



Test Report: XLC-40-H-KN

40W Multiple-Stage Constant Power LED Driver

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

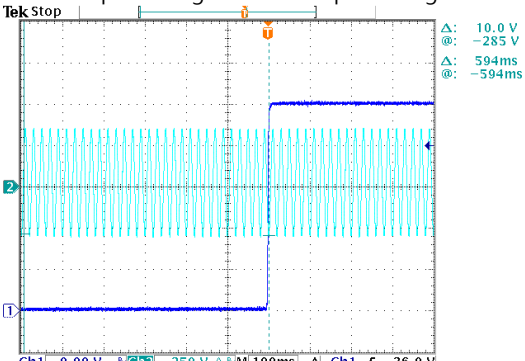
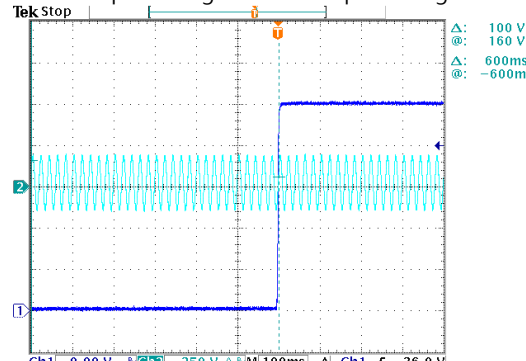
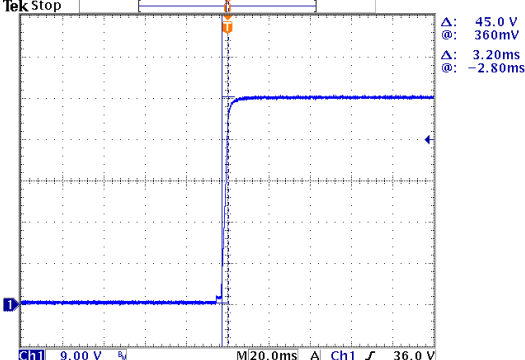
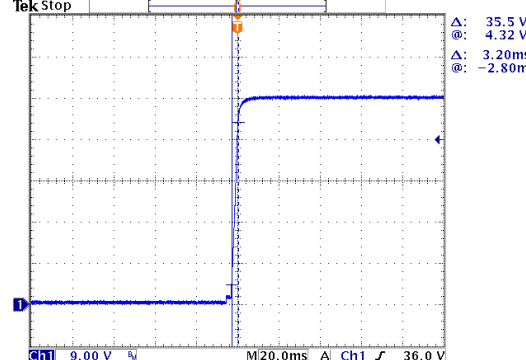
■ RELIABILITY TEST

ENVIRONMENT TEST

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

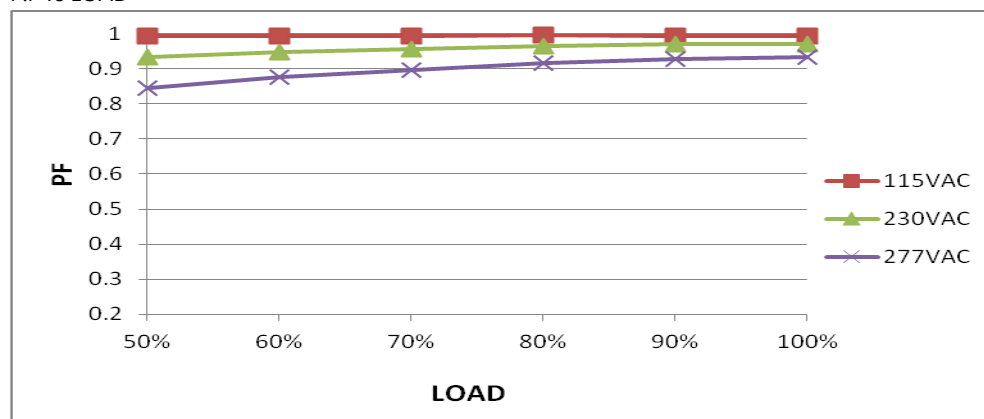
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	± 5%	I/P: 230 VAC I/P:115VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST	1.057 A /230VAC@CV MAX-1V 1.064A /230VAC@CV MIN 1.072A/115VAC@CV MAX-1V 1.062A/115VAC@CV MIN 0.67~2.09%
2	CURRENT ADJ. RANGE (BY ETS Database)	CH1:600mA/700mA/800mA/900mA/1050mA/1200mA/1300mA/1400mA	I/P: 230VAC O/P:CVmin& CVmax-1V CP: 0.6A ~1.05A Ta:25°C	0.611mA/230VAC@CV MAX-1V 0.608mA /230VAC@CV MIN 0.707mA/230VAC@CV MAX-1V 0.704mA/230VAC@CV MIN 0.822mA/230VAC@CV MAX-1V 0.812mA/230VAC@CV MIN 0.899mA/230VAC@CV MAX-1V 0.895mA /230VAC@CV MIN 1.057mA/230VAC@CV MAX-1V 1.064mA /230VAC@CV MIN 1.208mA/230VAC@CV MAX-1V 1.203mA /230VAC@CV MIN 1.312mA/230VAC@CV MAX-1V 1.302mA /230VAC@CV MIN 1.395mA/230VAC@CV MAX-1V 1.393mA /230VAC@CV MIN
3	OPEN CIRCUIT VOLTAGE (max)	60V	I/P: 230VAC O/P: OPEN Ta:25°C	58V
4	CONSTANT CURRENT OPERATION VOLTAGE	CH1: 9V~ 54V	I/P: 230 VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST	7.9V~ 56.1V /230VAC
5	CURRENT RIPPLE	< 4%	I/P: 230 VAC I/P:115VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST	230VAC: 2.45% 115VAC: 2.26%

6	SET UP TIME (Max)	230VAC/500ms 115VAC/1000ms	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C LEDH MODE TEST	230VAC/ 594ms 115 VAC/ 600ms
	INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage 		INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage 	
7	RISE TIME (Max)	230VAC/100ms 115VAC/ 100ms	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C LEDH MODE TEST	230VAC/ 3.2ms 115 VAC/3.2 ms
	INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage 		INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage 	

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC 141VDC~400VDC	(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=141VDC HIGH-LINE=431VDC O/P: Dim on/off 【for Dimming type】 Ta:25°C	(1) 97 VAC ~ 308VAC (2) 141Vdc~431Vdc/FULL LOAD 141 Vdc~431Vdc/50% LOAD (3) 141Vdc~431Vdc/FULL LOAD 141Vdc~431Vdc/50% LOAD (4)OK
			I/P: LOW-LINE-3V=97 VAC HIGH-LINE+10V=315 VAC 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: 100VAC ~305VAC O/P:FULL~MIN LOAD Ta:25°C	OK
3	INPUT CURRENT (TYP)	277VAC/0.2A 230 VAC/0.25A 115 VAC/ 0.5A	I/P: 277VAC/230 VAC/115 VAC O/P:FULL LOAD Ta:25°C LEDH MODE TEST	I = 0.171A/277VAC I = 0.201A/ 230VAC I = 0.403A/ 115VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.028mA N-FG:0.025mA
5	STANDBY POWER CONSUMPTION	Standby power consumption<0.5W(Dimming off)	I/P : 230VAC O/P : TESTING Ta : 25°C	0.3852W
6	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 LEDH MODE TEST	PF= 0.971/230V/100%LOAD PF= 0.994/115V/100%LOAD PF= 0.934/277V/100%LOAD

P.F vs LOAD



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EFFICIENCY (TYP)

88%

I/P: 230 VAC

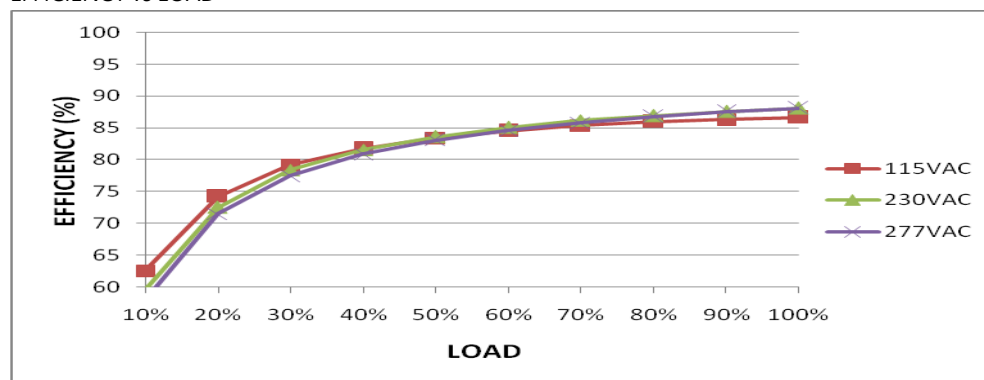
O/P:FULL LOAD

Ta:25°C

LEDH MODE TEST

88.32 %

EFFICIENCY vs LOAD



8

INRUSH CURRENT (TYP)

230 V/ 10A

COLD START

(twidth=100 us measured
at 50% Ipeak) COLD START

I/P: 230 VAC

O/P:FULL LOAD

Ta:25°C

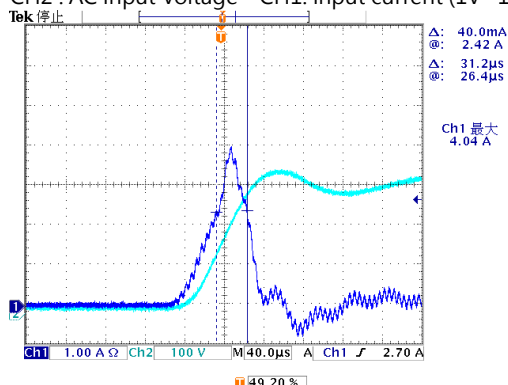
LEDH MODE TEST

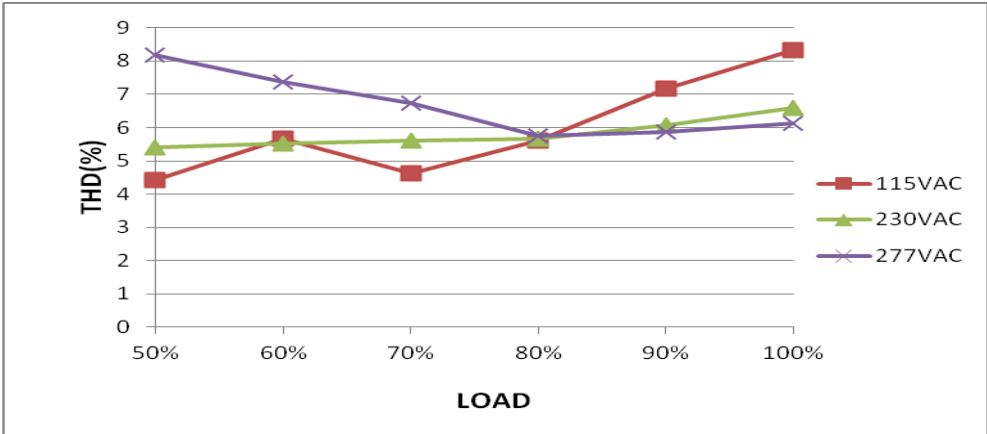
I =4.04A/ 230VAC

T50= 31.2 us

INPUT=230VAC/50HZ @ FULL LOAD

CH2 : AC Input Voltage CH1: Input current (1V=1A)



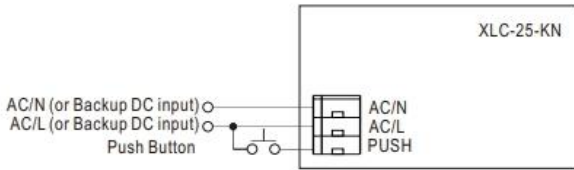
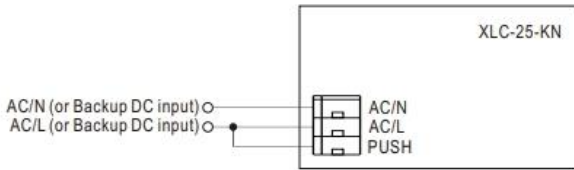
9	TOTAL HARMONIC DISTORTION	THD < 10%(@load ≥ 50%/230VAC; @load ≥ 75%/277VAC); THD < 15% @load 50%/115VAC	I/P : 115VAC/230VAC/277VAC O/P : 50% /75% LOAD Ta : 25°C	THD : 5.4% 230VAC 50% THD : 7.04% 277VAC 75% THD : 4.42% 115VAC 50%																												
THD vs LOAD																																
 <table><caption>THD vs LOAD Data</caption><thead><tr><th>LOAD (%)</th><th>115VAC THD (%)</th><th>230VAC THD (%)</th><th>277VAC THD (%)</th></tr></thead><tbody><tr><td>50%</td><td>4.42</td><td>5.4</td><td>8.2</td></tr><tr><td>60%</td><td>5.8</td><td>5.5</td><td>7.4</td></tr><tr><td>70%</td><td>4.8</td><td>5.6</td><td>6.8</td></tr><tr><td>80%</td><td>5.8</td><td>5.7</td><td>5.9</td></tr><tr><td>90%</td><td>7.1</td><td>6.1</td><td>5.9</td></tr><tr><td>100%</td><td>8.4</td><td>6.6</td><td>6.1</td></tr></tbody></table>					LOAD (%)	115VAC THD (%)	230VAC THD (%)	277VAC THD (%)	50%	4.42	5.4	8.2	60%	5.8	5.5	7.4	70%	4.8	5.6	6.8	80%	5.8	5.7	5.9	90%	7.1	6.1	5.9	100%	8.4	6.6	6.1
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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: FULL LOAD	O.T.P. Active PROTECTION TYPE : 1: De-rating to 75% loading; Stage 2: De-rating 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: FULL LOAD Ta: 25°C	NO DAMAGE PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																						
1	KNX interface	• Apply KNX Bus cable between KNX+ and KNX- • The application program(database) can be downloaded via Online Catalogs from ETS or via http://www.meanwell.com/productCatalog.aspx <table><thead><tr><th>Parametrization options</th><th>Description</th></tr></thead><tbody><tr><td>Device Setting</td><td> •Select current level •Select model •Behavior bus power up </td></tr><tr><td>Parameter Setting</td><td> •Basic Setting •normal Dimmer, staircase light •switch function •relative dimming function •absolution dimming function •Feedback Setting •dimming value report •on/off state report •lamp failure report •Lock function </td></tr><tr><td>Scenes</td><td> •Learn scene •scene1~scene32 </td></tr><tr><td>Automatic function</td><td> •Automatic function1~4 </td></tr><tr><td>operating hours</td><td> •Counting of operating hours •Constant light output(CLO) •Life time pre-warning </td></tr><tr><td>Power consumption</td><td> •Voltage, current, power feedback •Energy consumption feedback </td></tr><tr><td>Temperature Measurement</td><td> •customize the alarm temperature •Send temperature report cyclically </td></tr><tr><td>Auto-dimming over time</td><td> •Optional gradient dimming </td></tr><tr><td>Correction characteristic</td><td> •Correction by lux measured value(lux) </td></tr><tr><td>Push Dim Port</td><td> •Push dim •AC monitor </td></tr></tbody></table> I/P: 230 VAC O/P:FULL LOAD Ta:25°C TEST RESULT : OK	Parametrization options	Description	Device Setting	•Select current level •Select model •Behavior bus power up	Parameter Setting	•Basic Setting •normal Dimmer, staircase light •switch function •relative dimming function •absolution dimming function •Feedback Setting •dimming value report •on/off state report •lamp failure report •Lock function	Scenes	•Learn scene •scene1~scene32	Automatic function	•Automatic function1~4	operating hours	•Counting of operating hours •Constant light output(CLO) •Life time pre-warning	Power consumption	•Voltage, current, power feedback •Energy consumption feedback	Temperature Measurement	•customize the alarm temperature •Send temperature report cyclically	Auto-dimming over time	•Optional gradient dimming	Correction characteristic	•Correction by lux measured value(lux)	Push Dim Port	•Push dim •AC monitor		
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2	PUSH dimming or AC/DC input monitor(Primary side)	⊙ PUSH dimming  • KNX bus need to be connected when using PUSH Dimming • The detailed function of PUSH dimming, please refer to the database. • The maximum length of the cable between the push button and driver is 20 meters. • The mechanical push button can be connected only between the PUSH terminal, as displayed in the diagram, and AC/L (in brown or black); It will not function properly if it is connected to AC/N. • In case the PUSH dimming is set locally, up to 10 drivers can perform the PUSH dimming at the same time when utilizing one common push button. • In case the PUSH dimming is set independently via ETS, the number of drivers is done through group address and determined by the ETS project designer. ⊙ AC/DC input monitor  • KNX bus need to be connected when using AC/DC input monitor • The detailed function of AC/DC input monitor(emergency lighting), please refer to the database and instruction manual. I/P : 230 VAC O/P : DIMMING TEST Ta : 25°C TEST RESULT : OK
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COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q 1 Rated 800 V/10A	AC ON/OFF I/P: High-Line +3V =308v 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: 1.4A Q1 VDS: (1) 644V (2) 612V (3) 604V (4) 556V (5) 564V CP: 0.6A VDS: (1) 716V (2) 564V (3) 652V (4) 620V (5) 556V

				97V CP: 1.4A Q VDS: (1) 382V (2) 370V (3) 382V (4) 334V (5) 318V CP: 0.6A VDS: (1) 261V (2) 251V (3) 362V (4) 342V (5) 254V
2	Diode Peak Voltage	D100 Rated 3A/ 600 V	AC ON/OFF I/P: High-Line +3V =308 V Q101 : VDS: O/P: (1) LEDmax (2) LEDmax continue (3) Output Short Ta:25°C	D100 (1) 410V (2) 406V (3) 402V
3	Control IC Voltage Test	DD IC U150 Rated (Vin) 		

4	Clamp Diode Peak Voltage	D10 Rated : 1000V/1A	AC ON/OFF I/P : High-Line +3V = 308 V O/P: (1) LEDmax (2) LEDmax continue (3) LEDmin (4) LEDmin continue (5) NO LOAD Ta : 25°C	(1)682V (2)569V (3)718V (4)545V (5)722V
5	Dimming MOS	Q110 Rated : 100V /35A	AC ON/OFF I/P : High-Line +3V = 308 V O/P: (1) LEDmax (2) LEDmax continue (3) Short Ta:25°C	CP: 0.6A (1)76V (2) 75.2V (3) 76V CP:1.4A (1) 75.2V (2) 74.4V (3) 72.8V

SAFETY & EMC TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC/min	I/P-O/P: 4.125 KVAC/min Ta:25°C	I/P-O/P: 2.865mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25°C	I/P-O/P: 9999MΩ NO DAMAGE

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 LOAD Ta:25°C	PASS
2	CONDUCTION	EN55015	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab
3	RADIATION	EN55015	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab

4	E.S.D	EN61000-4-2 AIR : 8KV / Contact : 4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A
5	E.F.T	EN61000-4-4 INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A
6	SURGE	IEC61000-4-5 L-N :1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A
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 : XLC-40-H-KN 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=26.5 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=51.6 °C			
		NO	Position	ROOM AMBIENT Ta=26.5 °C	HIGH AMBIENT Ta=51.6°C
		1	Q1	77.4°C	102.7°C
		2	U1	65.4°C	90.5°C
		3	T1	70.5°C	95.3°C
		4	D101	82.6°C	107.9°C
		5	Q110	76.5°C	102.0°C
		6	D112	79.3°C	104.7°C
		7	U150	76.4°C	101.2°C
		8	C101	70.5°C	96.0°C
		9	L100	75.2°C	100.3°C
		10	Q302	52.5°C	77.9°C
		11	U471	62.7°C	87.8°C
		12	U400	67.5°C	92.3°C
		13	U435	64.4°C	89.5°C
		14	U402	64.3°C	89.4°C
		15	C452	70.6°C	95.3°C
		16	RT47	62.8°C	87.9°C
		17	R450	60.2°C	85.6°C
		18	LF50	46.9°C	72.0°C
		19	TC	62.5°C	87.9°C

2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/110VAC O/P : 100 % LOAD Ta=-30 °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 : 315 VAC O/P : FULL LOAD Ta=50 °C HUMIDITY= 95 %R.H	TEST : OK
4	TEMPERATURE COEFFICIENT	± 0.03 %(0°C~50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.002 %/°C(0~50°C)
5	STORAGE TEMPERATURE TEST	-40~80°C	1. Thermal shock Temperature : -45°C~ +90°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 : STATIC TEST : OK	
6	THERMAL SHOCK TEST	-25~50°C	1. Thermal shock Temperature : -30°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	
7	VIBRATION TEST	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. 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 : 3G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C	
8	CAPACITOR LIFE CYCLE	SUPPOSE C101 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) 44175HRS (2) 47567HRS (3) 52398HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 3935.2K hrs min. Telcordia SR-332 (Bellcore) ; 342.9K 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	WUWQIN/ZHOUBIAO	WENF	WUWQ

2020.10.1 TAG-QA-009