Test Report: XLG-320-H-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

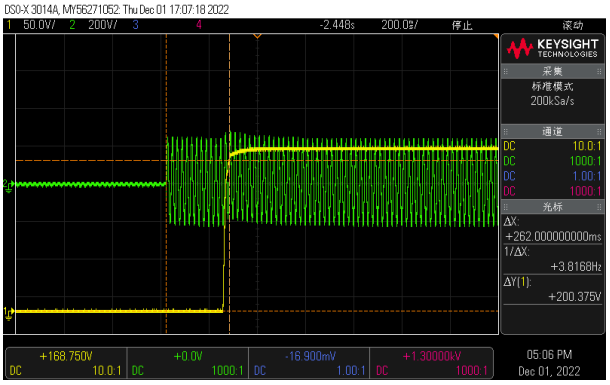
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

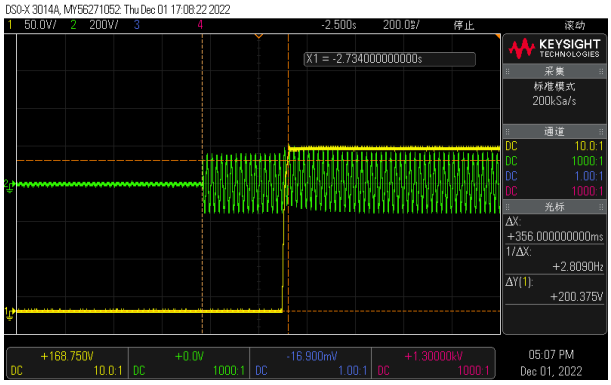
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	±5%	I/P:230VAC O/P:LEDmax CP: 5.6A & 7.42A Ta:25℃	CP5.6A: 5.54A/230VAC@CV MAX-1V 5.56A/230VAC@CV MIN -1~0.7% CP 7.42A: 7.35A/230VAC@CV MAX-1V 7.29A/230VAC@CV MIN -1.75~-0.94%
2	FULL POWER CURRENT RANGE	5600~7420 mA	I/P: 230VAC O/P:LEDmax CP: 5.6A & 7.42A Ta:25℃	57.5V/5.6A/230VAC 49V/7.42A/230VAC
3	OPEN CIRCUIT VOLTAGE (max)	65V	I/P: 230VAC O/P:NO LOAD CP: OPEN Ta:25℃	62.4V
4	CONSTANT CURRENT REGION	CP 5.6A: CH1:27V~ 56V CP 7.42A: CH1:27V~ 42V	I/P: 230VAC O/P:LEDmax CP: 5.6A & 7.42A Ta:25℃	CP 5.6A: 17.5V~56.9 V/230VAC CP 7.42A: 18.3V~ 48.2V/230VAC
5	CURRENT ADJ. RANGE	CH1: 2800mA~7420mA	I/P: 230VAC O/P:CVmin& CVmax-1V CP: 5.6A & 7.42A Ta:25℃	2170mA~6210mA/230VAC@CV MAX-1V 2187mA~8456mA /230VAC@CV MIN
6	CURRENT RIPPLE	5.0% max.	I/P: 230VAC O/P:LEDmax CP: 5.6A & 7.42A Ta:25℃	CP 5.6A: 1.9% CP 7.42A: 3.26%
7	AUXILIARY DC OUTPUT	12V@250mA tolerance ± 10%, ripple 200mVp-p (only for DA2-A-type)	I/P: 230VAC O/P:LEDmax CP: 5.6A & 7.42A Ta:25℃	PASS

8	SET UP TIME	230VAC/ 500 ms (Max) 115VAC/ 1200 ms (Max)	I/P: 230VAC I/P: 115VAC O/P:LEDmax CP 5.6A Ta:25℃	230VAC/262ms 115VAC/356ms

INPUT=230VAC/50HZ @ LEDMAX@ CP 5.6A
CH1 : Output Voltage CH2 : AC Input Voltage



INPUT=230VAC/60HZ @ LEDMAX@ CP 5.6A
CH1 : Output Voltage CH2 : AC Input Voltage

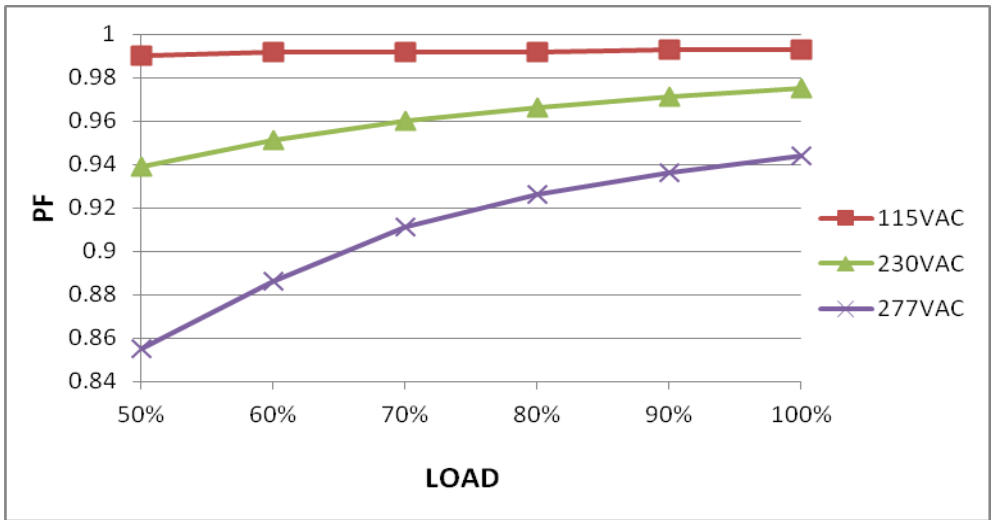


INPUT FUNCTION TEST

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℃	(1) 97VAC~308VAC (2) 142VDC ~ 431VDC (3) 142VDC ~ 431VDC
			I/P: LOW-LINE-3V=97 V HIGH-LINE+10V=315 V O/P: LEDmax / LEDmin CP 5.6A (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 :5.6A Ta:25℃	TEST:OK
3	INPUT CURRENT (TYP)	230VAC/ 1.6 A 277VAC/ 1.3 A 115VAC/3.2A	I/P: 230VAC/277VAC/115VAC O/P:LEDmax CP :5.6A Ta:25℃	I =1.456A/ 230VAC I =1.24A/ 277VAC I =2.958A/ 115VAC

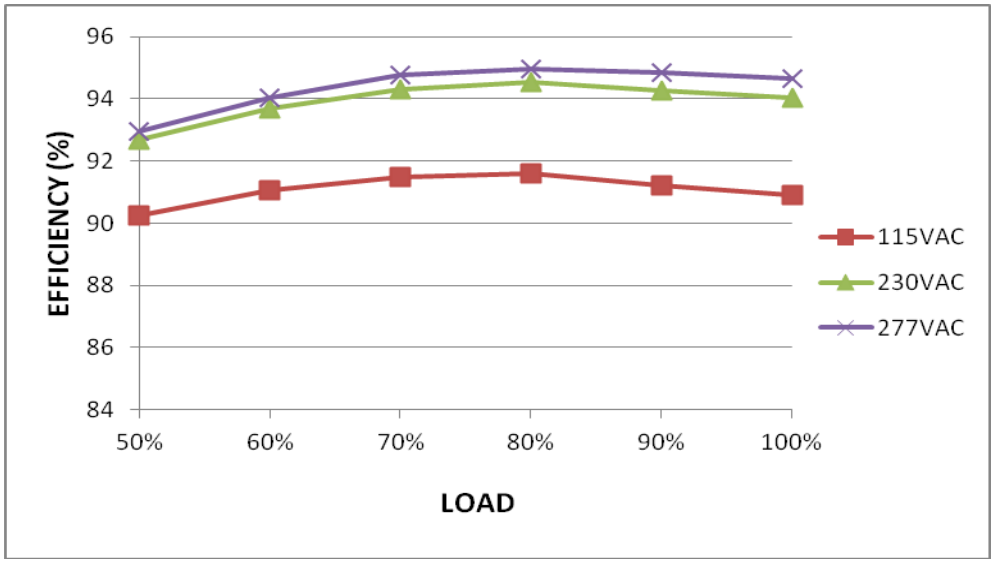
4	LEAKAGE CURRENT	EN61230-1 < 0.75mA / 277VAC	I/P: 277 VAC O/P:Min LOAD Ta:25℃	L-FG: 0.422mA N-FG: 0.417mA
5	STANDBY POWER CONSUMPTION	Standby power consumption <0.5W (Dimming OFF, Only for standard version DA2-type)	I/P：230VAC O/P：NO LOAD Ta：25℃	0.4462W
6	POWER FACTOR(TYP)	0.92/277VAC LEDMAX 0.95/230VAC LEDMAX 0.97/115VAC LEDMAX	I/P: 277VAC/230VAC/115VAC O/P:LEDmax CP 5.6A Ta:25℃	PF=0.944/277V/100%LOAD PF=0.975/230V/100%LOAD PF=0.993/115V/100%LOAD

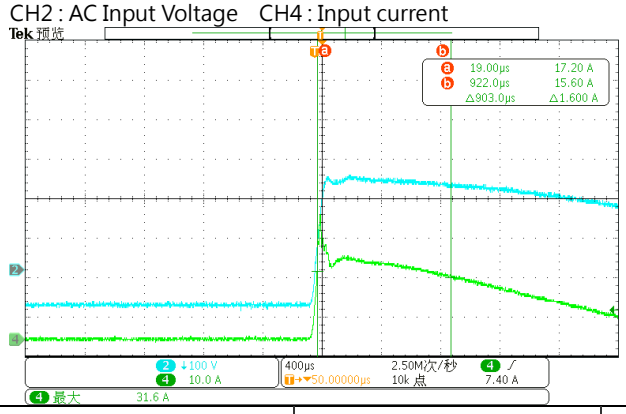
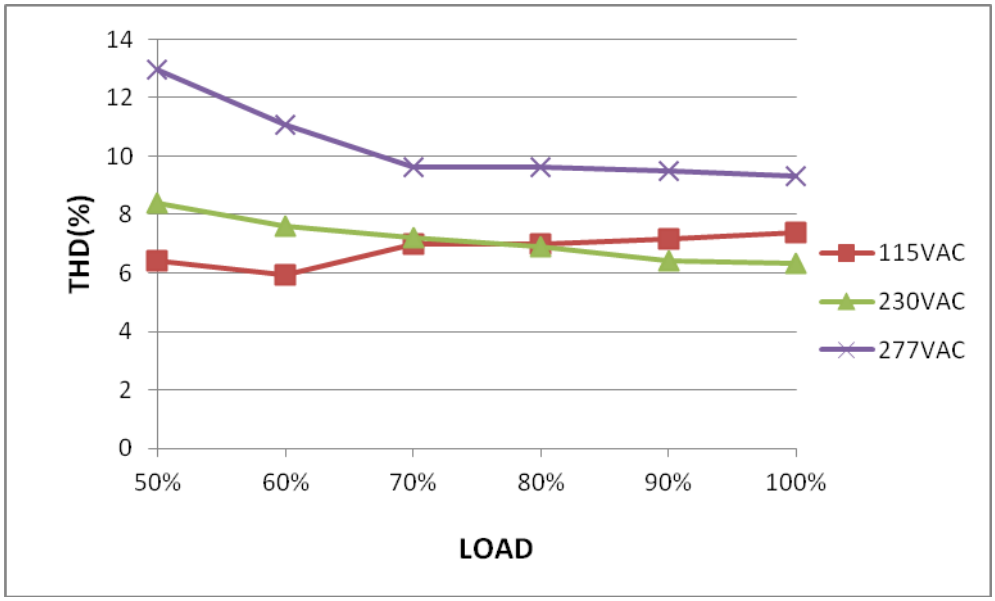
P.F vs LOAD



7	EFFICIENCY (TYP)	92.5%	I/P: 230VAC O/P:LEDmax CP: 5.6A Ta:25℃	94.05%

EFFICIENCY vs LOAD



8	INRUSH CURRENT (TYP)	230V/ 45A COLD START (twidth=1200 usmeasured at 50% Ipeak) COLD START	I/P: 230VAC O/P:LEDmax CP 5.6 A Ta:25℃	I =31.6A /230VAC T50= 903 μ S
	INPUT=230VAC/ 60HZ @ LEDMAX CH2 : AC Input Voltage CH4 : Input current 			
9	TOTAL HARMONIC DISTORTION	THD< 10% @ 230VAC> 50% loading THD< 10% @ 115VAC> 50% loading THD< 15% @ 277VAC> 75% loading	I/P： 277/230/115VAC O/P：75%/50% LOAD CP :5.6A Ta：25℃	THD：8.39 %230V 50% THD：6.41 %115V50% THD：9.82 %277V 75%
	THD vs LOAD 			

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P:305VAC I/P: 90 VAC O/P:LEDmax CP 5.6A Ta:25℃	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: 5.6A &7.42A Ta:25℃	CP:5.57 A NO DAMAGE PROTECTION TYPE : Hiccup mode or Constant current limiting, recovers automatically after fault condition is removed CP: 7.42A 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	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 15 A/ 650V	I/P:High-Line +3V =308v AC ON/OFF **CP:** 5.6A & 7.42A 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℃	308V **CP: 5.6A** Q8 VDS: (1) 466V (2) 478V (3) 446V (4) 436V (5) 510V **CP: 7.42A** **VDS:** (1) 486V (2) 466V (3) 478V (4) 466V (5) 506V 97V **CP:5.6A** Q8 VDS: (1) 474V (2) 458V (3) 478V (4) 466V (5) 502V **CP: 7.42A** VDS: (1) 464V (2) 456V (3) 472V (4) 456V (5) 504V
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:** 5.6A VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short	 **CP: 5.6A** Q1 VDS: (1) 490V (2) 490V (3) 482V (4) 474V (5) 446V

			I/P:Low-Line -3V = 97V VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short Ta:25℃	Q1 VDS: (1) 490V (2) 482V (3) 498V (4) 486V (5) 486V
3	P.F.C DIODE	D5 Rated 9 A/ 600 V	I/P:High-Line +3V =308v AC ON/OFF **CP: 7.42A** VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short I/P:Low-Line -3V = 97V O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) Output Short Ta:25℃	 (1) 504V (2) 492V (3) 504V (4)484V (5)440V (1)446 V (2) 438V (3) 446V (4)446V (5)436V
4	Diode Peak **Voltage**	Q100 Rated: 80A/150V	I/P:High-Line +3V =308v AC ON/OFF **CP:** 5.6A & 7.42A VDS: O/P: (1)LEDmax (2) LEDmax continue (3) Output Short Ta:25℃	 **CP: 5.57A** Q100 VDS: (1) 115.6V (2) 108.9V (3) 8.4V **CP: 7.42A** Q100 VDS: (1) 80V (2) 80V (3) 11.6V
5	**Input Capacitor Voltage**	C5 Rated: 180:μ /450 V Surge voltage: 500 V	I/P:High-Line +3V =308v AC ON/OFF **CP: 5.6A** VDS: O/P: (1)LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue Ta:25℃	 (1) 436V (2)432 V (3) 460V (4) 432V

6	**Control IC Voltage Test**	PWM IC U2 Rated 8.9 V~ 15.5V PFC IC U1 Rated 11.85V~ 20V O/P IC U107 Rated 8V~ 24V	I/P:High-Line +3V =308v AC ON/OFF **CP:** 5.6A VDS: O/P: (1)LEDmax (2) LEDmin (3) Output Short (4) NO LOAD VRmin.LOW LINE (5)DIM OFF Ta:25℃	 **U1&U2** (1) 13.19V (2) 1319V (3) 13.27V (4) 13.27V (5) 0.89V U107 (1) 10.48V (2) 10.48V (3) 10.48V (4) 10.48V (5) 10.4V
7	VCC Diode Peak Voltage	D304 Rated 400 V2 A D401 Rated 400 V2 A	AC ON/OFF I/P：High-Line +3V = 308 V O/P：(1) Full load (2) Full load continue Ta：25℃	 D304 D450 (1) 0.872A (1) 1.254A (2) 0.363A (2) 0.582A D470 (1) 2.25A (2) 0.256A
8	TOP SWITCHING STAND BY POWER	U300 Rated 1.5A/ 750V	AC ON/OFF **CP: 5.6A** 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℃	 **CP: 5.6A** (1) 558V (2) 574V (1) 518V (2) 510V

■ SAFETY & EMC TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	EN61347-1 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℃	I/P-O/P: 2.849mA I/P-FG: 2.62mA O/P-FG: 2.333mA 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: 9999MΩ I/P-FG:9999 MΩ O/P-FG: 9999M Ω NO DAMAGE
3	GROUNDING CONTINUITY	EN61230-1 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	11mΩ

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℃	PASS
2	CONDUCTION	EN 55015	I/P:230VAC (50HZ) O/P: LEDmax Ta:25℃	PASS Test by certified Lab
3	RADIATION	EN 55015	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25℃	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℃	CRITERIA A
5	E.F.T	EN61000-4-4 INPUT: 2KV	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25℃	CRITERIA A
6	SURGE	IEC61000-4-5 L-N :4KV L,N-PE:6KV	I/P: 230VAC (50HZ) O/P:LEDmax Ta:25℃	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

<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： XLG-320-H-DA2-A
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=27.8 ℃
2. HIGH AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=48.4 ℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=27.8℃</th><th>HIGH AMBIENT Ta=48.4℃</th></tr>
<tr><td>1</td><td>RTH1</td><td>67.3℃</td><td>87.7℃</td></tr>
<tr><td>2</td><td>BD1</td><td>66.9℃</td><td>86.7℃</td></tr>
<tr><td>3</td><td>C5</td><td>63.1℃</td><td>82.8℃</td></tr>
<tr><td>4</td><td>L2</td><td>67.9℃</td><td>88.7℃</td></tr>
<tr><td>5</td><td>U2</td><td>63.5℃</td><td>83.4℃</td></tr>
<tr><td>6</td><td>Q1</td><td>66.8℃</td><td>86.6℃</td></tr>
<tr><td>7</td><td>Q2</td><td>68.2℃</td><td>88.1℃</td></tr>
<tr><td>8</td><td>C16</td><td>71.3℃</td><td>91.9℃</td></tr>
<tr><td>9</td><td>Q7</td><td>66.9℃</td><td>94.3℃</td></tr>
<tr><td>10</td><td>D6</td><td>69.9℃</td><td>92.3℃</td></tr>
<tr><td>11</td><td>U1</td><td>62.0℃</td><td>81.6℃</td></tr>
<tr><td>12</td><td>C88</td><td>69.5℃</td><td>89.9℃</td></tr>
<tr><td>13</td><td>T1</td><td>78.2℃</td><td>99.9℃</td></tr>
<tr><td>14</td><td>T1core</td><td>65.7℃</td><td>87.0℃</td></tr>
<tr><td>15</td><td>Q100</td><td>64.0℃</td><td>84.8℃</td></tr>
<tr><td>16</td><td>C104</td><td>64.8℃</td><td>85.7℃</td></tr>
<tr><td>17</td><td>C105</td><td>62.6℃</td><td>83.1℃</td></tr>
<tr><td>18</td><td>U101</td><td>63.2℃</td><td>83.6℃</td></tr>
<tr><td>19</td><td>U300</td><td>72.6℃</td><td>93.2℃</td></tr>
<tr><td>20</td><td>T2</td><td>73.7℃</td><td>94.6℃</td></tr>
<tr><td>21</td><td>C312</td><td>69.7℃</td><td>90.2℃</td></tr>
<tr><td>22</td><td>C480</td><td>64.3℃</td><td>84.5℃</td></tr>
<tr><td>23</td><td>U430</td><td>59.0℃</td><td>78.9℃</td></tr>
<tr><td>24</td><td>U431</td><td>61.0℃</td><td>80.8℃</td></tr>
<tr><td>25</td><td>RG47</td><td>66.5℃</td><td>86.7℃</td></tr>
<tr><td>26</td><td>RT22</td><td>65.5℃</td><td>85.7℃</td></tr>
<tr><td>27</td><td>TC</td><td>58.9℃</td><td>78.6℃</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/120VAC
O/P： 100%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 45 ℃
NO DAMAGE</td><td>I/P： 315 VAC
O/P：FULL LOAD
Ta=45 ℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td></tr>
</table>

4	TEMPERATURE COEFFICIENT	± 0.06 %/(0℃~60℃)	I/P： 230 VAC O/P：FULL LOAD	± 0.0087 %/℃(0~60℃)
5	STORAGE TEMPERATURE TEST	-40~80℃	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：10CYCLE 5. Input/Output condition：AC OFF STATIC TEST：OK	
6	THERMAL SHOCK TEST	-40~45℃	1. Thermal shock Temperature： -45℃~ +50℃ 2. Temperature change rate ：25℃ / 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℃	
8	CAPACITOR LIFE CYCLE	SUPPOSE C104 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Tc=75 ℃ LIFE TIME (2) I/P： 230VAC O/P：75% LOAD Tc=75 ℃ LIFE TIME (3) I/P： 230VAC O/P：50% LOAD Tc= 75 ℃ LIFE TIME		(1) 67090HRS (2) 64405HRS (3) 75312HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 1397.7K hrs min. Telcordia SR-332 (Bellcore)； 145.1K 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/HUANGMK	WENF	LINKX