



Test Report: NGE90U12-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

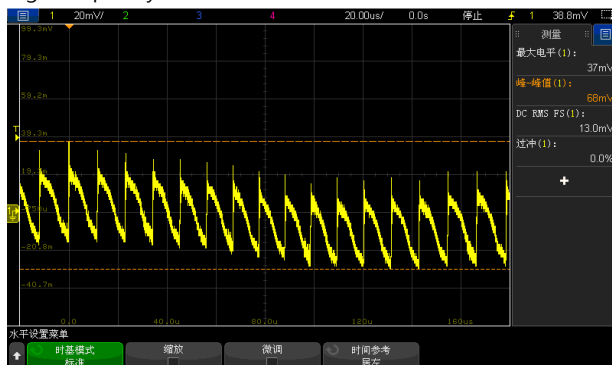
ENVIRONMENT TEST

DESIGN VERIFY TEST

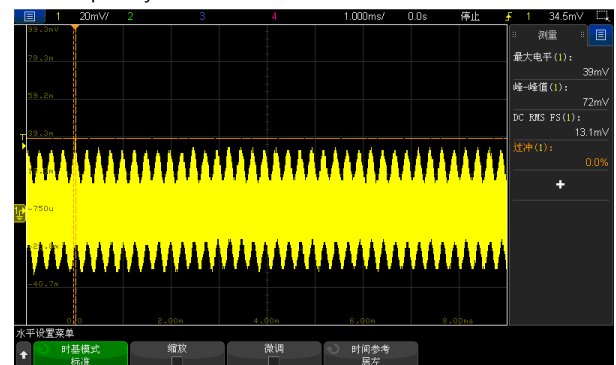
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE TOLERANCE	V1: -4%~ +4%	I/P: 80VAC~264VAC O/P:FULL~MIN. LOAD Ta:25°C	V1: -1.7%~0.935%
2	LINE REGULATION	V1: -1%~ +1%	I/P: 80VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: -0.016%~0.008%
3	LOAD REGULATION	V1: -4%~ +4%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -1.7%~0.935%
4	OVER/UNDERSHOOT TEST	<± 5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	1.04%
5	RIPPLE & NOISE (Max)	V1: 120mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 72Vp-p / high frequency 68Vp-p / low frequency

high frequency :

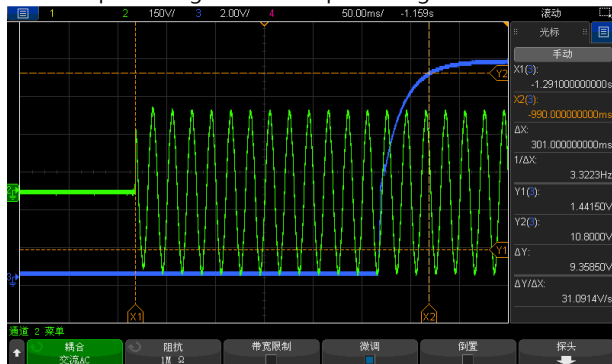


low frequency :

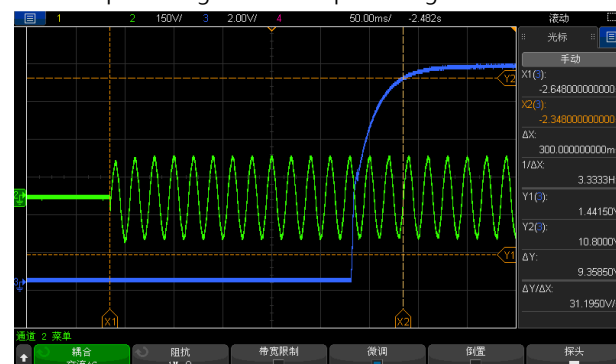


6	SET UP TIME(Max)	230VAC/1000ms 115VAC/1000ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 301ms 115VAC/ 300ms
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INPUT=230VAC/50HZ @ FULL LOAD
CH3: Output Voltage CH2: AC Input Voltage



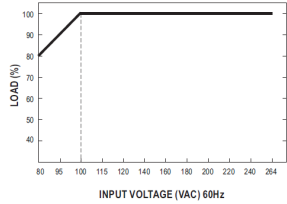
INPUT=115VAC/60HZ @ FULL LOAD
CH3: Output Voltage CH2: AC Input Voltage



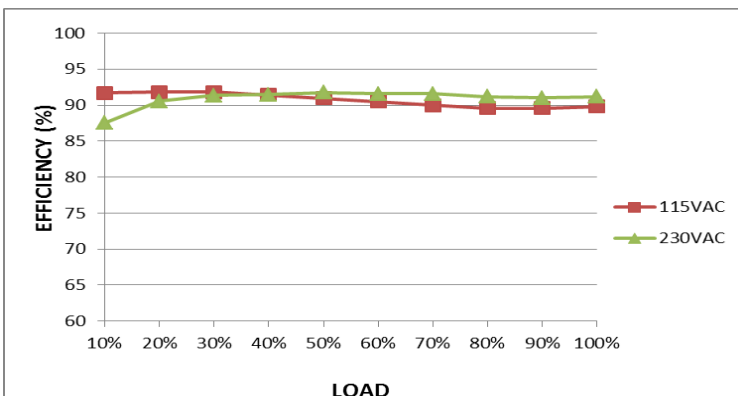
7	RISE TIME (Max)	230VAC/60ms 115VAC/60ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 37.7ms 115VAC/ 36.41ms
INPUT=230VAC/50HZ @ FULL LOAD CH3: Output Voltage		INPUT=115VAC/60HZ @ FULL LOAD CH3: Output Voltage		
8	HOLD UP TIME (Typ.)	230VAC/30ms 115VAC/10ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/69.4ms 115VAC/16.2ms
INPUT=230VAC/50HZ @ FULL LOAD CH3: Output Voltage CH2: AC Input Voltage		INPUT=115VAC/60HZ @ FULL LOAD CH3: Output Voltage CH2: AC Input Voltage		
9	DYNAMIC LOAD	V1: 1200mVp-p	I/P: 230VAC O/P: (1) FULL/0% LOAD 50%DUTY/ 120HZ (2) FULL/0% LOAD 50%DUTY / 1KHZ Ta:25°C	706mVp-p 653mVp-p
FULL /0% LOAD 50%DUTY / 120HZ		FULL /0% LOAD 50%DUTY / 1KHZ		

10	TRANSIENT RECOVERY TIME	V1: 1200mVp-p < 500us	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	324mVp-p 0us
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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 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)	(1) 66.7V~264V/ FULL LOAD 66.7V~264V/ 80% LOAD (2) 94.5Vdc~370Vdc/FULL LOAD 94.5Vdc~370Vdc/80% LOAD (3) 94.5Vdc~370Vdc/FULL LOAD 94.5Vdc~370Vdc/80% LOAD 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 =0.632A/ 230VAC I =1.232A/ 115VAC
4	LEAKAGE CURRENT	100uA/ 264 VAC	I/P : 264 VAC O/P : Min LOAD Ta : 25°C	78.8uA
5	NO LOAD CONSUMPTION	< 0.1W	I/P : 240VAC O/P : NO LOAD Ta : 25°C	0.075W
6	EFFICIENCY(Typ.)	90%	I/P:230VAC O/P:FULL LOAD Ta:25°C	91.12%/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 =72.3A/ 230VAC I =36.1A/ 115VAC T50=490us/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	128.8%/ 264VAC 135.2%/ 230VAC 128.8%/100VAC PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	12.6V~16.2V Protection type: Shut down O/P vltage, re-power on to removed	I/P: 264VAC I/P: 80VAC O/P: MIN LOAD Ta:25°C	14.0V/ 264VAC 14.1V/ 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 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) 565V (2) 489V (3) 561V

			<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) 561V</p> <p>(5) 557V</p> <p>(6) 561V</p> <p>(7) 569V</p>
2	Diode Peak Voltage	<p>Q100</p> <p>Rated: 100A/80V</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) 68.0V</p> <p>(2) 70.4V</p> <p>(3) 67.4V</p> <p>(4) 67.4V</p> <p>(5) 68.6V</p> <p>(6) 66.2V</p> <p>(7) 66.8V</p> <p>(8) 66.8V</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) 385V</p> <p>(2) 380V</p> <p>(3) 385V</p> <p>(4) 382V</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) 17.2V (1) 10.03V</p> <p>(2) 17.2V (2) 9.94V</p> <p>(3) 17.2V (3) 9.94V</p> <p>(4) 17.2V (4) 9.66V</p> <p>(5) 17.2V (5) 9.57V</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) 486V</p> <p>(2) 461V</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: 1.641mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 600 VDC Ta:25°C	I/P-O/P: 9999 MΩ 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 : NGE90U12-P1J 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 26.2 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 40.8 °C																																																																																																														
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 26.2°C</th> <th>HIGH AMBIENT Ta= 40.8°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>RTH1</td><td>70.1°C</td><td>81.3°C</td></tr> <tr><td>2</td><td>R4</td><td>63.3°C</td><td>74.2°C</td></tr> <tr><td>3</td><td>LF1</td><td>59.9°C</td><td>72.8°C</td></tr> <tr><td>4</td><td>ZNR1</td><td>55.9°C</td><td>69.1°C</td></tr> <tr><td>5</td><td>C1</td><td>55.5°C</td><td>68.9°C</td></tr> <tr><td>6</td><td>LF2</td><td>53.3°C</td><td>67.0°C</td></tr> <tr><td>7</td><td>BD1</td><td>63.9°C</td><td>77.3°C</td></tr> <tr><td>8</td><td>C5</td><td>63.0°C</td><td>76.2°C</td></tr> <tr><td>9</td><td>C11</td><td>69.9°C</td><td>83.5°C</td></tr> <tr><td>10</td><td>D3</td><td>75.7°C</td><td>89.3°C</td></tr> <tr><td>11</td><td>T1 coil</td><td>70.3°C</td><td>83.6°C</td></tr> <tr><td>12</td><td>T1 core</td><td>69.5°C</td><td>82.7°C</td></tr> <tr><td>13</td><td>C106</td><td>65.4°C</td><td>78.9°C</td></tr> <tr><td>14</td><td>U101</td><td>85.0°C</td><td>98.0°C</td></tr> <tr><td>15</td><td>U5</td><td>54.2°C</td><td>67.8°C</td></tr> <tr><td>16</td><td>U2</td><td>67.9°C</td><td>81.5°C</td></tr> <tr><td>17</td><td>R27</td><td>68.6°C</td><td>82.5°C</td></tr> <tr><td>18</td><td>U3</td><td>63.1°C</td><td>76.6°C</td></tr> <tr><td>19</td><td>D2</td><td>70.5°C</td><td>84.6°C</td></tr> <tr><td>20</td><td>Q1</td><td>71.6°C</td><td>86.5°C</td></tr> <tr><td>21</td><td>Q100</td><td>76.5°C</td><td>90.1°C</td></tr> <tr><td>22</td><td>C107</td><td>62.1°C</td><td>75.6°C</td></tr> <tr><td>23</td><td>R101</td><td>84.7°C</td><td>101.4°C</td></tr> <tr><td>24</td><td>D1</td><td>75.9°C</td><td>89.4°C</td></tr> <tr><td>25</td><td>RTH2</td><td>69.6°C</td><td>83.2°C</td></tr> <tr><td>26</td><td>CASE</td><td>54.7°C</td><td>68.1°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 26.2°C	HIGH AMBIENT Ta= 40.8°C	1	RTH1	70.1°C	81.3°C	2	R4	63.3°C	74.2°C	3	LF1	59.9°C	72.8°C	4	ZNR1	55.9°C	69.1°C	5	C1	55.5°C	68.9°C	6	LF2	53.3°C	67.0°C	7	BD1	63.9°C	77.3°C	8	C5	63.0°C	76.2°C	9	C11	69.9°C	83.5°C	10	D3	75.7°C	89.3°C	11	T1 coil	70.3°C	83.6°C	12	T1 core	69.5°C	82.7°C	13	C106	65.4°C	78.9°C	14	U101	85.0°C	98.0°C	15	U5	54.2°C	67.8°C	16	U2	67.9°C	81.5°C	17	R27	68.6°C	82.5°C	18	U3	63.1°C	76.6°C	19	D2	70.5°C	84.6°C	20	Q1	71.6°C	86.5°C	21	Q100	76.5°C	90.1°C	22	C107	62.1°C	75.6°C	23	R101	84.7°C	101.4°C	24	D1	75.9°C	89.4°C	25	RTH2	69.6°C	83.2°C	26	CASE	54.7°C	68.1°C
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26	CASE	54.7°C	68.1°C																																																																																																													
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 138.08 % 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	± 0.008 %/°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) 296409.2 HRS (2) 113099.3 HRS (3) 199740 HRS (4) 324133.3 HRS	
10	MTBF	Conducted by Parts Stress Analysis Prediction 605.3Khrs min. MIL-HDBK-217F (25°C) 5120.6Khrs 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