KVAC/min Ta:25°C	I/P-O/P: 2.27mA I/P-FG:1.999mA O/P-FG: 1.842mA 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:>9999 M Ω NO DAMAGE
3	GROUNDING CONTINUITY	EN61347-1 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	8mΩ

### E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P: 230VAC/50HZ O/P: LEDmax Ta:25°C	PASS
2	CONDUCTION	EN55015	I/P:230VAC (50HZ) O/P: LEDmax /50% LOAD Ta:25°C	PASS Test by certified Lab
3	RADIATION	EN55015	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25°C	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR : 8KV / Contact : 4KV	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25°C	CRITERIA A
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 2KV	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25°C	CRITERIA A
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :4KV L,N-PE:6KV	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25°C	CRITERIA A
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 : XLG-240-48ABV 1. ROOM AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta=30 °C 2. HIGH AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta=53.4 °C																																																																																														
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=30 °C</th> <th>HIGH AMBIENT Ta= 53.4 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>RTH1</td><td>78.0°C</td><td>101.4°C</td></tr> <tr><td>2</td><td>ZNR1</td><td>69.7°C</td><td>94.8°C</td></tr> <tr><td>3</td><td>BD1</td><td>72.9°C</td><td>100.1°C</td></tr> <tr><td>4</td><td>L2</td><td>75.5°C</td><td>101.7°C</td></tr> <tr><td>5</td><td>C5</td><td>74.4°C</td><td>102.6°C</td></tr> <tr><td>6</td><td>R7</td><td>78.7°C</td><td>104.8°C</td></tr> <tr><td>7</td><td>C44</td><td>80.0°C</td><td>108.7°C</td></tr> <tr><td>8</td><td>Q1</td><td>79.5°C</td><td>105.9°C</td></tr> <tr><td>9</td><td>D5</td><td>79.4°C</td><td>107.4°C</td></tr> <tr><td>10</td><td>C20</td><td>79.7°C</td><td>103.5°C</td></tr> <tr><td>11</td><td>Q2</td><td>84.0°C</td><td>109.7°C</td></tr> <tr><td>12</td><td>Q3</td><td>83.8°C</td><td>108.3°C</td></tr> <tr><td>13</td><td>U2</td><td>75.8°C</td><td>99.5°C</td></tr> <tr><td>14</td><td>T1</td><td>81.0°C</td><td>107.1°C</td></tr> <tr><td>15</td><td>D100</td><td>80.5°C</td><td>106.8°C</td></tr> <tr><td>16</td><td>D101</td><td>84.2°C</td><td>111.0°C</td></tr> <tr><td>17</td><td>C123</td><td>85.5°C</td><td>101.3°C</td></tr> <tr><td>18</td><td>C104</td><td>77.1°C</td><td>103.3°C</td></tr> <tr><td>19</td><td>C105</td><td>78.4°C</td><td>104.1°C</td></tr> <tr><td>20</td><td>J102</td><td>77.4°C</td><td>97.5°C</td></tr> <tr><td>21</td><td>RTH3</td><td>78.2°C</td><td>98.8°C</td></tr> <tr><td>22</td><td>TC</td><td>67.0°C</td><td>94.4°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=30 °C	HIGH AMBIENT Ta= 53.4 °C	1	RTH1	78.0°C	101.4°C	2	ZNR1	69.7°C	94.8°C	3	BD1	72.9°C	100.1°C	4	L2	75.5°C	101.7°C	5	C5	74.4°C	102.6°C	6	R7	78.7°C	104.8°C	7	C44	80.0°C	108.7°C	8	Q1	79.5°C	105.9°C	9	D5	79.4°C	107.4°C	10	C20	79.7°C	103.5°C	11	Q2	84.0°C	109.7°C	12	Q3	83.8°C	108.3°C	13	U2	75.8°C	99.5°C	14	T1	81.0°C	107.1°C	15	D100	80.5°C	106.8°C	16	D101	84.2°C	111.0°C	17	C123	85.5°C	101.3°C	18	C104	77.1°C	103.3°C	19	C105	78.4°C	104.1°C	20	J102	77.4°C	97.5°C	21	RTH3	78.2°C	98.8°C	22	TC	67.0°C	94.4°C
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P : 230 VAC O/P : 120.2 % LOAD Ta : 25°C	TEST : OK																																																																																												
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/110VAC O/P : 100 % LOAD Ta= -25°C	TEST : OK																																																																																												
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P : 315 VAC O/P : FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK																																																																																												

5	TEMPERATURE COEFFICIENT	$\pm 0.03\%$ (0°C~60°C)	I/P : 230 VAC O/P : FULL LOAD	$\pm$ %(0~50°C)
6	STORAGE TEMPERATURE TEST	-20~80°C	1. Thermal shock Temperature : -25°C~ +85°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 200CYCLE 5. Input/Output condition : STATIC	
7	THERMAL SHOCK TEST	-20~50°C	1. Thermal shock Temperature : -25°C~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 16 CYCLE 5. Input/Output condition : 15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle:230V/ FULL LOAD Burn In Test	
8	VIBRATION TEST	10 ~ 500Hz, 5G 12min./1cycle, 72min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 6G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C	
9	CAPACITOR LIFE CYCLE	SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Tc=70 °C LIFE TIME (2) I/P : 230VAC O/P : 75% LOAD Tc=70 °C LIFE TIME (3) I/P : 230VAC O/P : 50% LOAD Tc=70 °C LIFE TIME		(1) 74306HRS (2) 86749HRS (3) 117213HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 2496.2K hrs min. Telcordia SR-332 (Bellcore) ; 219.8K hrs min. MIL-HDBK-217F (25°C)		
11	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 50,000 hours		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQ/HUANGMK	WENF	LINKX