

MODEL : RSP-1000-15

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 150 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25°C	V1: 58 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 13.5 V~ 16.5 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	12.62 V~ 16.95 V/ 230 VAC 12.62 V~ 16.95 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 1 %~ -1 % (Max)	I/P: 100VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.18 %~ -0.18 %	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P:100 VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0.04 %~ -0.04 %	P
5	LOAD REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.18 %~ -0.18 %	P
6	SET UP TIME	230VAC: 300 ms (Max) 115 VAC: 300 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 52 ms 115VAC/ 83 ms	P
7	RISE TIME	230VAC: 50 ms (Max) 115VAC: 50 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 21 ms 115VAC/ 21 ms	P
8	HOLD UP TIME	230VAC: 16 ms (TYP) 115VAC: 16 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 19.6 ms 115VAC/ 17.7 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: <5 %	P
10	DYNAMIC LOAD	V1: 1500 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	539 mVp-p	P

## INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	83V~264V	P
			I/P: LOW-LINE-3V= 87V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN ( AC POWER ON/OFF NO DAMAGE )	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 90 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK	P
3	POWER FACTOR	0.95 / 230 VAC(TYP) 0.98 / 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	PF= 0.975 / 230 VAC PF= 0.998 / 115 VAC	P
4	EFFICIENCY	85 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	85.5%	P
5	INPUT CURRENT	230V/ 6 A (TYP) 115V/ 12 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 3.95 A/ 230 VAC I = 7.96 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 40 A (TYP) 115V/ 25 A (TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 35 A/ 230 VAC I = 18 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P: 254 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.93 mA N-FG: 0.93 mA	P

## PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 %~ 125 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25°C	115%/ 230 VAC 114% /115 VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1: 17V~ 20.5 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	18.2 V/ 230 VAC 18.2 V/ 115 VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1: 75 ± 5°C O.T.P. TSW2: 85 ± 5°C O.T.P. NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Shut down o/p voltage , recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD Ta:25°C	NO DAMAGE Constant Current Limiting	P

## CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	FAN LOCK TEST	FAN LOCK :POWER OFF FAN UNLOCK :POWER ON	I/P: 230 VAC O/P:FULL LOAD	FAN LOCK :POWER OFF FAN UNLOCK :POWER ON	P
2	FAN SPEED CONTROL	Fan Voltage : NO LOAD:7.7V ~9.4V 100% LOAD:11.2V~ 12.2V	I/P: 230 VAC O/P:TESTING Ta:25°C	Fan Voltage: NO LOAD: 7.84 V 100% LOAD: 11.2 V	P
3	REMOTE ON/OFF	ON/OFF~ -S SHORT : POWER ON ON/OFF~ -S OPEN : POWER OFF that is shown in Fig2.1(SPEC)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	ON/OFF& -S SHORT : POWER ON ON/OFF& -S OPEN : POWER OFF	P
4	DC OK Signal	Sink current 10mA DC_OK – GND : 0~1V output ON DC_OK – GND : 3.3~5.6V output OFF that is shown in Fig3.1(SPEC)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	Output ON : 0 V Output OFF : 5 V	P
5	REMOTE SENSE	>0.5V that is shown in Fig4.1(SPEC)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	> 0.5V	P
6	OUTPUT VOLTAGE PROGRAMMABLE(PV)	Adjustment of output voltage is possible between 40 %~110 % of rated output (1)Using external voltage source between Vci ~ -s that is shown in Fig5.1(SPEC) (2)Connecting a resistor externally that in shown in Fig5.2& Fig5.3(SPEC)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	(1) External Voltage 40% Voltage= 2 V 100% Voltage= 5 V  (2) External Resistor (A) Fig5.2 40% Voltage= 380 Ω 100% Voltage= ∞ Ω (OPEN) (B) Fig5.3 100% Voltage= ∞ Ω (OPEN) 110% Voltage= 6.1KΩ	P
7	CURRENT SHARING	PSU1-PSU2 < 10% that is shown in Fig6.1(SPEC)	I/P: 230 VAC O/P:FULL/50% LOAD Ta:25°C	O/P:100% PSU1: 916W PSU2: 886W PSU3: 876W  O/P:50% PSU1: 458W PSU2: 443W PSU3: 438W	P
8	AUX ILIRY POWER (AUX)	5V @ 0.5A (+5%,-8%)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	5.07V	P

## ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : RSP-1000-24 1. ROOM AMBIENT BURN-IN : 1HRS I/P: 230VAC O/P: FULL LOAD Ta= 29.8°C 2. HIGH AMBIENT BURN-IN : 2HRS I/P: 230VAC O/P: FULL LOAD Ta= 54.2°C			P
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P: 230 VAC O/P: 110% LOAD Ta:25°C	TEST : OK	P
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P: 100% LOAD Ta= -20°C	TEST : OK	P
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 50°C HUMIDITY= 95 %R.H	TEST : OK	P
5	TEMPERATURE COEFFICIENT	± 0.03 %(0~50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.005 %(0~50°C)	P
6	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency:10~500Hz (3) Sweep Time:10min/sweep cycle (4) Acceleration:2G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25°C		TEST : OK	P

### SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25°C	I/P-O/P: 8.73 mA I/P-FG: 7.13 mA O/P-FG: 0.5 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: 4.4 GΩ I/P-FG: 6.5 GΩ O/P-FG: 4.8 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C	17 mΩ	P
4	APPROVAL	TUV: Certificate NO : R50094068 UL: File NO : R50094068			P

### E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS A	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

### M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	RSP-1000-24 : SUPPOSE C110 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 1025344 HRS I/P: 230VAC O/P:FULL LOAD Ta= 50 °C LIFE TIME= 172662 HRS			P
2	MTBF	Conducted by Parts Stress Analysis Prediction 939.4K hrs min. Telcordia SR-332 (Bellcore) ; 116.5K hrs min. MIL-HDBK-217F (25°C)			P
3	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure : Above 50,000 hours @ TA 50°C			P

### COMPONENT STRESS TEST



NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q900 Rated 2SK2082 : 900 V 9A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25°C	(1) 884 V (2) 848 V	P
2	Diode <b>Peak Voltage</b>	D102 Rated ESAD83-006 : 60V 30A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25°C	(1) 52 V (2) 29 V	P
3	Clamp Diode <b>Peak Voltage</b>	D900 Rated BYM26E : 1KV 2.3 A	I/P:High-Line +3V = 267 V O/P: (1) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 828 V	P
4	<b>Input Capacitor Voltage</b>	C5 Rated : 220u / 450V/ 105°C	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(1) 410 V (2) 406 V (3) 410 V	P
5	<b>Control IC Voltage Test</b>	U2 Rated UCC28220D : 15 V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(1) 13.9 V (2) 14 V (3) 13.9 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2006/8/4	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2006/11/20	PRODUCT SAMPLE W0609A18	PASS	VINCENT TSENG	MAX LIN
2007/1/5	PRODUCT SAMPLE W0612A26	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023