



Test Report: XLG-320-M-DA2

320W Constant Power Mode with DALI-2 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	CURRENT TOLERANCE	±5%	I/P:230VAC O/P:LEDmax CP: 2.1A & 2.8A Ta:25°C	CP 2.1A: 2.086A/230VAC@CV MAX-1V 2.092A/230VAC@CV MIN -0.29%~0.76% CP 2.8A: 2.785A/230VAC@CV MAX-1V 2.831A/230VAC@CV MIN -0.54%~1.21%
2	FULL POWER CURRENT RANGE	2100-2800 mA	I/P: 230VAC O/P:LEDmax CP: 2.1A & 2.8A Ta:25°C	148V/2.11A/230VAC 111V/2.82A/230VAC
3	OPEN CIRCUIT VOLTAGE (max)	180V	I/P: 230VAC O/P:NO LOAD CP: OPEN Ta:25°C	157V
4	CONSTANT CURRENT REGION	CP 2.1A: CH1: 74V~ 148V CP 2.8A: CH1: 74V~ 111V	I/P: 230VAC O/P:LEDmax CP: 2.1A & 2.8A Ta:25°C	CP A:2.1A 56V~148 V/230VAC CP A:2.8A 62V~118 V/230VAC
5	CURRENT ADJ. RANGE	CH1: 1050mA~2800mA	I/P: 230VAC O/P:CVmin& CVmax-1V CP: 2.1A & 2.8A Ta:25°C	731mA~2257mA/230VAC@CV MAX-1V 912mA~3120mA/230VAC@CV MIN
6	CURRENT RIPPLE	5.0% max.	I/P: 230VAC O/P:LEDmax CP: 2.1A & 2.8A Ta:25°C	CP A:2.1 3.38% CP 2.8A: 3.9%
7	AUXILIARY DC OUTPUT	12V@250mA tolerance ± 10%, ripple 200mVp-p (only for DAA-type)	I/P: 230VAC O/P:LEDmax CP: 2.1A & 2.8A Ta:25°C	PASS

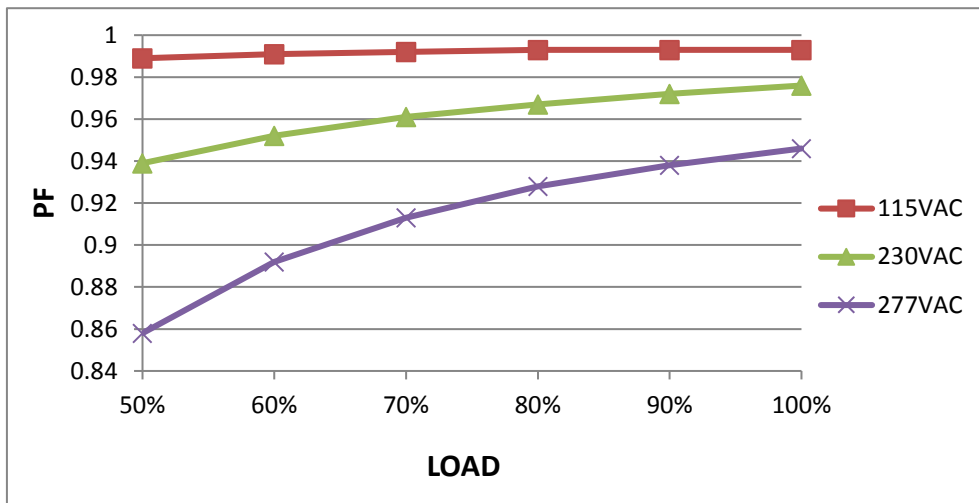
8	SET UP TIME	230VAC/ 500ms (Max) 115VAC/1200 ms (Max)	I/P: 230VAC I/P: 115VAC O/P:LEDmax CP 2.8A Ta:25°C	230VAC/145.6ms 115VAC/ 391.6ms
	INPUT=230VAC/50HZ @ LEDMAX@ CP 2.8A CH1 : Output Voltage CH2 : AC Input Voltage		INPUT=115VAC/60HZ @ LEDMAX@ CP 2.8A CH1 : Output Voltage CH2 : AC Input Voltage	

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305 VAC 142VDC ~ 431VDC	(1) I/P:TESTING O/P:LEDmax (2) I/P:DC TESTING(L:+ N:-) O/P:LEDmax (3) I/P:DC TESTING(L:- N:+) O/P:LEDmax (PLEASE CHECK DERATING CURVE) Ta:25°C	(1) 87VAC~308VAC (2) 142VDC ~ 431VDC (3) 142VDC ~ 431VDC
			I/P: LOW-LINE-3V=97 V HIGH-LINE+10V=315 V O/P: LEDmax / LEDmin CP 2.8A (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	(1).TEST: OK (2).TEST : OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 100 VAC ~305VAC O/P: LEDmax ~ LEDmin CP:2.8 A Ta:25°C	TEST:OK
3	INPUT CURRENT (TYP)	230VAC/ 1.6 A 277VAC/ 1.3A 115VAC/ 3.2A	I/P: 230VAC/277VAC/115VAC O/P:LEDmax CP: 2.8A Ta:25°C	I = 1.47 A/ 230VAC I = 1.24A/ 277VAC I = 2.97A/ 115VAC

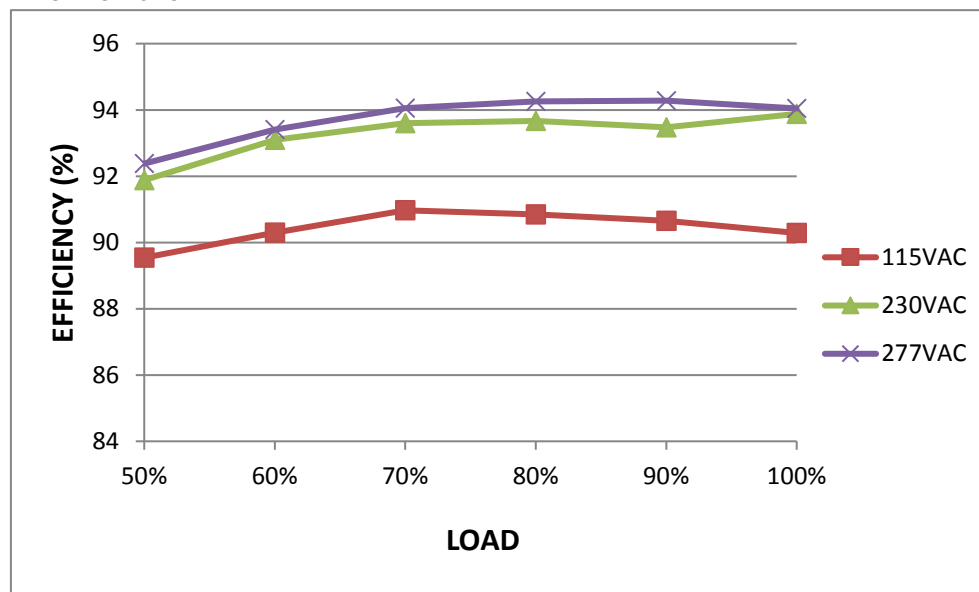
4	LEAKAGE CURRENT	EN61230-1 < 0.75mA / 277VAC	I/P: 277 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.285mA N-FG:0.287 mA
5	STANDBY POWER CONSUMPTION	Standby power consumption <0.5W (Dimming OFF, Only for standard version DA2-type)	I/P : 230VAC O/P : NO LOAD Ta : 25°C	<0.4283W
6	POWER FACTOR(TYP)	0.95/230VAC LEDMAX 0.92/277 VAC LEDMAX 0.97/115 VAC LEDMAX	I/P: 115VAC/230VAC/277VAC O/P:LEDmax CP: 2.8A Ta:25°C	PF= 0.976/230V/100%LOAD PF=0.946/277V/100%LOAD PF=0.993/115V/100%LOAD

P.F vs LOAD

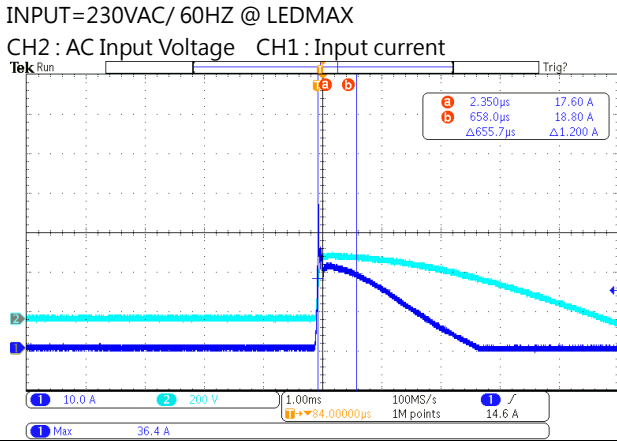


7	EFFICIENCY (TYP)	93.5%	I/P: 230VAC O/P:LEDmax CP: 2.8 A Ta:25°C	93.88%
---	------------------	-------	---	--------

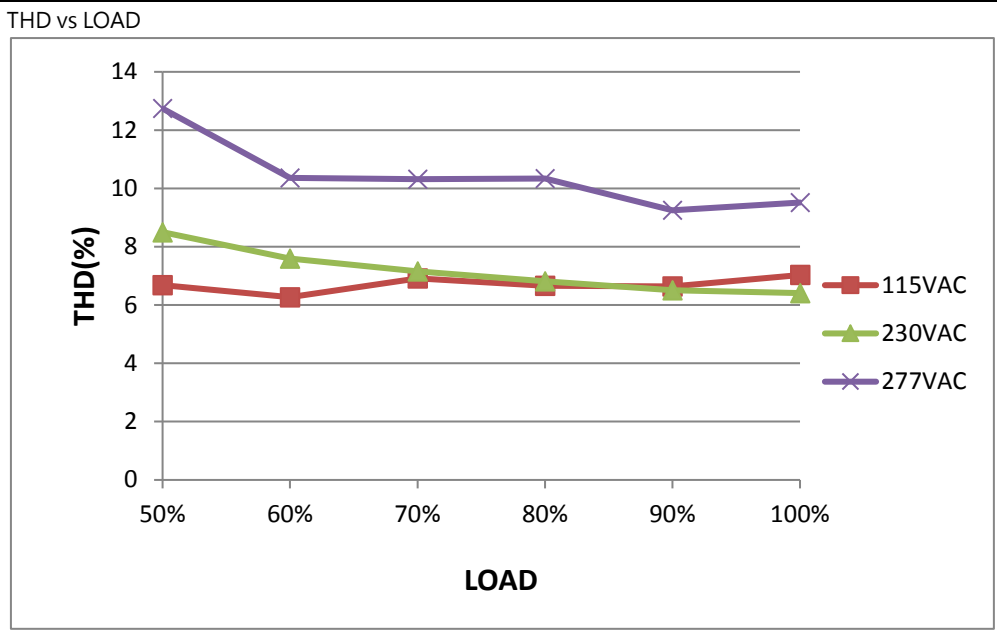
EFFICIENCY vs LOAD



8	INRUSH CURRENT (TYP)	230V/ 45A COLD START	I/P: 230VAC O/P:LEDmax CP:2.8 A Ta:25°C	I =36.4A /230VAC
		(twidh=1200 usmeasured at 50% Ipeak) COLD START		T50= 655.7 μS



9	TOTAL HARMONIC DISTORTION	THD < 10% @ 230VAC > 50% loading	I/P : 277/230/115VAC O/P : 75%/50% LOAD CP:2.8A Ta : 25°C	THD : 8.5%230V 50%
		THD < 10% @ 115VAC > 50% loading		THD : 6.68%115V50%
		THD < 15% @ 277VAC > 75% loading		THD : 10.30%277V 75%



PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 305 VAC I/P: 100 VAC O/P: LEDmax CP: 2.1A Ta:25°C	O.T.P Active PROTECTION TYPE : OK Stage 1: Derating to 75% loading; stage 2: Derating to 50% loading, recovers automatically after fault condition is removed
2	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 305VAC I/P: 100 VAC O/P: LEDMAX CP: 2.1A &2.8A Ta:25°C	CP:2.1 A NO DAMAGE PROTECTION TYPE : Hiccup mode or Constant current limiting, recovers automatically after fault condition is removed CP: 2.8A NO DAMAGE PROTECTION TYPE : Hiccup mode or Constant current limiting, recovers automatically after fault condition is removed
3	INPUT OVER VOLTAGE (for XLG-320I only)	320 ~ 390VAC (Shut down output voltage when the input voltage exceeds protection voltage,recovers automatically after fault condition is removed) Can survive input voltage stress of 440Vac for 48 hours @ tc 75°C max	I/P: TESTING O/P: LEDMAX	pass

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q8 Rated 13 A/ 600V	I/P:High-Line +3V =308v AC ON/OFF CP: 2.1A&2.8A VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short I/P:Low-Line -3V = 97V VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short Ta:25°C	308V CP: 2.1A Q8 VDS: (1) 461V (2) 452V (3) 467V (4) 442V (5) 491V CP: 2.8A VDS: (1) 489V (2) 461V (3) 501V (4) 471V (5) 492V 97V CP:2.1 A Q8 VDS: (1) 461V (2) 453V (3) 449V (4) 435V (5) 447V CP: 2.8A VDS: (1) 472V (2) 452V (3) 474V (4) 449V (5) 501V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 20 A/ 600V	I/P:High-Line +3V =308v AC ON/OFF CP: 2.1A VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short	CP: 2.1A Q1 VDS: (1) 499V (2) 478V (3) 462V (4) 456V (5) 488V

			<p>I/P:Low-Line -3V = 97V VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short</p> <p>Ta:25°C</p>	<p>Q1 VDS: (1) 472V (2) 474V (3) 466V (4) 472V (5) 468V</p>
3	P.F.C DIODE	D5 Rated 9 A/ 600 V	<p>I/P:High-Line +3V =308v AC ON/OFF CP:2.1 A VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short</p> <p>I/P:Low-Line -3V = 97V O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short</p> <p>Ta:25°C</p>	<p>(1) 494V (2) 446V (3) 478V (4)457V (5)469V</p> <p>(1)472 V (2) 461V (3) 466V (4)448V (5)472V</p>
4	Diode Peak Voltage	D100 Rated: 10A/400V	<p>I/P:High-Line +3V =308v AC ON/OFF CP: 2.1A&2.8A VDS: O/P: (1)LEDmax (2) LEDmax continue (3) Output Short</p>	<p>CP: 2.1A Q100 VDS: (1) 162V (2) 154V (3) 14V CP: 2.8A Q100 VDS: (1) 150V (2) 118V (3) 6V</p>
5	Input Capacitor Voltage	C5 Rated: 180μ/450 V	<p>I/P:High-Line +3V =308v AC ON/OFF CP: 2.1A VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue Ta:25°C</p>	<p>(1) 453V (2) 439V (3) 443V (4) 437V</p>

6	Control IC Voltage Test	<p>PWM IC U2 Rated 8.9 V~ 15.5V</p> <p>PFC IC U1 Rated 11.85V~ 20V</p> <p>O/P IC U107 Rated 8V~ 24V</p>	<p>I/P:High-Line +3V =308v AC ON/OFF CP: 2.1A VDS: O/P: (1)LEDmax (2) LEDmin (3) Output Short (4) NO LOAD VRmin.LOW LINE Ta:25°C</p>	<p>U1&U2 (1) 14V (2) 13.8V (3) 14.2V (4) 14.2V</p> <p>U107 (1) 11.1V (2) 10.8V (3) 10.9V (4) 10.8V</p>
7	VCC Diode Peak Voltage	<p>D304 Rated 400 V2 A</p> <p>D401 Rated 400 V 2A</p>	<p>AC ON/OFF</p> <p>I/P : High-Line +3V = 308 V O/P : (1) Full load (2) Full load continue Ta : 25°C</p>	<p>D304 (1) 148V (2) 141V</p> <p>D401 (1) 132V (2) 115V</p>
8	TOP SWITCHING STAND BY POWER	<p>U300 Rated 1.5A/ 700V</p>	<p>AC ON/OFF CP: 2.1A I/P:High-Line +3V =308 V O/P: (1)LEDmax (2) LEDmin I/P:Low-Line -3V =97 V O/P: (1)LEDmax (2) LEDmin Ta:25°C</p>	<p>CP: 2.1A (1) 526V (2) 521V</p> <p>(1) 518V (2) 509V</p>

■ SAFETY & EMC TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	EN61230-1 I/P-O/P: 3.75KVAC/min I/P-FG: 2 KVAC/min O/P-FG:1.8KVAC/min	I/P-O/P: 4.125 KVAC/min I/P-FG: 2.4KVAC/min O/P-FG: 2.16KVAC/min Ta:25°C	I/P-O/P: 3.628mA I/P-FG: 2.859mA O/P-FG:2.231 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°C	I/P-O/P: 9999MΩ I/P-FG: 9999M Ω O/P-FG: 9999M Ω NO DAMAGE
3	GROUNDING CONTINUITY	EN61230-1 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	13mΩ

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	EN 55015	I/P:230VAC (50HZ) O/P: LEDmax Ta:25°C	PASS Test by certified Lab
3	RADIATION	EN 55015	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25°C	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 AIR : 8KV / Contact : 4KV	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25°C	CRITERIA A
5	E.F.T	EN61000-4-4 INPUT: 2KV	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25°C	CRITERIA A
6	SURGE	IEC61000-4-5 L-N :4KV L,N-PE:6KV	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25°C	CRITERIA B
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-320-H-DAA 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=27.8 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=48.4 °C																																																																																																																		
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=27.8°C</th> <th>HIGH AMBIENT Ta=48.4°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>RTH1</td><td>67.3°C</td><td>87.7°C</td></tr> <tr><td>2</td><td>BD1</td><td>66.9°C</td><td>86.7°C</td></tr> <tr><td>3</td><td>C5</td><td>63.1°C</td><td>82.8°C</td></tr> <tr><td>4</td><td>L2</td><td>67.9°C</td><td>88.7°C</td></tr> <tr><td>5</td><td>U2</td><td>63.5°C</td><td>83.4°C</td></tr> <tr><td>6</td><td>Q1</td><td>66.8°C</td><td>86.6°C</td></tr> <tr><td>7</td><td>Q2</td><td>68.2°C</td><td>88.1°C</td></tr> <tr><td>8</td><td>C16</td><td>71.3°C</td><td>91.9°C</td></tr> <tr><td>9</td><td>Q7</td><td>66.9°C</td><td>94.3°C</td></tr> <tr><td>10</td><td>D6</td><td>69.9°C</td><td>92.3°C</td></tr> <tr><td>11</td><td>U1</td><td>62.0°C</td><td>81.6°C</td></tr> <tr><td>12</td><td>C88</td><td>69.5°C</td><td>89.9°C</td></tr> <tr><td>13</td><td>T1</td><td>78.2°C</td><td>99.9°C</td></tr> <tr><td>14</td><td>T1core</td><td>65.7°C</td><td>87.0°C</td></tr> <tr><td>15</td><td>Q100</td><td>64.0°C</td><td>84.8°C</td></tr> <tr><td>16</td><td>C104</td><td>64.8°C</td><td>85.7°C</td></tr> <tr><td>17</td><td>C105</td><td>62.6°C</td><td>83.1°C</td></tr> <tr><td>18</td><td>U101</td><td>63.2°C</td><td>83.6°C</td></tr> <tr><td>19</td><td>U300</td><td>72.6°C</td><td>93.2°C</td></tr> <tr><td>20</td><td>T2</td><td>73.7°C</td><td>94.6°C</td></tr> <tr><td>21</td><td>C312</td><td>69.7°C</td><td>90.2°C</td></tr> <tr><td>22</td><td>C480</td><td>64.3°C</td><td>84.5°C</td></tr> <tr><td>23</td><td>U430</td><td>59.0°C</td><td>78.9°C</td></tr> <tr><td>24</td><td>U431</td><td>61.0°C</td><td>80.8°C</td></tr> <tr><td>25</td><td>RG47</td><td>66.5°C</td><td>86.7°C</td></tr> <tr><td>26</td><td>RT22</td><td>65.5°C</td><td>85.7°C</td></tr> <tr><td>27</td><td>TC</td><td>58.9°C</td><td>78.6°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=27.8°C	HIGH AMBIENT Ta=48.4°C	1	RTH1	67.3°C	87.7°C	2	BD1	66.9°C	86.7°C	3	C5	63.1°C	82.8°C	4	L2	67.9°C	88.7°C	5	U2	63.5°C	83.4°C	6	Q1	66.8°C	86.6°C	7	Q2	68.2°C	88.1°C	8	C16	71.3°C	91.9°C	9	Q7	66.9°C	94.3°C	10	D6	69.9°C	92.3°C	11	U1	62.0°C	81.6°C	12	C88	69.5°C	89.9°C	13	T1	78.2°C	99.9°C	14	T1core	65.7°C	87.0°C	15	Q100	64.0°C	84.8°C	16	C104	64.8°C	85.7°C	17	C105	62.6°C	83.1°C	18	U101	63.2°C	83.6°C	19	U300	72.6°C	93.2°C	20	T2	73.7°C	94.6°C	21	C312	69.7°C	90.2°C	22	C480	64.3°C	84.5°C	23	U430	59.0°C	78.9°C	24	U431	61.0°C	80.8°C	25	RG47	66.5°C	86.7°C	26	RT22	65.5°C	85.7°C	27	TC	58.9°C	78.6°C
NO	Position	ROOM AMBIENT Ta=27.8°C	HIGH AMBIENT Ta=48.4°C																																																																																																																	
1	RTH1	67.3°C	87.7°C																																																																																																																	
2	BD1	66.9°C	86.7°C																																																																																																																	
3	C5	63.1°C	82.8°C																																																																																																																	
4	L2	67.9°C	88.7°C																																																																																																																	
5	U2	63.5°C	83.4°C																																																																																																																	
6	Q1	66.8°C	86.6°C																																																																																																																	
7	Q2	68.2°C	88.1°C																																																																																																																	
8	C16	71.3°C	91.9°C																																																																																																																	
9	Q7	66.9°C	94.3°C																																																																																																																	
10	D6	69.9°C	92.3°C																																																																																																																	
11	U1	62.0°C	81.6°C																																																																																																																	
12	C88	69.5°C	89.9°C																																																																																																																	
13	T1	78.2°C	99.9°C																																																																																																																	
14	T1core	65.7°C	87.0°C																																																																																																																	
15	Q100	64.0°C	84.8°C																																																																																																																	
16	C104	64.8°C	85.7°C																																																																																																																	
17	C105	62.6°C	83.1°C																																																																																																																	
18	U101	63.2°C	83.6°C																																																																																																																	
19	U300	72.6°C	93.2°C																																																																																																																	
20	T2	73.7°C	94.6°C																																																																																																																	
21	C312	69.7°C	90.2°C																																																																																																																	
22	C480	64.3°C	84.5°C																																																																																																																	
23	U430	59.0°C	78.9°C																																																																																																																	
24	U431	61.0°C	80.8°C																																																																																																																	
25	RG47	66.5°C	86.7°C																																																																																																																	
26	RT22	65.5°C	85.7°C																																																																																																																	
27	TC	58.9°C	78.6°C																																																																																																																	
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/100VAC O/P : 100%LOAD Ta= -45/-35 °C	TEST : OK																																																																																																																
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 45 °C NO DAMAGE	I/P : 315 VAC O/P : FULL LOAD Ta=45 °C HUMIDITY= 95 %R.H	TEST : OK																																																																																																																

4	TEMPERATURE COEFFICIENT	± 0.06 %/(0°C~60°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.001 %/°C(0~60°C)
5	STORAGE TEMPERATURE TEST	-40~80°C	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 : 10CYCLE 5. Input/Output condition : AC OFF STATIC TEST : OK	
6	THERMAL SHOCK TEST	-40~45°C	1. Thermal shock Temperature : -45°C~ +50°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 TEST : OK	
7	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	
8	CAPACITOR LIFE CYCLE	SUPPOSE C104 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Tc=75 °C LIFE TIME (2) I/P : 230VAC O/P : 75% LOAD Tc=75 °C LIFE TIME (3) I/P : 230VAC O/P : 50% LOAD Tc= 75 °C LIFE TIME		(1) 53350HRS (2) 52942HRS (3) 52228HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 1397.7K hrs min. Telcordia SR-332 (Bellcore) ; 145.1K hrs min. MIL-HDBK-217F (25°C)		
10	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