



Test Report: OWA-200E-54

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. TEST

Safety Test

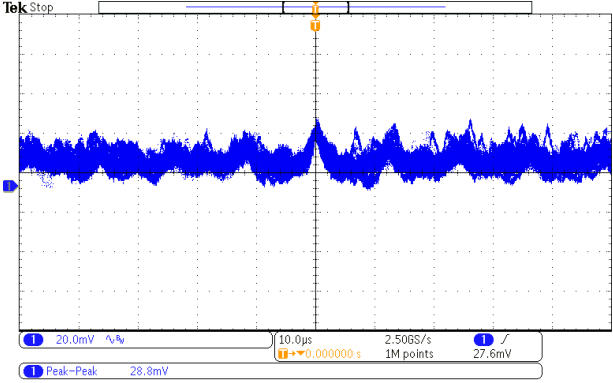
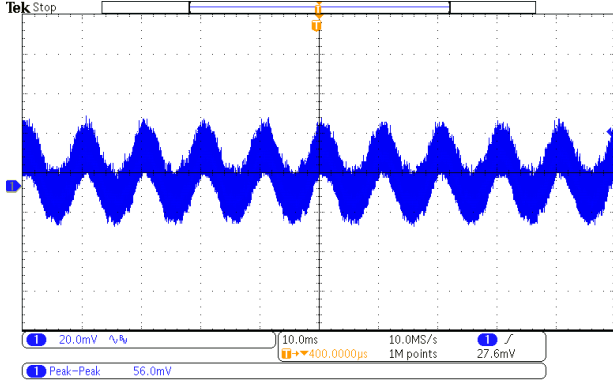
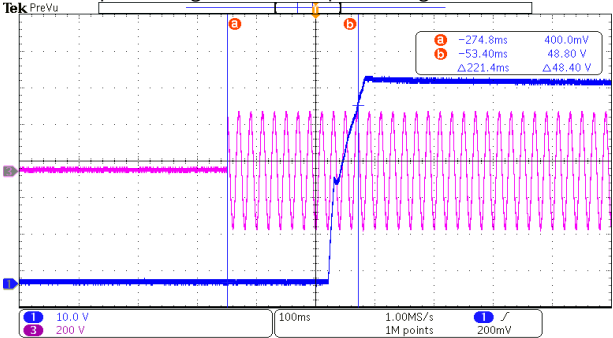
E.M.C. Test

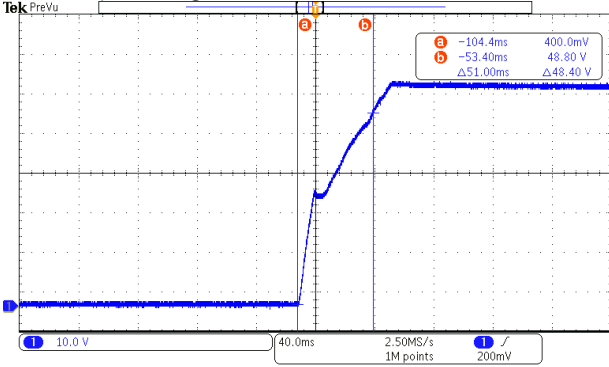
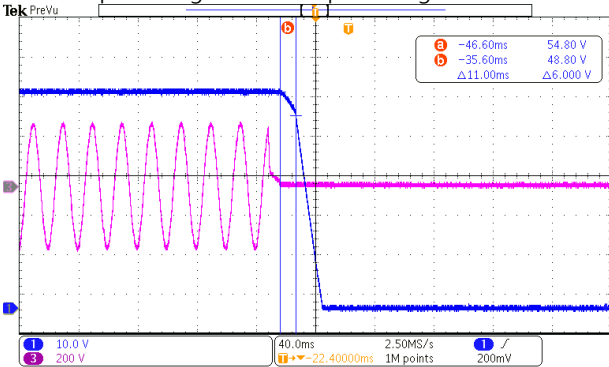
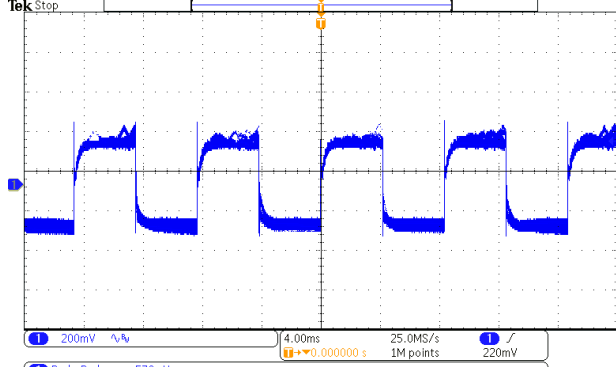
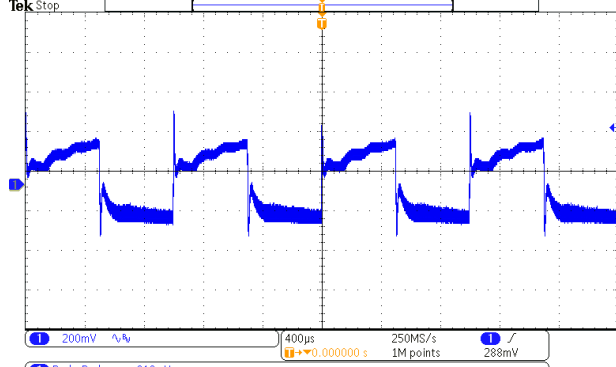
■ RELIABILITY TEST

ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

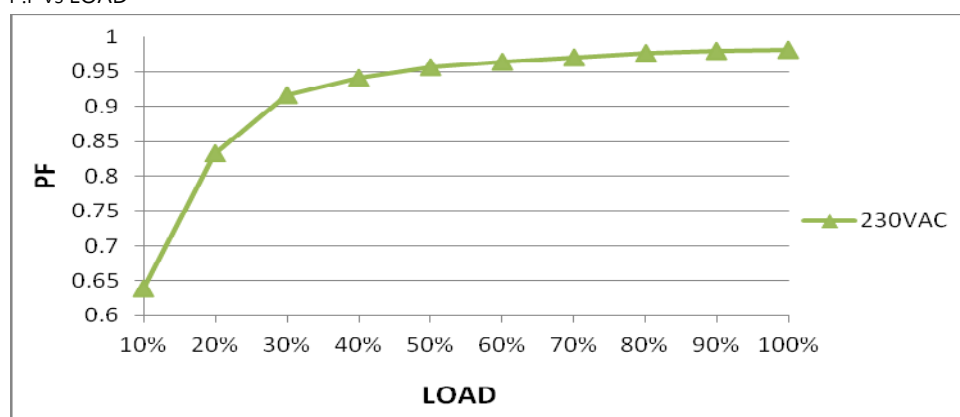
N O	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE TOLERANCE	V1: -3% ~ 3% (Max)	I/P:180VAC /264AC O/P:FULL~MIN LOAD Ta:25°C	V1: 0.92 %~ 1.1%
2	LINE REGULATION	V1: -0.5% ~0.5% (Max)	I/P:180VAC~264AC O/P:FULL LOAD Ta:25°C	V1: 0%~ 0%
3	LOAD REGULATION	V1: -3% ~ 3% (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.16%~0.16 %
4	OVER/UNDERSHOOT TEST	< <u>±</u> 5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: 3.75%
5	RIPPLE & NOISE	V1: 350mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1: 56mVp-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/ 221.4 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH3: AC Input Voltage 				

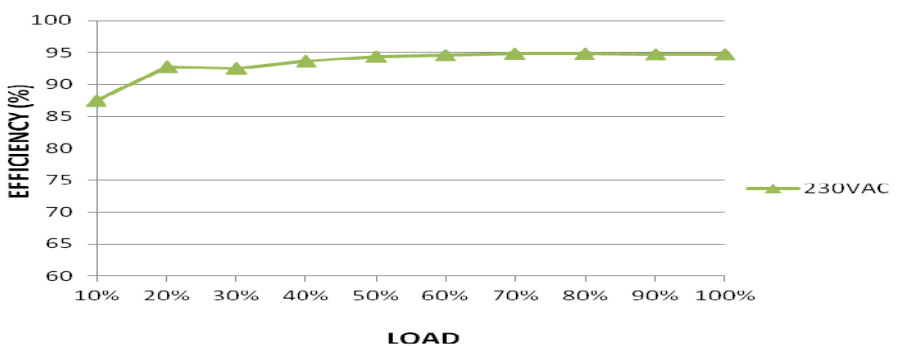
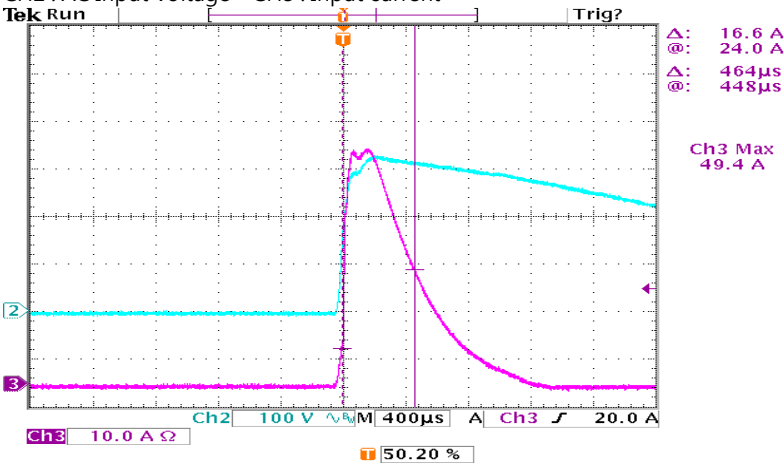
7	RISE TIME (Max)	230VAC/80ms	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C 使用 LEDH MODE TEST	230VAC/ 51 ms
8	INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage 			
9	HOLD UP TIME (Typ)	230VAC/10ms	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C 使用 LEDH MODE TEST	230VAC/11 ms
	INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage 			
10	DYNAMIC LOAD	V1: 5400mVp-p	I/P: 230VAC O/P: (1) FULL /50% LOAD 50%DUTY / 120HZ (2) FULL /50% LOAD 50%DUTY / 1KHZ Ta: 25°C	576mVp-p FULL /50% LOAD 50%DUTY / 120HZ 616mVp-p FULL /50% LOAD 50%DUTY / 1KHZ
	FULL /50% LOAD 50%DUTY / 120HZ 			
	FULL /50% LOAD 50%DUTY / 1KHZ 			

INPUT FUNCTION TEST

N O	TEST ITEM	SPECI FICATION	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) 177V~264VAC (2) 242Vdc~370Vdc/FULL LOAD (3) 242Vdc~370Vdc/FULL LOAD
			I/P: LOW-LINE-3V=177 V HIGH-LINE+15%=300 V 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 =0.93 A/ 230VAC
	NO LOAD POWER CONSUMPTION	<0.15W	I/P: 230 VAC O/P:NO LOAD Ta:25°C	0.1318W/230V
4	POWER FACTOR(TYP)	0.96/230 VAC FULL LOAD	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	PF= 0.982 /230V/100%LOAD

P.F vs LOAD



5	EFFICIENCY (TYP)	94%	I/P: 230VAC O/P: 100%Load Ta:25°C	94.71%
EFFICIENCY vs LOAD 				
6	INRUSH CURRENT (TYP)	230 V/ 65A (twidh=550us measured at 50% Ipeak) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I = 49.4 A/ 230VAC T50=464us
INPUT=230VAC/50HZ @ FULL LOAD CH2 : AC Input Voltage CH3 : Input current 				

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	127.2%/ 267VAC 126.6%/ 230VAC 126.8%/180VAC PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed

2	OVER VOLTAGE PROTECTION	V1:59 V~ 70 V	I/P: 267VAC I/P: 230VAC I/P: 180VAC O/P:TESTING Ta:25°C	63.8V/230VAC 64.4V/180VAC 64.2V/267VAC 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) 466V (2) 478V (3) 470V (4) 466V (5) 466V (6) 470V (7) 486V VDS: (1) 470V (2) 482V (3) 470V (4) 466V (5) 470V (6) 470V (7) 474V

2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q 1 Rated 26A/600V	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. 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	VDS: (1) 501V (2) 456V (3) 499V (4) 503V (5) 508V (6) 503V (7) 462V VDS: (1) 501V (2) 446V (3) 503V (4) 499V (5) 503V (6) 491V (7) 468V
3	P.F.C DIODE	D5 Rated 9 A/ 600V	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 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	(1) 491V (2) 455V (3) 438V (4) 436V (1) 431V (2) 428V (3) 431V (4) 427V

4	Diode Peak Voltage	Q101 Rated 33 A/ 150V Q100 Rated 33A/ 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°C	Q101: VDS: (1) 126V (2) 14V (3) 126V (4) 125V (5) 125V (6) 125V (7) 12.4V (8) 123V Q100: VDS: (1) 122V (2) 12.4V (3) 124V (4) 123V (5) 124V (6) 122V (7) 14.8V (8) 124V
5	Input Capacitor Voltage	C5 Rated: 100μ / 450V	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°C	(1) 435V (2) 416V (3) 431V (4) 421V
6	Control IC Voltage Test	U2 Rated -0.3V~20V U1 Rated -0.3V ~ 35 V	AC ON/OFF I/P:High-Line +3V =267 V O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD VRmin(LOW LINE) Ta:25°C	U1: (1) 16.7 (2) 16.7 (3) 17.1 (4) 15.9 (5) 16.7 U2: (1) 16.5V (2) 16.5V (3) 16.6V (4) 16.7V (6) 15.6V

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: 1.864mA 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: 0.037mA N-FG:0.042mA

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P: 230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	EN55032 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab
3	RADIATION	EN55032 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY 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 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV	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 : OWA-200U-54 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																																																																																																																										
		<table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=27 °C</th><th>HIGH AMBIENT Ta=49 °C</th></tr><tr><td>1</td><td>RT1</td><td>73.0°C</td><td>89.2°C</td></tr><tr><td>2</td><td>ZNR1</td><td>53.9°C</td><td>74.9°C</td></tr><tr><td>3</td><td>U3</td><td>56.2°C</td><td>77.8°C</td></tr><tr><td>4</td><td>C1</td><td>59.4°C</td><td>79.4°C</td></tr><tr><td>5</td><td>LF2</td><td>59.8°C</td><td>82.3°C</td></tr><tr><td>6</td><td>C6</td><td>59.1°C</td><td>81.8°C</td></tr><tr><td>7</td><td>R18</td><td>59.7°C</td><td>82.6°C</td></tr><tr><td>8</td><td>BD1</td><td>61.2°C</td><td>83.7°C</td></tr><tr><td>9</td><td>L2</td><td>58.3°C</td><td>81.3°C</td></tr><tr><td>10</td><td>L2core</td><td>58.7°C</td><td>81.7°C</td></tr><tr><td>11</td><td>Q1</td><td>59.9°C</td><td>82.7°C</td></tr><tr><td>12</td><td>D5</td><td>65.4°C</td><td>88.1°C</td></tr><tr><td>13</td><td>U1</td><td>58.4°C</td><td>81.0°C</td></tr><tr><td>14</td><td>U2</td><td>60.7°C</td><td>84.1°C</td></tr><tr><td>15</td><td>Q71</td><td>60.4°C</td><td>83.8°C</td></tr><tr><td>16</td><td>Q72</td><td>60.8°C</td><td>84.5°C</td></tr><tr><td>17</td><td>C35</td><td>56.4°C</td><td>80.2°C</td></tr><tr><td>18</td><td>T1</td><td>66.1°C</td><td>90.9°C</td></tr><tr><td>19</td><td>C5</td><td>58.0°C</td><td>81.2°C</td></tr><tr><td>20</td><td>U101</td><td>60.0°C</td><td>84.3°C</td></tr><tr><td>21</td><td>Q100</td><td>51.1°C</td><td>75.8°C</td></tr><tr><td>22</td><td>Q101</td><td>50.7°C</td><td>75.1°C</td></tr><tr><td>23</td><td>C115</td><td>47.3°C</td><td>71.5°C</td></tr><tr><td>24</td><td>C105</td><td>46.4°C</td><td>70.8°C</td></tr><tr><td>25</td><td>C106</td><td>46.6°C</td><td>71.2°C</td></tr><tr><td>26</td><td>C107</td><td>42.6°C</td><td>66.6°C</td></tr><tr><td>27</td><td>RTH5</td><td>58.1°C</td><td>81.6°C</td></tr><tr><td>28</td><td>LF100</td><td>39.4°C</td><td>63.2°C</td></tr><tr><td>29</td><td>TC</td><td>53.3°C</td><td>74.8°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta=27 °C	HIGH AMBIENT Ta=49 °C	1	RT1	73.0°C	89.2°C	2	ZNR1	53.9°C	74.9°C	3	U3	56.2°C	77.8°C	4	C1	59.4°C	79.4°C	5	LF2	59.8°C	82.3°C	6	C6	59.1°C	81.8°C	7	R18	59.7°C	82.6°C	8	BD1	61.2°C	83.7°C	9	L2	58.3°C	81.3°C	10	L2core	58.7°C	81.7°C	11	Q1	59.9°C	82.7°C	12	D5	65.4°C	88.1°C	13	U1	58.4°C	81.0°C	14	U2	60.7°C	84.1°C	15	Q71	60.4°C	83.8°C	16	Q72	60.8°C	84.5°C	17	C35	56.4°C	80.2°C	18	T1	66.1°C	90.9°C	19	C5	58.0°C	81.2°C	20	U101	60.0°C	84.3°C	21	Q100	51.1°C	75.8°C	22	Q101	50.7°C	75.1°C	23	C115	47.3°C	71.5°C	24	C105	46.4°C	70.8°C	25	C106	46.6°C	71.2°C	26	C107	42.6°C	66.6°C	27	RTH5	58.1°C	81.6°C	28	LF100	39.4°C	63.2°C	29	TC	53.3°C	74.8°C
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 126 % LOAD Ta : 25°C	TEST : OK																																																																																																																								
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 230VAC/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	± 0.001 %/°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) 240361HRS (2) 203524HRS (3) 310483HRS (4) 402278 HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 850.4K hrs min. 267.6MIL-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

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