Test Report: NGE65U24-P1J

65W 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

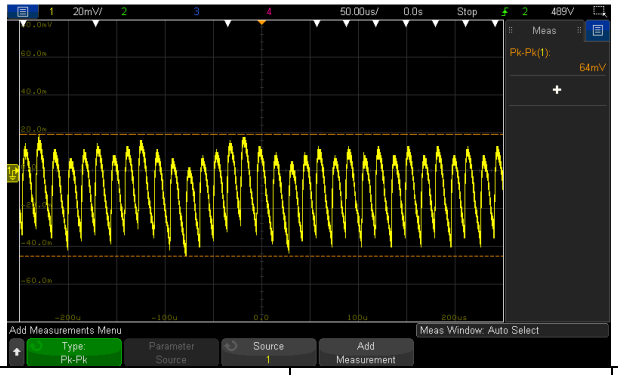
ENVIRONMENT TEST

■ DESIGN VERIFY TEST

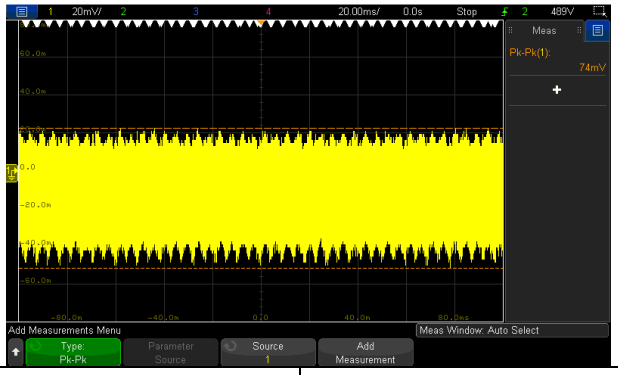
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE TOLERANCE	V1: -2%~ +2%	I/P: 80VAC~264VAC O/P:FULL~MIN. LOAD Ta:25℃	V1: -0.55%~0.55%
2	LINE REGULATION	V1: -1%~ +1%	I/P: 80VAC~ 264VAC O/P:FULL LOAD Ta:25℃	V1: 0 %~0%
3	LOAD REGULATION	V1: -2%~ +2%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: -0.55%~0.55%
4	OVER/UNDERSHOOT TEST	<± 5%	I/P: 230VAC O/P:FULL LOAD Ta:25℃	1.69%
5	RIPPLE & NOISE (Max)	V1: 240mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25℃	V1: 64 mVp-p / high frequency 74mVp-p / low frequency

high frequency :

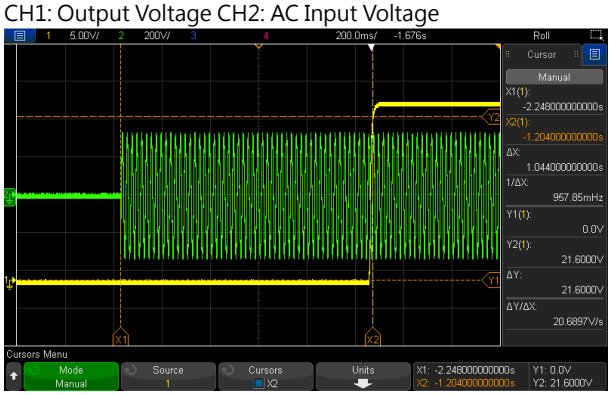


low frequency :

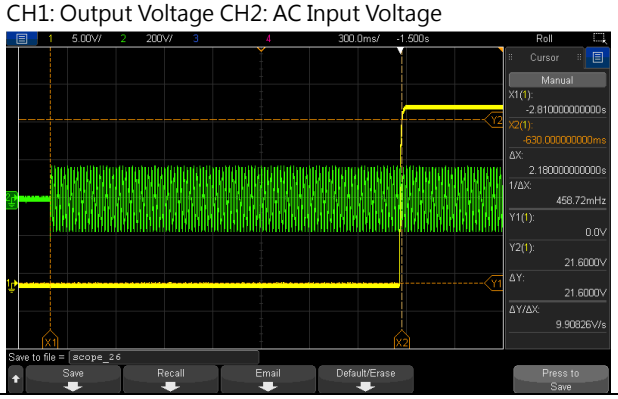


6	SET UP TIME(Max)	230VAC/1500ms 115VAC/3000ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/ 1044ms 115VAC/ 2180ms

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

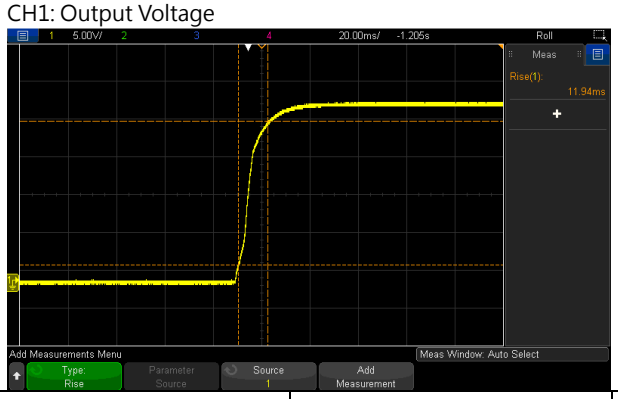


INPUT=115VAC/60HZ @ FULL LOAD
CH1: Output Voltage CH2: AC Input Voltage

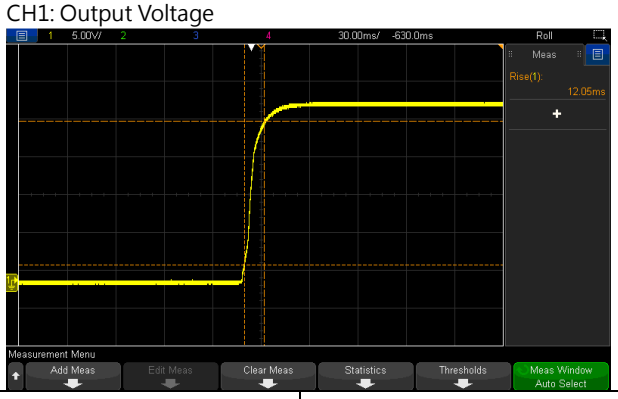


7	RISE TIME (Max)	230VAC/50ms 115VAC/50ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/ 11.94ms 115VAC/ 12.05ms

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

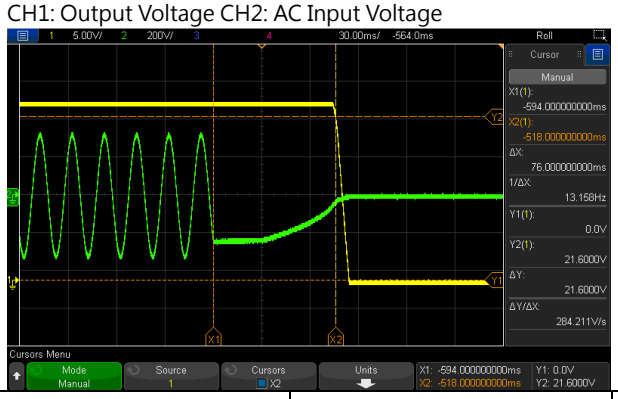


INPUT=115VAC/60HZ @ FULL LOAD
CH1: Output Voltage

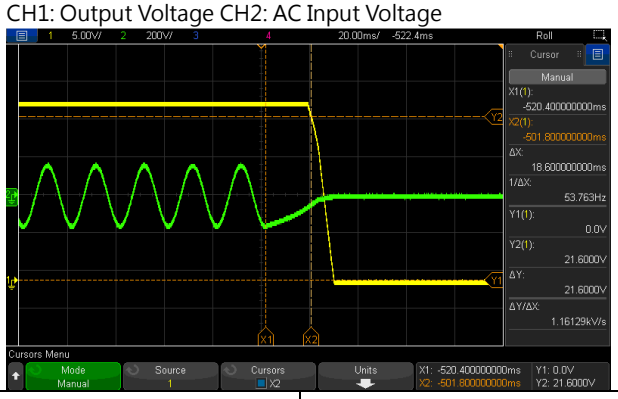


8	HOLD UP TIME (Typ.)	230VAC/30ms 115VAC/10ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/ 76ms 115VAC/ 18.6ms

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

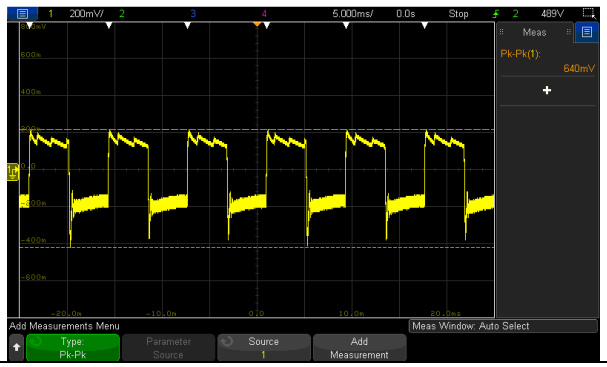


INPUT=115VAC/60HZ @ FULL LOAD
CH1: Output Voltage CH2: AC Input Voltage

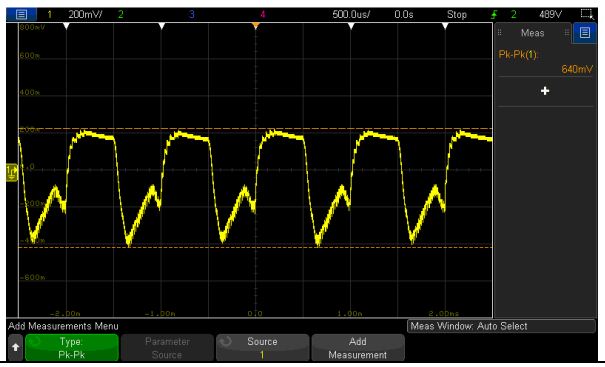


9	DYNAMIC LOAD	V1: 2400mVp-p	I/P: 230VAC O/P: (1) FULL/0% LOAD 50%DUTY / 120HZ (2) FULL/0% LOAD 50%DUTY / 1KHZ Ta:25℃	640mVp-p 640mVp-p

FULL /0% LOAD 50%DUTY / 120HZ

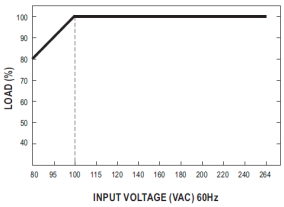
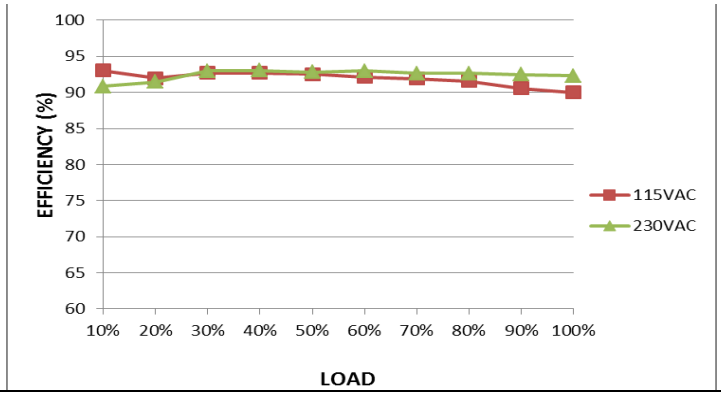


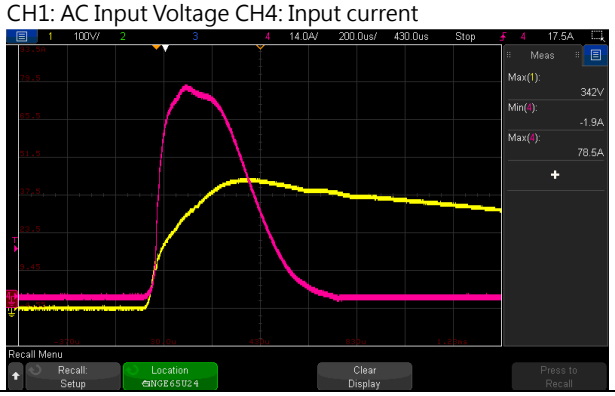
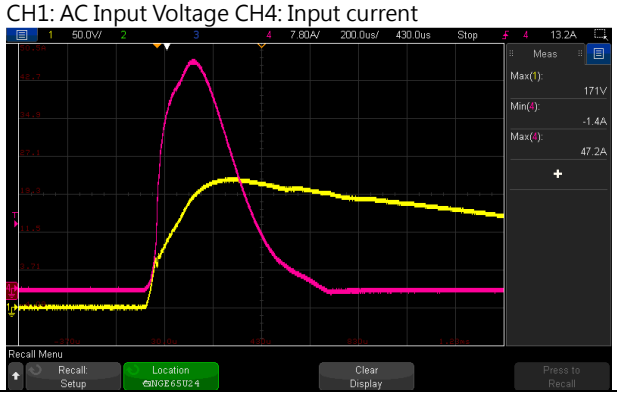
FULL /0% LOAD 50%DUTY / 1KHZ



10	TRANSIENT RECOVERY TIME	V1: 2400mVp-p < 500us	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	245mVp-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℃	(1) 76.8V~264V/ FULL LOAD 76.6V~264V/ 80% LOAD (2) 110Vdc~370Vdc/FULL LOAD 110Vdc~370Vdc/80% LOAD (3) 110Vdc~370Vdc/FULL LOAD 110Vdc~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℃	TEST: OK
3	INPUT CURRENT (Typ.)	230V/ 0.8A 115V/ 1.5A	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	I =0.74A/ 230VAC I =1.13A/ 115VAC
4	LEAKAGE CURRENT	Touch current 100uA/ 264V for 60601	I/P： 264 VAC O/P：Min LOAD Ta：25℃	75uA
5	NO LOAD CONSUMPTION	< 0.075W	I/P：240VAC O/P：NO LOAD Ta：25℃	0.0591W
6	EFFICIENCY(Typ.)	90%	I/P:230VAC O/P:FULL LOAD Ta:25℃	92.3%
	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℃	I =78.5A/ 230VAC I =47.2A/ 115VAC T50=385.6 us/230V
	INPUT=230VAC/50HZ @ FULL LOAD CH1: AC Input Voltage CH4: Input current 		INPUT=115VAC/ 60HZ @ FULL LOAD CH1: AC Input Voltage CH4: Input current 	

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	110%~150% 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℃	128.8%/ 264VAC 130.9%/ 230VAC 129.9%/100VAC PROTECTION TYPE： Hiccup mode, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	110%~140% rated output voltage Protection type: Clamp by zener diode	I/P: AC OFF O/P:MIN LOAD Ta:25℃	31.17V PROTECTION TYPE： Clamp by zener diode
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℃	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: 10.6A/ 650V	AC ON/OFF I/P: High-Line +3V =267V VDS: O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/	Q1 VDS: (1) 522V (2) 518V (3) 530V (4) 522V

			Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25℃	(5) 522V (6) 530V (7) 522V
2	Diode Peak Voltage	Q100 Rated: 45A/150V	AC ON/OFF I/P: High-Line +3V =267 V O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD Ta:25℃	Q100: VDS: (1) 117.6V (2) 116.8V (3) 117.6V (4) 117.6V (5) 117.6V (6) 118.4V (7) 116.8V (8) 117.6V
3	Input Capacitor Voltage	C5 Rated: 120μ /400 V	I/P: High-Line +3V =267V O/P: (1)Full Load input on/off (2) Min load input on /Off (3) Full Load /Min load Change (4) Full load continue Ta:25℃	(1) 393V (2) 377V (3) 385V (4) 377V
4	Control IC Voltage Test	PWM IC U3 Rated: 8V~ 26.5V O/P IC U101 Rated: 4V~ 13V	AC ON/OFF I/P: High-Line +3V =267 V O/P:(1) FULL LOAD (2) Output Short (3) O.L.P (4) NO LOAD VRmin (LOW LINE) Ta:25℃	U3 U101 (1) 16.3V (1) 9.03V (2) 16.3V (2) 9.03V (3) 16.3V (3) 9.03V (4) 8.8V (4) 8.95V
5	Clamp Diode Peak Voltage	D5 Rated： 600V/1A	AC ON/OFF I/P：High-Line +3V = 267 V O/P： (1) Dynamic Load 90%Duty/1KHz (2) Full load continue Ta：25℃	(1) 521V (2) 476V

■ 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℃	I/P-O/P:1.64mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 600 VDC Ta:25℃	I/P-O/P:50GΩ 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℃	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℃	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℃	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℃	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℃	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℃	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

<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：NGE65U24-P1J
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 28.3 ℃
2. HIGH AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=40.2 ℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=28.3℃</th><th>HIGH AMBIENT Ta=40.2℃</th></tr>
<tr><td>1</td><td>R42</td><td>70.8℃</td><td>81.0℃</td></tr>
<tr><td>2</td><td>U3</td><td>66.9℃</td><td>77.2℃</td></tr>
<tr><td>3</td><td>Q1</td><td>75.1℃</td><td>85.6℃</td></tr>
<tr><td>4</td><td>D42</td><td>70.3℃</td><td>80.3℃</td></tr>
<tr><td>5</td><td>U2</td><td>66.4℃</td><td>76.6℃</td></tr>
<tr><td>6</td><td>U1</td><td>59.5℃</td><td>70.2℃</td></tr>
<tr><td>7</td><td>Q100</td><td>74.8℃</td><td>85.6℃</td></tr>
<tr><td>8</td><td>C101</td><td>78.1℃</td><td>88.7℃</td></tr>
<tr><td>9</td><td>R101</td><td>80.2℃</td><td>90.7℃</td></tr>
<tr><td>10</td><td>U101</td><td>76.4℃</td><td>86.9℃</td></tr>
<tr><td>11</td><td>C105</td><td>66.9℃</td><td>77.2℃</td></tr>
<tr><td>12</td><td>C40</td><td>61.4℃</td><td>71.6℃</td></tr>
<tr><td>13</td><td>C106</td><td>62.4℃</td><td>72.6℃</td></tr>
<tr><td>14</td><td>C5</td><td>68.2℃</td><td>78.2℃</td></tr>
<tr><td>15</td><td>BD1</td><td>67.7℃</td><td>77.8℃</td></tr>
<tr><td>16</td><td>RTH2</td><td>73.0℃</td><td>82.1℃</td></tr>
<tr><td>17</td><td>LF2</td><td>67.2℃</td><td>77.5℃</td></tr>
<tr><td>18</td><td>C1</td><td>56.0℃</td><td>66.6℃</td></tr>
<tr><td>19</td><td>ZNR1</td><td>57.3℃</td><td>67.8℃</td></tr>
<tr><td>20</td><td>LF1</td><td>56.2℃</td><td>66.7℃</td></tr>
<tr><td>21</td><td>C8</td><td>74.1℃</td><td>84.2℃</td></tr>
<tr><td>22</td><td>R6</td><td>73.6℃</td><td>83.8℃</td></tr>
<tr><td>23</td><td>D5</td><td>74.3℃</td><td>84.4℃</td></tr>
<tr><td>24</td><td>R40</td><td>68.9℃</td><td>79.1℃</td></tr>
<tr><td>25</td><td>T1coil</td><td>75.7℃</td><td>85.9℃</td></tr>
<tr><td>26</td><td>T1core</td><td>73.3℃</td><td>83.3℃</td></tr>
<tr><td>27</td><td>C5</td><td>68.3℃</td><td>78.3℃</td></tr>
</table></td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P： 230 VAC
O/P：127%LOAD
Ta：25℃</td><td>TEST：OK</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P： 264VAC/100VAC
O/P： 100%LOAD
Ta= -35℃</td><td>TEST：OK</td></tr>
</table>

4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40℃/95 %R.H NO DAMAGE	I/P： 272 VAC O/P：FULL LOAD Ta= 40℃ HUMIDITY= 95 %R.H	TEST：OK
5	TEMPERATURE COEFFICIENT	±0.03%/℃(0~40℃)	I/P： 230 VAC O/P：FULL LOAD	±0.0061%/℃(0~40℃)
6	STORAGE TEMPERATURE TEST	-20~85℃	1. Thermal shock Temperature： -45℃~ +90℃ 2. Temperature change rate ：25℃ / 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℃	1. Thermal shock Temperature： -35℃~ +45℃ 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	
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：10min/sweep cycle (4) Acceleration：3G (5) Test Time：180min in each axis (X.Y.Z) (6) Ta：25℃	
9	CAPACITOR LIFE CYCLE	SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Ta= 25℃ LIFE TIME (2) I/P： 230VAC O/P：FULL LOAD Ta= 40℃ LIFE TIME (3) I/P： 230VAC O/P：75% LOAD Ta= 40℃ LIFE TIME (4) I/P： 230VAC O/P：50% LOAD Ta= 40℃ LIFE TIME		(1) 58017HRS (2) 22917.9HRS (3) 80699.8HRS (4) 207541.3HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 682.2 Khrs min. MIL-HDBK-217F (25℃) 5852.4 Khrs min.Telcordia TR/SR-332(Bellcore) (25℃)		
11	Ongoing Reliability Test	I/P：230VAC O/P：FULL LOAD TA=50℃ Demonstration Mean Time Between Failure：30,000 hours		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	Yuwei	Liutt	Wangdz

2020.10.1 TAG-QA-009