



Test Report: RSP-750-5

750W Single Output Power Supply

■ 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	VERDICT
1	RIPPLE & NOISE	V1 : 150 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 33.2 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 4.75 V ~ 5.5 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	4.38 V ~ 5.761 V/ 230 VAC 4.38 V ~ 5.761 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1 : 2 % ~ -2 % (Max)	I/P : 100VAC / 264 VAC O/P : FULL / MIN LOAD Ta : 25°C	V1 : 0.2 % ~ -0.2 %	P
4	LINE REGULATION	V1 : 0.5 % ~ -0.5 % (Max)	I/P : 100VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0.12 % ~ -0.12 %	P
5	LOAD REGULATION	V1 : 2 % ~ -2 % (Max)	I/P : 230 VAC O/P : FULL ~ MIN LOAD Ta : 25°C	V1 : 0.12 % ~ -0.12 %	P
6	SET UP TIME	230VAC : 1000 ms (Max) 115VAC : 1000 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 140 ms 115VAC 350 ms	P
7	RISE TIME	230VAC : 50 ms (Max) 115VAC : 50 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 7 ms 115VAC/ 7 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/ 31 ms 115VAC/ 30 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 : 1000 mVp-p	I/P : 230 VAC (1).O/P : FULL /Min LOAD 90%DUTY/ 1KHZ (2).O/P : FULL /Min LOAD 90%DUTY/ 3KHZ (3).O/P : FULL /Min LOAD 90%DUTY/ 5KHZ (4).O/P : FULL /Min LOAD 50%DUTY/ 120HZ Ta : 25°C	(1)388 mVp-p (2)186 mVp-p (3)158 mVp-p (4)536 mVp-p	P

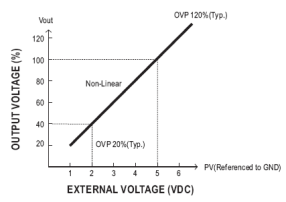
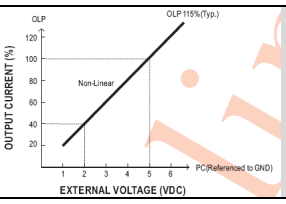
INPUT FUNCTION TEST

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	74 V~264V	P
			I/P : LOW-LINE-3V=87 V 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 : 100AC ~ 264 VAC O/P : FULL~MIN LOAD Ta : 25°C	TEST : OK	P
3	POWER FACTOR	0.97 / 230 VAC(TYP) 0.98 / 115 VAC(TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.979 / 230 VAC PF= 1 / 115 VAC	P
4	EFFICIENCY	82% (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	82.34 %	P
5	INPUT CURRENT	230V/ 2.8 A (TYP) 115V/ 5.6 A (TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 2.69 A/ 230 VAC I = 5.47 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 = 36 A/ 230 VAC I = 19 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P : 264 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.88 mA N-FG : 0.74 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	112.5%/ 230 VAC 110%/ 115 VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1 : 5.75V ~ 6.75 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	6.191 V/ 230 VAC 6.218 V/ 115 VAC Shut down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC : TSW1 : 80 ± 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	REMOTE ON/OFF CONTROL	Power on : short between on/off (pin13) & 12V-AUX(pin14) on CN50 Power off : open between on/off (pin13) & 12-AUX(pin14) on CN50	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : OK	P																		
2	DC OK SIGNAL	The TTL signal out, PSU turn on = 0 ~ 1V PSU turn off = 3.3 ~ 5.6V	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	PSU turn on = 0 V PSU turn off = 5 V	P																		
3	OUTPUT VOLTAGE PROGRAMMABLE(PV)		I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	<table border="1"> <tr> <td>ADJ V</td><td>2V</td><td>3V</td><td>4V</td><td>5V</td><td>5.5V</td></tr> <tr> <td>SPEC</td><td>40%</td><td>60%</td><td>80%</td><td>100%</td><td>110%</td></tr> <tr> <td>TEST</td><td>40%</td><td>60.6%</td><td>80.6%</td><td>100.6%</td><td>110.6%</td></tr> </table>	ADJ V	2V	3V	4V	5V	5.5V	SPEC	40%	60%	80%	100%	110%	TEST	40%	60.6%	80.6%	100.6%	110.6%	P
ADJ V	2V	3V	4V	5V	5.5V																		
SPEC	40%	60%	80%	100%	110%																		
TEST	40%	60.6%	80.6%	100.6%	110.6%																		
4	OUTPUT CURRENT PROGRAMMABLE(PC)		I/P : 230 VAC O/P : 0%~110 LOAD Ta : 25°C	<table border="1"> <tr> <td>ADJ V</td><td>2V</td><td>3V</td><td>4V</td><td>5V</td><td>5.5V</td></tr> <tr> <td>SPEC</td><td>40%</td><td>60%</td><td>80%</td><td>100%</td><td>110%</td></tr> <tr> <td>TEST</td><td>30.6%</td><td>50.6%</td><td>72%</td><td>90%</td><td>104%</td></tr> </table>	ADJ V	2V	3V	4V	5V	5.5V	SPEC	40%	60%	80%	100%	110%	TEST	30.6%	50.6%	72%	90%	104%	P
ADJ V	2V	3V	4V	5V	5.5V																		
SPEC	40%	60%	80%	100%	110%																		
TEST	30.6%	50.6%	72%	90%	104%																		
5	REMOTE SENSE	>0.5V	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	> 0.5 V	P																		
6	FAN SPEED	FAN Voltage : 0% LOAD 7~9V 100%LOAD 11.5~12.5V	I/P : 230 VAC O/P : 0%~100%LOAD Ta : 25°C	O/P : 0% LOAD FAN Voltage : 7.989 V O/P : 100%LOAD FAN Voltage : 12.128 V	P																		
7	AUXILIARY POWER	12V@ 0.1 A(±10%)	I/P : 230 VAC O/P : 0%~100%LOAD Ta : 25°C	O/P : 0% LOAD 12.714 V O/P : 100%LOAD 12.269 V	P																		

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q905 Rated : STP7N95K3 7A/950V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	(1) 828 V (2) 812 V (3) 800 V	P
2	Diode Peak Voltage	D101 Rated : M6035C 60A/35V Q201 Rated : IPP015N04NG 120A/40V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue Ta : 25°C	(1) 11.8 V (2) 7.90 V (3) 11.4 V (1) 21.3 V (2) 14.6 V (3) 20.7 V	P
3	Input Capacitor Voltage	C5 Rated : 330u/400V 105°C 30*30 HU	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) 384 V (2) 396 V (3) 388 V	P
4	Control IC Voltage Test	U901 Rated : UCC28220D 8V~14V	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) 12.3 V (2) 12.1 V (3) 12 V	P
5	Power Transistor (D to S) or (C to E) Peak Voltage	Q 2 Rated : FCP22N60N 22A/600V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	(1) 414 V (2) 408 V (3) 410 V	P

SAFETY & E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 3 KVAC/min I/P-FG : 2KVAC/min O/P-FG : 0.5 KVAC/min	I/P-O/P : 3.6 KVAC/min I/P-FG : 2.4 KVAC/min O/P-FG : 0.6 KVAC/min Ta : 25°C	I/P-O/P : 9.02 mA I/P-FG : 8.71 mA O/P-FG : 7.02 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/70% RH	I/P-O/P : 22.4 GΩ I/P-FG : 17.1 GΩ O/P-FG : 11.8 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta : 25°C / 70% RH	10 mΩ	P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A CLASS D	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 B	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				

RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT		
1	TEMPERATURE RISE TEST	MODEL : RSP-750-5			P		
		1. ROOM AMBIENT BURN-IN : 1.5 HRS I/P : 230VAC O/P : FULL LOAD Ta=33.6 °C					
		2. HIGH AMBIENT BURN-IN : 6 HRS I/P : 230VAC O/P : FULL LOAD Ta=48.2 °C					
		NO	Position	PART NUMBER		ROOM AMBIENT Ta=33.6 °C	HIGH AMBIENT Ta=48.2 °C
		1	LF1	TR690-R1		41.3°C	56.5°C
		2	C2	105/275VAC 20% P=22.5 R46		41.8°C	57.2°C
		3	BD1	30A/800V SILICON US30KB80R		53.7°C	68.2°C
		4	L2	TF2432		43.8°C	58.0°C
		5	Q2	FCP22N60N 22A/600V TO220		47.8°C	62.7°C
		6	C11	225/450V 10% P=22 MMX		41.9°C	56.3°C
		7	C5	330u/400V 105°C 30*30 HU		36.6°C	52.0°C
		8	T1	TF2413		49.0°C	66.7°C
		9	T2	TF2414		56.8°C	74.7°C
		10	Q901	STP7N95K3 7A/950V TO220		49.9°C	67.3°C
		11	Q906	STP7N95K3 7A/950V TO220		58.8°C	75.7°C
		12	U901	UCC28220D SOIC-16		43.3°C	60.2°C
		13	Q100	IPP015N04NG 120A/40V TO220		57.6°C	75.4°C
		14	Q200	IPP015N04NG 120A/40V TO220		73.0°C	91.0°C
		15	D101	M6035C 60A/35V TO220		69.0°C	86.7°C
		16	D900	BYV26EGP 1A/1KV DO-204AC		42.5°C	59.4°C
		17	D70	ST02D-170 AX078 T-52mm		47.3°C	62.0°C
		18	C75	220u/25V UL7Kh 8*11.5 KY		43.4°C	60.4°C
		19	T3	TF2431		45.4°C	62.7°C
		20	C320	100u/25V L5Kh 6.3*11 KY		45.4°C	61.9°C
		21	C301	1500u/16V UL10Kh 10*20 ZLH		46.7°C	64.7°C
		22	C161	470u/25V UL7Kh 8*20 KY		47.3°C	65.5°C
		23	L100	TF2425		80.5°C	101.6°C
24	C110	4700u/10V UL10Kh 12.5*30 ZLH	67.4°C	85.5°C			
25	TSW1	BW-DCP-R0 80°C 105mm HH (H110)	40.1°C	54.8°C			
26	TSW2	BW-DCP-R0 90°C 70mm HH (H110)	65.1°C	82.8°C			
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 115 % LOAD Ta : 25°C	TEST : OK	P		
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100 % LOAD Ta= -35 °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	$\pm 0.03\%/^{\circ}\text{C}$ (0~50°C)	I/P : 230 VAC O/P : FULL LOAD	$\pm 0 \%/^{\circ}\text{C}$ (0~50°C)	P
6	STORAGE TEMPERATURE TEST	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 : 5 CYCLE 5. Input/Output condition : STATIC		OK	P
7	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°C ~ +55°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 : 230VAC/Full Load AC ON/OFF TEST turn on 58sec ; turn off 2sec		OK	P
8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK	P
9	CAPACITOR LIFE CYCLE	RSP-750-5:SUPPOSE C101 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= 50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME		(1) 310177HRS (2) 62120HRS (3) 97472HRS (4) 136903HRS	P
10	MTBF	Conducted by Parts Stress Analysis Prediction 1036.8K hrs min. Telcordia SR-332 (Bellcore) ; 109.2K hrs min. MIL-HDBK-217F (25°C)			P
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure : Above 50,000 hours @ TA 50°C			P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2012/5/16	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2012/7/11	PRODUCT SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2012/8/7	PRODUCT SAMPLE W1207C22	PASS	SANFORD SU	VINCENT TSENG

2009/08/04 A50-F023