



Test Report: OWA-200E-12

200W Single Output Moistureproof Adaptor

■ DESIGN VERIFY

TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

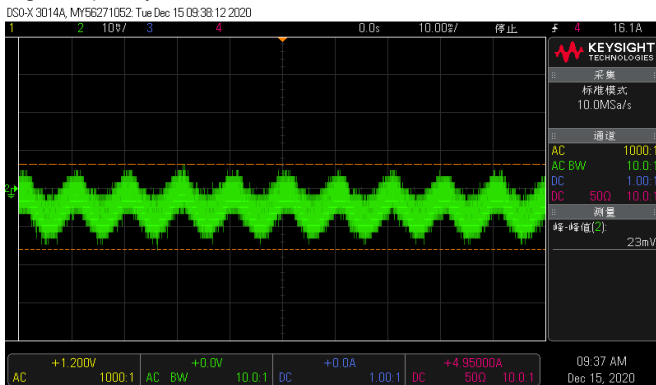
■ SAFETY & E.M.C.

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

N O	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE TOLERANCE	V1: -5% ~ 5% (Max)	I/P:180VAC /264AC O/P:FULL~MIN LOAD Ta:25°C	V1: 0.4%~ 2.9 %
2	LINE REGULATION	V1: -0.5% ~0.5% (Max)	I/P:180VAC~264AC O/P:FULL LOAD Ta:25°C	V1: 0.1 %~0.11 %
3	LOAD REGULATION	V1: -5% ~ 5% (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 1.52 %~1.62 %
4	OVER/UNDERSHOOT TEST	< +5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: 0.9 %
5	RIPPLE & NOISE	V1: 150mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1:23mVp-p / 100% load

high frequency :



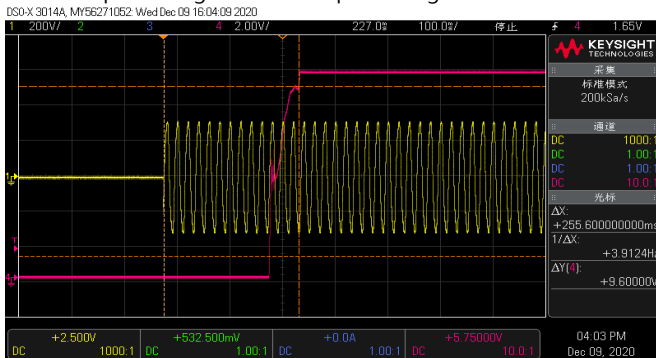
low frequency :



6	SET UP TIME (Max)	230VAC/500ms	I/P: 230 VAC O/P:FULL LOAD Ta:25°C 使用 LEDH MODE TEST	230VAC/ 255.6 ms
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INPUT=230VAC/50HZ @ FULL LOAD

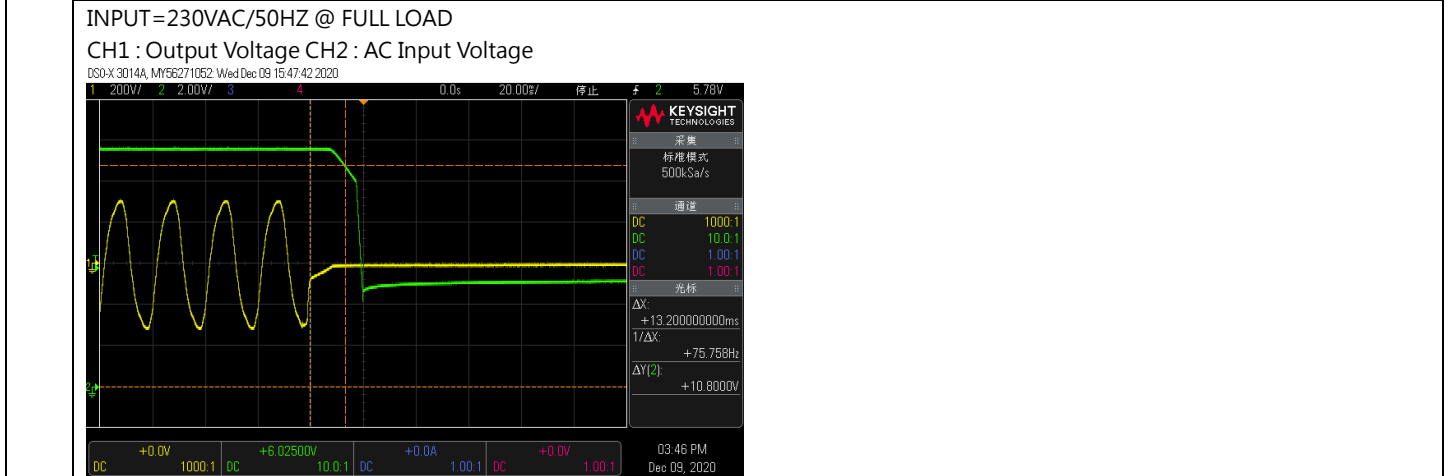
CH1 : Output Voltage CH2 : AC Input Voltage



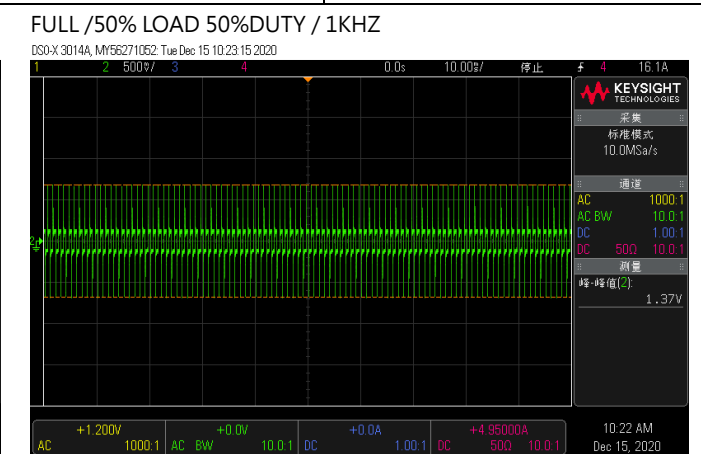
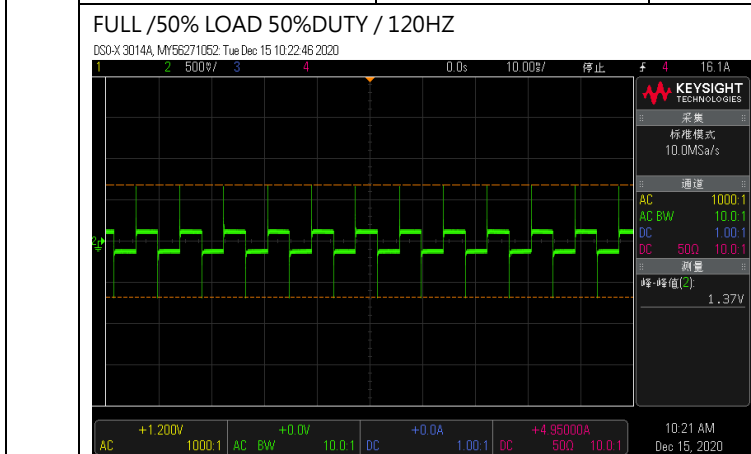
7	RISE TIME (Max)	230VAC/80ms	I/P: 230 VAC O/P:FULL LOAD Ta:25°C 使用 LEDH MODE TEST	230VAC/ 55.4 ms
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9	HOLD UP TIME (Typ)	230VAC/10ms	I/P: 230 VAC O/P:FULL LOAD Ta:25°C 使用 LEDH MODE TEST	230VAC/ 13.2 ms
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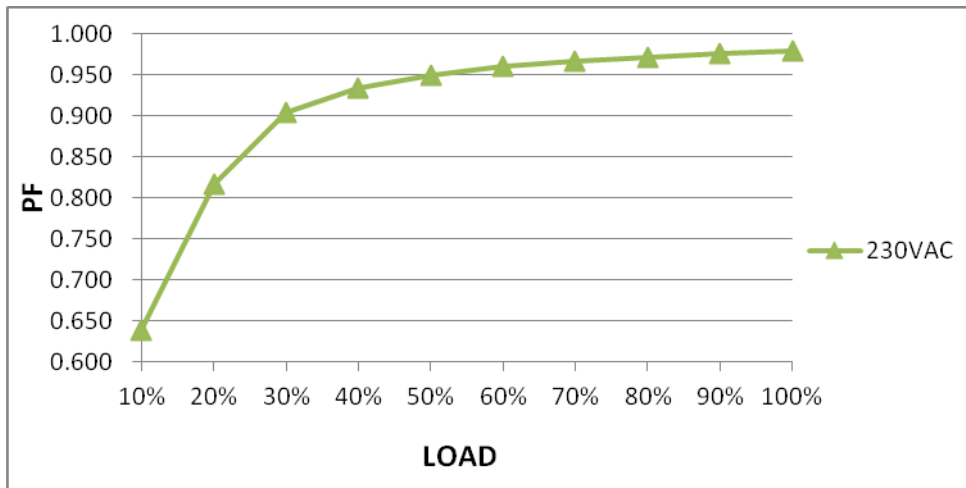
10	DYNAMIC LOAD	V1: 2400mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C	1370 mVp-p FULL /50% LOAD 50%DUTY / 120HZ 1370 mVp-p FULL /50% LOAD 50%DUTY / 1KHZ
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INPUT FUNCTION TEST

N O	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	180VAC~264VAC 254VDC~ 370VDC	(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 Ta:25°C	(1) 180 V~264VAC (2) 242Vdc~370Vdc/FULL LOAD (3) 242Vdc~370Vdc/FULL LOAD
			I/P: LOW-LINE-3V=177 VAC HIGH-LINE+15%=300 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: 180 VAC ~264VAC O/P:FULL~MIN LOAD Ta:25°C	OK
3	INPUT CURRENT (TYP)	230 VAC/1.1A	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I =0.854A/ 230VAC
	NO LOAD POWER CONSUMPTION	<0.15W	I/P: 230 VAC O/P:NO LOAD Ta:25°C	0.1192W/230VAC
4	POWER FACTOR(TYP)	0.96/230 VAC FULL LOAD	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	PF=0.979/230V/100%LOAD

P.F vs LOAD



5	EFFICIENCY (TYP)	91/%	I/P: 230VAC O/P: FULL LOAD Ta:25°C	91.05 %																						
<p>EFFICIENCY vs LOAD</p> <table border="1"> <caption>Efficiency vs Load Data (Approximate)</caption> <thead> <tr> <th>LOAD (%)</th> <th>EFFICIENCY (%)</th> </tr> </thead> <tbody> <tr><td>10%</td><td>86</td></tr> <tr><td>20%</td><td>90</td></tr> <tr><td>30%</td><td>90</td></tr> <tr><td>40%</td><td>91</td></tr> <tr><td>50%</td><td>92</td></tr> <tr><td>60%</td><td>92</td></tr> <tr><td>70%</td><td>92</td></tr> <tr><td>80%</td><td>91</td></tr> <tr><td>90%</td><td>91</td></tr> <tr><td>100%</td><td>91</td></tr> </tbody> </table>					LOAD (%)	EFFICIENCY (%)	10%	86	20%	90	30%	90	40%	91	50%	92	60%	92	70%	92	80%	91	90%	91	100%	91
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80%	91																									
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100%	91																									
6	INRUSH CURRENT (TYP)	230 V/ 65A (twidth=550us measured at 50% Ipeak) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I =49.8 A/ 230VAC T50=440 us/230VAC																						
<p>INPUT=230VAC/50HZ @ FULL LOAD CH2 : AC Input Voltage CH3 : Input current</p> <p>Ch3 Max 49.8 A</p> <p>Δ: 9.20 A @: 24.6 A Δ: 440μs @: 448μs</p> <p>Ch3 10.0 A Ω</p> <p>50.20 %</p>																										

ROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER CURRENT PROTECTION	105 %~150%	I/P: 267VAC I/P: 230VAC I/P: 180VAC O/P:TESTING Ta:25°C	137.7%/ 267VAC 137.7%/ 230VAC 137.7%/ 180VAC PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed

2	OVER VOLTAGE PROTECTION	V1: 13 V~ 18 V	I/P: 267VAC I/P: 230VAC I/P: 180VAC O/P: TESTING Ta: 25°C	17.08V/ 267VAC 17.05V/ 230VAC 17.15V/ 180VAC PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 267 VAC I/P: 180 VAC O/P: FULL LOAD	O.T.P Active PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 267VAC I/P: 180 VAC 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	Q 73 Rated 11A/600V	AC ON/OFF I/P: High-Line +3V = 267V VDS: 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. I/P: Low-Line -3V = 177V 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. Ta: 25°C	VDS: (1) 435V (2) 447V (3) 431V (4) 431V (5) 435V (6) 427V (7) 447V VDS: (1) 431V (2) 435V (3) 431V (4) 431V (5) 427V (6) 427V (7) 443V

2	<p>P.F.C Transistor (D to S) or (C to E) Peak Voltage</p>	<p>Q1 Rated 26A/600V</p>	<p>I/P:High-Line +3V =267 V AC ON/OFF 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.</p> <p>I/P:Low-Line -3V =177V AC ON/OFF 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. Ta:25°C</p>	<p>VDS: (1) 483V (2) 479V (3) 479V (4) 487V (5) 483V (6) 483V (7) 467V</p> <p>VDS: (1) 467V (2) 467V (3) 463V (4) 467V (5) 463V (6) 467V (7) 467V</p>
3	<p>P.F.C DIODE</p>	<p>D5 Rated 9 A/ 600V</p>	<p>I/P:High-Line +3V =267 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz</p> <p>I/P:Low-Line -3V = 177V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz Ta:25°C</p>	<p>(1) 479V (2) 427V (3) 479V (4) 483V</p> <p>(1) 427V (2) 427V (3) 427V (4) 427V</p>

4	Diode Peak Voltage	<p>Q101 Rated 100A/40V</p> <p>Q100 Rated 100A/40V</p>	<p>AC ON/OFF</p> <p>I/P:High-Line +3V =267 V</p> <p>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</p> <p>Ta:25°C</p>	<p>Q101: VDS:</p> <p>(1) 29.4V (2) 6.04V (3) 29.8V (4) 29.8V (5) 29.4V (6) 29.4V (7) 28.6V (8) 28.6 V</p> <p>Q104: VDS:</p> <p>(1) 29.4V (2) 10.62V (3) 30.2V (4) 30.6V (5) 30.6V (6) 29.8V (7) 27.4V (8) 27.0 V</p>
5	Input Capacitor Voltage	C5 Rated: 100μ / 450V	<p>I/P:High-Line +3V =267V</p> <p>O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue</p> <p>Ta:25°C</p>	<p>(1) 423V (2) 419V (3) 423V (4) 419V</p>
6	Control IC Voltage Test	<p>U2 Rated 0.3V~20V</p> <p>U1 Rated -0.3V~ 35V</p>	<p>AC ON/OFF</p> <p>I/P:High-Line +3V =267 V</p> <p>O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD VRmin(Low LINE)</p> <p>Ta:25°C</p>	<p>U2 U1</p> <p>(1) 16.5V (1) 16.5V (2) 16.7V (2) 16.7V (3) 16.9V (3) 16.7V (4) 16.7V (4) 16.5V (5) 16.7V (5) 16.5V</p>

SAFETY & EMC TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4.2KVAC/min	I/P-O/P: 4.5 KVAC/min Ta:25°C	I/P-O/P: 1.347mA 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
3	LEAKAGE CURRENT	<0.25mA / 240VAC	I/P: 240 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.0027 mA N-FG:0.0025 mA

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONDUCTION	FCC Part15 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
2	RADIATION	FCC Part15 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
3	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 : OWA-200U-12 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=27 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=49 °C																																																																																																																										
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25	C106	60.9°C	85.4°C																																																																																																																									
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29	TC	55.4°C	78.3°C																																																																																																																									
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 133 % LOAD Ta : 25°C	TEST : OK																																																																																																																								
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/180VAC O/P : 100 % LOAD Ta= -45 °C	TEST : OK																																																																																																																								

4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 45 °C NO DAMAGE	I/P : 264VAC O/P : FULL LOAD Ta= 45 °C HUMIDITY= 95 %R.H	TEST : OK
5	TEMPERATURE COEFFICIENT	+ 0.03 %/(0°C~50°C)	I/P : 230 VAC O/P : FULL LOAD	+ 0.012 %/°C(0~50°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 : 10CYCLE 5. Input/Output condition : STATIC	
7	THERMAL SHOCK TEST	-40~45°C	1. Thermal shock Temperature : -45°C~ +50°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, 5G 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 : 6G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C	
9	CAPACITOR LIFE CYCLE	SUPPOSE C105 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=45 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta=45 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta=45 °C LIFE TIME		(1) 248353HRS (2) 53454HRS (3) 149898HRS (4) 295122HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 2677.8K hrs min. Telcordia SR-332 (Bellcore) ; 267.6K hrs min. MIL-HDBK-217F (25°C)		
11	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	WUWQ/HUANGMK	WENF	LINKX

2018.4.30 GP-A50-F010