



Test Report: NGE90U24-P1J

90W AC-DC Reliable Wall-mounted Interchangeable
Type Green Adaptor

■ 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

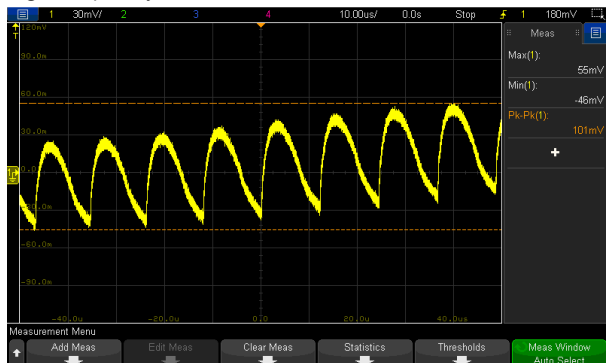
ENVIRONMENT TEST

■ DESIGN VERIFY TEST

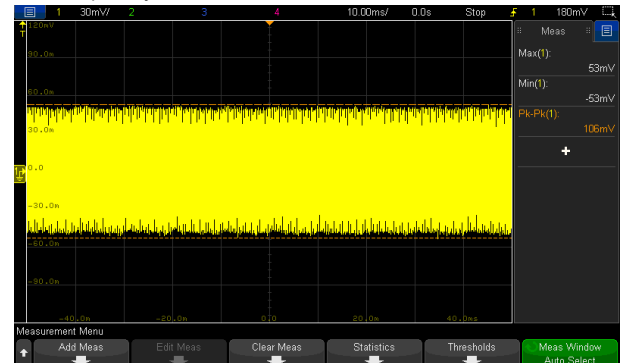
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE TOLERANCE	V1: -3%~ +3%	I/P: 80VAC~264VAC O/P:FULL~MIN. LOAD Ta:25°C	V1: -0.519%~0.499%
2	LINE REGULATION	V1: -1%~ +1%	I/P: 80VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: -0.013 %~0.205%
3	LOAD REGULATION	V1: -3%~ +3%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.519%~0.499%
4	OVER/UNDERSHOOT TEST	<± 5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	1.30%
5	RIPPLE & NOISE (Max)	V1: 240mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 101mVp-p / high frequency 106mVp-p / low frequency

high frequency :

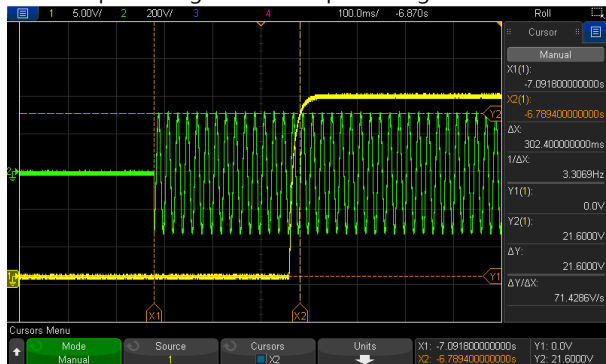


low frequency :

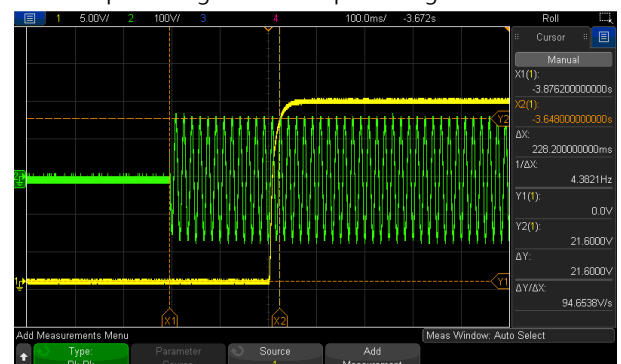


6	SET UP TIME(Max)	230VAC/1000ms 115VAC/1000ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/302.4ms 115VAC/228.2ms
---	------------------	--------------------------------	--	----------------------------------

INPUT=230VAC/50HZ @ FULL LOAD
CH1: Output Voltage CH2: AC Input Voltage



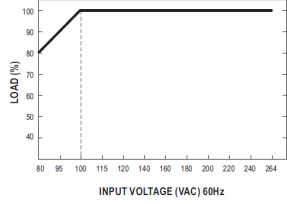
INPUT=115VAC/60HZ @ FULL LOAD
CH1: Output Voltage CH2: AC Input Voltage



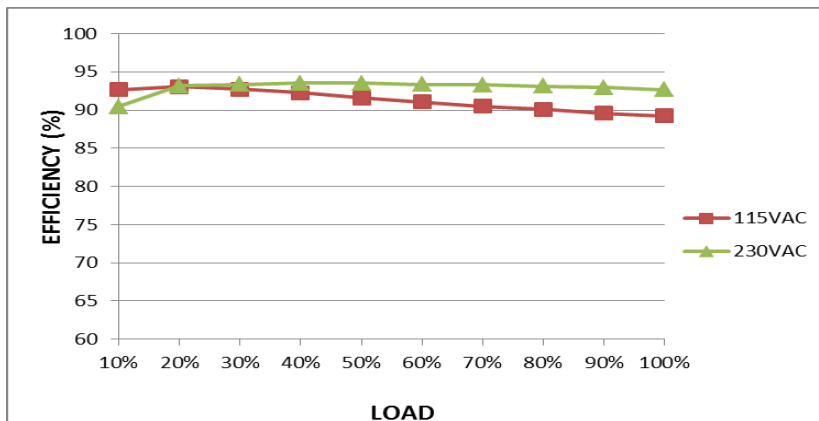
7	RISE TIME (Max)	230VAC/60ms 115VAC/60ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 20.28ms 115VAC/ 19.16ms
INPUT=230VAC/50HZ @ FULL LOAD		INPUT=115VAC/60HZ @ FULL LOAD		
CH1: Output Voltage		CH1: Output Voltage		
8	HOLD UP TIME (Typ.)	230VAC/30ms 115VAC/10ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 71.0ms 115VAC/ 14.4ms
INPUT=230VAC/50HZ @ FULL LOAD		INPUT=115VAC/60HZ @ FULL LOAD		
CH1: Output Voltage CH2: AC Input Voltage		CH1: Output Voltage CH2: AC Input Voltage		
9	DYNAMIC LOAD	V1: 2400mVp-p	I/P: 230VAC O/P: (1) FULL/0% LOAD 50%DUTY/ 120HZ (2) FULL/0% LOAD 50%DUTY / 1KHZ Ta:25°C	640mVp-p 650mVp-p
FULL /0% LOAD 50%DUTY / 120HZ		FULL /0% LOAD 50%DUTY / 1KHZ		

10	TRANSIENT RECOVERY TIME	V1: 2400mVp-p < 500us	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	342mVp-p 0us
----	-------------------------	--------------------------	--	-----------------

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	80VAC~264VAC 113VDC~ 370VDC 	(1) I/P: TESTING O/P: FULL LOAD/ 80% LOAD (2) I/P: DC TESTING (L: + N:-) O/P: FULL LOAD/ 80% LOAD (3) I/P: DC TESTING (L: - N: +) O/P: FULL LOAD/ 80% LOAD Ta:25°C	(1) 67.60V~264V/ FULL LOAD 67.60V~264V/ 80% LOAD (2) 94.73Vdc~370Vdc/FULL LOAD 94.65Vdc~370Vdc/80% LOAD (3) 94.73Vdc~370Vdc/FULL LOAD 94.65Vdc~370Vdc/80% LOAD
			I/P: HIGH-LINE+15%=300V O/P:FULL LOAD /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:80 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST : OK
3	INPUT CURRENT (Typ.)	230V/ 0.9A 115V/ 1.8A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =0.871A/ 230VAC I =1.5161A/ 115VAC
4	LEAKAGE CURRENT	100uA/ 264 VAC	I/P : 264 VAC O/P : Min LOAD Ta : 25°C	78.6uA
5	NO LOAD CONSUMPTION	< 0.1W	I/P : 240VAC O/P : NO LOAD Ta : 25°C	0.058W
6	EFFICIENCY(Typ.)	92%	I/P:230VAC O/P:FULL LOAD Ta:25°C	92.66%/230VAC

EFFICIENCY vs LOAD



7	INRUSH CURRENT(Typ.)	230V/100A 115V/50A COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =60.2A/ 230VAC I =30.5A/ 115VAC T50=530us/230V
INPUT=230VAC/50HZ @ FULL LOAD CH3: AC Input Voltage CH4: Input current				
INPUT=115VAC/ 60HZ @ FULL LOAD CH3: AC Input Voltage CH4: Input current				

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~160% rated output power Protection type: Hiccup mode, recovers automatically after fault condition is removed	I/P: 264VAC I/P: 230VAC I/P: 100VAC O/P:TESTING Ta:25°C	124.94%/ 264VAC 131.91%/ 230VAC 120.45%/100VAC PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	26.4V~32.4V Protection type: Shut down O/P voltage, re-power on to removed	I/P: 264VAC I/P: 80VAC O/P:MIN LOAD Ta:25°C	28.2V/ 264VAC 28.2V/ 80VAC PROTECTION TYPE : Shut down O/P voltage, re-power on to removed
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE Protection type: Hiccup mode, recovers automatically after fault condition is removed	I/P: 264VAC I/P: 80VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE OK PROTECTION TYPE : Hiccup mode, 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) Peak Voltage	Q1 Rated: 25A/ 650V	AC ON/OFF I/P: High-Line +3V =267V VDS: O/P: (1)Full Load (2)Output Short	Q1 VDS: (1) 576V (2) 572V (3) 576V

			<p>(3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz</p> <p>(4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz</p> <p>(5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz</p> <p>(6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz</p> <p>(7)0%→400% Load.</p> <p>Ta:25°C</p>	<p>(4) 576V</p> <p>(5) 572V</p> <p>(6) 576V</p> <p>(7) 584V</p>
2	Diode Peak Voltage	<p>Q100</p> <p>Rated: 60A/150V</p>	<p>AC ON/OFF</p> <p>I/P: High-Line +3V =267 V</p> <p>O/P: (1)Full Load</p> <p>(2)Output Short</p> <p>(3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz</p> <p>(4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz</p> <p>(5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz</p> <p>(6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz</p> <p>(7)0%→400% Load.</p> <p>(8).NO LOAD</p> <p>Ta:25°C</p>	<p>Q100:</p> <p>VDS:</p> <p>(1) 118.5V</p> <p>(2) 117.7V</p> <p>(3) 119.3V</p> <p>(4) 118.5V</p> <p>(5) 118.5V</p> <p>(6) 120.1V</p> <p>(7) 119.3V</p> <p>(8) 119.3V</p>
3	Input Capacitor Voltage	<p>C5</p> <p>Rated: 150μ /400 V</p>	<p>I/P: High-Line +3V =267V</p> <p>O/P: (1)Full Load input on/off</p> <p>(2) Min load input on /Off</p> <p>(3) Full Load /Min load Change</p> <p>(4) Full load continue</p> <p>Ta:25°C</p>	<p>(1) 378V</p> <p>(2) 378V</p> <p>(3) 378V</p> <p>(4) 378V</p>
4	Control IC Voltage Test	<p>PWM IC U2</p> <p>Rated: 9V~ 28V</p> <p>O/P IC U101</p> <p>Rated: 4V~ 13V</p>	<p>AC ON/OFF</p> <p>I/P: High-Line +3V =267 V</p> <p>O/P:(1) FULL LOAD</p> <p>(2) Output Short</p> <p>(3) O.L.P</p> <p>(4) O.V.P</p> <p>(5) NO LOAD VRmin (LOW LINE)</p> <p>Ta:25°C</p>	<p>U2 U101</p> <p>(1) 17.3V (1) 9.73V</p> <p>(2) 17.3V (2) 9.73V</p> <p>(3) 17.3V (3) 9.79V</p> <p>(4) 18.4V (4) 9.20V</p> <p>(5) 17.3V (5) 9.65V</p>
5	Clamp Diode Peak Voltage	<p>D1</p> <p>Rated : 620V/1A</p>	<p>AC ON/OFF</p> <p>I/P : High-Line +3V = 267 V</p> <p>O/P : (1) Dynamic Load 90%Duty/1KHz</p> <p>(2) Full load continue</p> <p>Ta : 25°C</p>	<p>(1) 474V</p> <p>(2) 470V</p>

■ SAFETY& E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4KVAC/min	I/P-O/P: 4.4 KVAC/min Ta:25°C	I/P-O/P: 1.512mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 600 VDC Ta:25°C	I/P-O/P: 9999MΩ NO DAMAGE

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	BS EN/EN61000-3-2 ■ CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	BS EN/EN55032(CISPR32)/EN55011, FCC Part15 , CNS15936, GB/T 9254.1-2021 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS
3	RADIATION	BS EN/EN55032(CISPR32)/EN55011, FCC Part15 , CNS15936, GB/T 9254.1-2021 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS
4	E.S.D	BS EN/EN61000-4-2 Level 3, 15KV air; Level 2, 8KV contact	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	BS EN/EN 61000-4-4 INPUT : 1KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	BS EN/EN 61000-4-5 Level 3, 1KV/L-N	I/P : 230 VAC/50HZ O/P : FULL LOAD 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 : NGE90U24-P1J 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 27.3 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 40.0 °C																																																																																																										
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 27.3°C</th> <th>HIGH AMBIENT Ta=40.0°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>RTH1</td><td>77.0°C</td><td>87.6°C</td></tr> <tr><td>2</td><td>R4</td><td>67.9°C</td><td>79.2°C</td></tr> <tr><td>3</td><td>LF1</td><td>61.7°C</td><td>74.4°C</td></tr> <tr><td>4</td><td>ZNR1</td><td>57.6°C</td><td>70.7°C</td></tr> <tr><td>5</td><td>C1</td><td>58.3°C</td><td>71.5°C</td></tr> <tr><td>6</td><td>LF2</td><td>56.5°C</td><td>70.0°C</td></tr> <tr><td>7</td><td>BD1</td><td>64.4°C</td><td>77.3°C</td></tr> <tr><td>8</td><td>C5</td><td>65.2°C</td><td>78.1°C</td></tr> <tr><td>9</td><td>C11</td><td>68.0°C</td><td>80.7°C</td></tr> <tr><td>10</td><td>D3</td><td>74.3°C</td><td>87.4°C</td></tr> <tr><td>11</td><td>T1 coil</td><td>75.8°C</td><td>88.6°C</td></tr> <tr><td>12</td><td>T1 core</td><td>73.0°C</td><td>85.8°C</td></tr> <tr><td>13</td><td>C106</td><td>66.2°C</td><td>78.8°C</td></tr> <tr><td>14</td><td>C107</td><td>61.5°C</td><td>74.1°C</td></tr> <tr><td>15</td><td>Q100</td><td>73.6°C</td><td>86.7°C</td></tr> <tr><td>16</td><td>R101</td><td>77.9°C</td><td>90.9°C</td></tr> <tr><td>17</td><td>D2</td><td>71.1°C</td><td>84.0°C</td></tr> <tr><td>18</td><td>Q1</td><td>76.5°C</td><td>89.1°C</td></tr> <tr><td>19</td><td>U2</td><td>66.2°C</td><td>78.7°C</td></tr> <tr><td>20</td><td>U3</td><td>60.8°C</td><td>73.4°C</td></tr> <tr><td>21</td><td>R27</td><td>68.9°C</td><td>81.7°C</td></tr> <tr><td>22</td><td>RTH2</td><td>68.9°C</td><td>81.6°C</td></tr> <tr><td>23</td><td>U101</td><td>78.5°C</td><td>91.5°C</td></tr> <tr><td>24</td><td>D1</td><td>76.7°C</td><td>90.0°C</td></tr> <tr><td>25</td><td>CASE</td><td>51.8°C</td><td>64.7°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 27.3°C	HIGH AMBIENT Ta=40.0°C	1	RTH1	77.0°C	87.6°C	2	R4	67.9°C	79.2°C	3	LF1	61.7°C	74.4°C	4	ZNR1	57.6°C	70.7°C	5	C1	58.3°C	71.5°C	6	LF2	56.5°C	70.0°C	7	BD1	64.4°C	77.3°C	8	C5	65.2°C	78.1°C	9	C11	68.0°C	80.7°C	10	D3	74.3°C	87.4°C	11	T1 coil	75.8°C	88.6°C	12	T1 core	73.0°C	85.8°C	13	C106	66.2°C	78.8°C	14	C107	61.5°C	74.1°C	15	Q100	73.6°C	86.7°C	16	R101	77.9°C	90.9°C	17	D2	71.1°C	84.0°C	18	Q1	76.5°C	89.1°C	19	U2	66.2°C	78.7°C	20	U3	60.8°C	73.4°C	21	R27	68.9°C	81.7°C	22	RTH2	68.9°C	81.6°C	23	U101	78.5°C	91.5°C	24	D1	76.7°C	90.0°C	25	CASE	51.8°C	64.7°C
NO	Position	ROOM AMBIENT Ta= 27.3°C	HIGH AMBIENT Ta=40.0°C																																																																																																									
1	RTH1	77.0°C	87.6°C																																																																																																									
2	R4	67.9°C	79.2°C																																																																																																									
3	LF1	61.7°C	74.4°C																																																																																																									
4	ZNR1	57.6°C	70.7°C																																																																																																									
5	C1	58.3°C	71.5°C																																																																																																									
6	LF2	56.5°C	70.0°C																																																																																																									
7	BD1	64.4°C	77.3°C																																																																																																									
8	C5	65.2°C	78.1°C																																																																																																									
9	C11	68.0°C	80.7°C																																																																																																									
10	D3	74.3°C	87.4°C																																																																																																									
11	T1 coil	75.8°C	88.6°C																																																																																																									
12	T1 core	73.0°C	85.8°C																																																																																																									
13	C106	66.2°C	78.8°C																																																																																																									
14	C107	61.5°C	74.1°C																																																																																																									
15	Q100	73.6°C	86.7°C																																																																																																									
16	R101	77.9°C	90.9°C																																																																																																									
17	D2	71.1°C	84.0°C																																																																																																									
18	Q1	76.5°C	89.1°C																																																																																																									
19	U2	66.2°C	78.7°C																																																																																																									
20	U3	60.8°C	73.4°C																																																																																																									
21	R27	68.9°C	81.7°C																																																																																																									
22	RTH2	68.9°C	81.6°C																																																																																																									
23	U101	78.5°C	91.5°C																																																																																																									
24	D1	76.7°C	90.0°C																																																																																																									
25	CASE	51.8°C	64.7°C																																																																																																									
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 133.09% LOAD Ta : 25°C	TEST : OK																																																																																																								
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100% LOAD Ta= -35 °C	TEST : OK																																																																																																								

4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40 °C/95 %R.H NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta= 40 °C HUMIDITY= 95 %R.H	TEST : OK
5	TEMPERATURE COEFFICIENT	± 0.03 %/°C(0~45°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.009 %/°C(0~45°C)
6	STORAGE TEMPERATURE TEST	-40~85°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 : 10 CYCLE 5. Input/output condition : STATIC	
7	THERMAL SHOCK TEST	-30~40°C	1. Thermal shock Temperature : -35°C~ +45°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, 2G 10min./1cycle, 60min. 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 : 3G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C	
9	CAPACITOR LIFE CYCLE	SUPPOSE C107 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 40 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 40 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 40 °C LIFE TIME	(1) 328245.2 HRS (2) 116859.4 HRS (3) 206418.6 HRS (4) 331980 HRS	
10	MTBF	Conducted by Parts Stress Analysis Prediction 605.3 Khrs min. MIL-HDBK-217F (25°C) 5120.6 Khrs min. Telcordia TR/SR-332(Bellcore) (25°C)		
11	Ongoing Reliability Test	I/P : 230VAC O/P : 100% LOAD TA=50°C Demonstration Mean Time Between Failure : 30,000 hours		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	Yuwei	Liutt	Wangdz

2020.10.1 TAG-QA-009