



# TEST REPORT: RPS-300-27-C

## 300W Single Output Green Medical Type

### ■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection 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

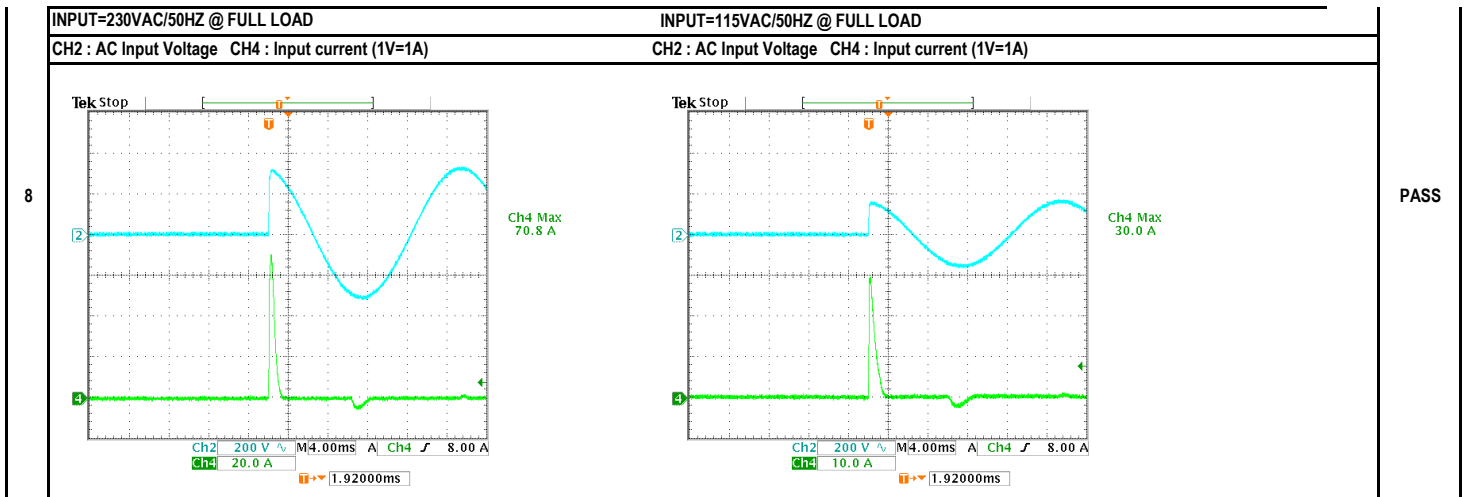
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 25.65V ~ 28.35V	I/P : 230VAC O/P: MIN LOAD TA : 25°C	CH1: 24.40V ~ 28.94V	PASS
2	OUTPUT VOLTAGE TOLERANCE (Max)	V1 : 2.0% ~ -2.0%	I/P : 115VAC / 264VAC O/P: FULL / MINLOAD TA= 25°C	V1: 0.78% ~ -0.34%	PASS
3	LINE REGULATION (MAX.)	V1 : 0.5% ~ -0.5%	I/P : 115VAC / 264VAC O/P: FULL LOAD TA : 25°C	V1: 0.00% ~ 0.00%	PASS
4	LOAD REGULATION(MAX.)	V1 : 1.0% ~ -1.0%	I/P : 230VAC O/P: MIN LOAD ~ FULL LOAD TA : 25°C	V1: 0.78% ~ -0.34%	PASS
5	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230VAC O/P: FULL LOAD TA : 25°C	TEST< 1.5 %	PASS
6	RIPPLE & NOISE(Max)	V1 : 200 mVp-p	I/P : 230VAC O/P: FULL LOAD TA : 25°C	V1 : 138 mVp-p	PASS
7	SET UP TIME (MAX.)	230VAC : 2500ms 115VAC : 3000ms	I/P : 230VAC I/P : 115VAC O/P: FULL LOAD TA : 25°C	230VAC : 816ms 115VAC : 776ms	PASS
7	RISE TIME (MAX.)	230VAC : 30ms 115VAC : 30ms	I/P : 230VAC I/P : 115VAC O/P: FULL LOAD TA : 25°C	230VAC : 8.0ms 115VAC : 7.6ms	PASS

8	<p>INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage</p>		<p>INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage</p>		PASS
HOLD UP TIME (TYP.)		<p>230VAC : 13ms 115VAC : 13ms</p>	<p>I/P : 230VAC I/P : 115VAC O/P: FULL LOAD TA : 25°C</p>	<p>230VAC : 38.8ms 115VAC : 38.8ms</p>	PASS
9	<p>INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage</p>		<p>INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage</p>		PASS
DYNAMIC LOAD		<p>V1 : 2700 mVp-p</p>	<p>I/P : 230VAC O/P: (1)Full/Min load 50%duty/120HZ (2)Full/Min load 50%duty/1KHZ TA : 25°C</p>	<p>(1). 231mv (2). 198mv unit:mVp-p</p>	PASS
10	<p>FULL /MIN LOAD 50%DUTY / 120HZ</p>		<p>FULL /MIN% LOAD 50%DUTY / 1KHZ</p>		PASS



INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC ~ 264VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C	72.2VAC ~ 264VAC	PASS
			I/P : LOW-LINE = 112VAC HIGH-LINE = 300VAC O/P : FULL/MIN LOAD ON:30 Sec ; OFF:30 Sec 10MIN ( POWER ON/OFF NO DAMAGE )	TEST : OK	
2	INPUT FREQUENCY RANGE	47HZ ~ 63HZ NO DAMAGE	I/P : 115VAC ~ 264VAC O/P : FULL-MIN LOAD Ta : 25°C	TEST : OK	PASS
3	INPUT CURRENT (TYP.)	1.80A / 230VAC 3.50A / 115VAC	I/P : 230VAC I/P : 115VAC O/P : FULL LOAD TA : 25°C	I= 1.377A / 230VAC I= 2.940A / 115VAC	PASS
4	LEAKAGE CURRENT	< 0.25mA	I/P : 240VAC O/P : MIN LOAD TA : 25°C	L-FG: 0.08 mA N-FG: 0.044 mA	PASS
5	NO LOAD POWER CONSUMPTION	< 0.50W	I/P : 230VAC O/P : MIN LOAD TA : 25°C	< 0.386 W	PASS
6	POWER FACTOR (TYP.)	0.93 / 230VAC 0.98 / 115VAC	I/P : 230VAC I/P : 115VAC O/P : FULL LOAD TA : 25°C	PF= 0.9889 / 230VAC PF= 0.9969 / 115VAC	PASS
7	EFFICIENCY (TYP.)	93.0%	I/P : 230VAC O/P : FULL LOAD TA : 25°C	93.76 %	PASS
	INRUSH CURRENT (TYP.)	80A / 230VAC 40A / 115VAC COLD START	I/P : 230VAC I/P : 115VAC O/P : FULL LOAD TA : 25°C	I= 70.8A / 230VAC I= 30.0A / 115VAC	



**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105% ~ 135%	I/P: 264VAC I/P: 230VAC I/P: 115VAC O/P: TESTING Ta: 25°C	117.17% 264VAC 117.17% 230VAC 117.17% 115VAC Hiccup Mode	PASS
2	OVER VOLTAGE PROTECTION	29.50V ~ 33.50V	I/P: 264VAC I/P: 230VAC I/P: 90VAC O/P: MIN LOAD Ta: 25°C	32.00V 264VAC 32.00V 230VAC 32.00V 90VAC Shut down Re- power ON	PASS
3	OVER TEMPERATURE PROTECTION	Shut down Re- power ON	I/P: 264VAC I/P: 90VAC O/P: FULL LOAD	O.T.P. Active Shut down Re- power ON	PASS
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264VAC I/P: 90VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Hiccup Mode	PASS

**COMPONENT STRESS TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	PWM Power Transistor	Q5 Rated : 600V 19.0A	I/P : 267VAC  VDS : O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	VIN: 267VAC VDS: (1). 432.00V (2). 444.00V (3). 414.00V	PASS
2	PWM Power Transistor	Q6 Rated : 600V 19.0A	I/P : 267VAC  VDS : O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	VIN: 267VAC VDS: (1). 438.00V (2). 440.00V (3). 420.00V	PASS
3	O/P MOSFET	Q101 Rated : 75V 80.0A  Q102 Rated : 75V 80.0A	I/P : 267VAC  VDS : O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	Q101 VDS : Q102 VDS : (1). 66.80V 64.60V (2). 12.60V 12.60V (3). 66.80V 64.60V	PASS
4	Input Capacitor	C5 Rated : 150uf 400V	I/P : 267VAC O/P : (1)Full Load Turn on /Off (2)Min load Turn on /Off (3)Full Load /Min load Change (4)Full Load Continue Ta : 25°C	(1). 399.00V (2). 397.00V (3). 398.00V (4). 398.00V	PASS

5	Control IC	U1 Rated : 16V (max) 8.85V (min)	I/P : 267VAC O/P : (1)Full Load (2)Output Short (3)O.L.P (4)O.V.P (5)Low Line No Load Vo(min) Ta : 25°C	U1 (1). 14.10V (2). 14.10V (3). 14.10V (4). 14.10V (5). 13.90V	PASS
6	PFC Power Transistor	Q1 Rated : 600V 17.9A	I/P : 267VAC VDS : O/P : (1)Full Load Turn on (2) Output Short (3)Full load continu #REF! Ta : 25°C	VIN: 267VAC VDS: (1). 504.00V (2). 540.00V (3). 480.00V	PASS
7	PFC Diode	D10 Rated : 600V 8.0A	I/P : 267VAC O/P : (1)Full Load Turn on (2) Output Short (3)Dynamic Load Full/Min Load 90%Duty/5KHz (4)Dynamic Load Full/Min Load 50%Duty/120Hz Ta : 25°C	267VAC (1). 420.00V (2). 408.00V (3). 420.00V (4). 416.00V	PASS
8	Clamp Diode	D33 Rated : 1000V 1.0A	I/P : 267VAC O/P : (1)Dynamic Load Full/Min Load (2)Full load continue Ta : 25°C	(1). 400.00V (2). 284.00V	PASS

SAFETY & E.M.C. TEST  
SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 4.000KVAC /min I/P-FG : 2.000KVAC /min O/P-FG : 1.500KVAC /min	I/P-O/P: 4.400KVAC /min I/P-FG: 2.400KVAC /min O/P-FG: 1.800KVAC /min Ta : 25°C	I/P-O/P: 1.15mA I/P-FG: 1.23mA O/P-FG: 1.16mA NO DAMAGE	PASS
2	ISOLATION RESISTANCE	I/P-O/P : 500VDC>100MΩ I/P-FG : 500VDC>100MΩ O/P-FG : 500VDC>100MΩ	I/P-O/P: 500VDC I/P-FG: 500VDC O/P-FG: 500VDC Ta : 25°C/70%RH	I/P-O/P: 9999MΩ I/P-FG: 9999MΩ O/P-FG: 9999MΩ NO DAMAGE	PASS

E.M.C. TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A 0	I/P : 230VAC /50HZ O/P : FULL LOAD Ta : 25°C	PASS	PASS
2	CONDUCTION	EN55022 CLASS B	I/P : 230VAC /50HZ O/P : FULL LOAD / 50% LOAD Ta : 25°C	PASS Test by certified Lab	PASS
3	RADIATION	EN55022 CLASS B	I/P : 230VAC /50HZ O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab	PASS
4	E.S.D	EN61000-4-2 CH2 : AC Input Voltage CH4 : Input current (1V=1A)	I/P : 230VAC /50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	PASS
5	E.F.T	EN61000-4-4 MEDICAL INPUT: 2KV	I/P : 230VAC /50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	PASS
6	SURGE	IEC61000-4-5 MEDICAL L-N:1KV;L/N-PE: 2KV	I/P : 230VAC /50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	PASS



RELIABILITY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT		
1	TEMPERATURE RISE TEST	MODEL : RPS-300-24-C			PASS		
		1. ROOM AMBIENT BURN-IN : 1.0hrs IP: 230VAC O/P: 100% LOAD TA= 32.5°C					
		2. HIGH AMBIENT BURN-IN : 1.0hrs IP: 230VAC O/P: 100% LOAD TA= 51.9°C					
			NO. Position	ROOM AMBIENT 32.5°C		HIGH AMBIENT Ta: 51.9°C	
			1	BD1		66.2°C	89.4°C
			2	ZNR1		47.0°C	68.4°C
			3	C1		40.2°C	61.3°C
			4	LF2		37.3°C	58.3°C
			5	C5		63.6°C	85.2°C
			6	Q1		58.8°C	80.7°C
			7	L2		69.6°C	89.8°C
			8	ZNR2		38.4°C	58.8°C
			9	T1		56.6°C	77.0°C
			10	C200		52.8°C	73.4°C
			11	C105		44.2°C	64.7°C
			12	Q101		42.6°C	63.6°C
			13	Q5		77.2°C	99.1°C
			14	TSW1		46.6°C	68.7°C
			15	TSW2		42.3°C	63.1°C
			16	U1		58.0°C	80.3°C
			17	U103		58.0°C	78.8°C
			18	C911		64.1°C	84.1°C
			19	T900		68.4°C	88.5°C
			20	U903		76.4°C	97.4°C
	21	C950	62.0°C	82.1°C			
	22	C955	57.2°C	77.6°C			
	23	L1	58.6°C	84.7°C			
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P : 230VAC O/P : 112.00% LOAD Ta : 25°C	TEST : OK	PASS		
3	LOW TEMPERATURE TURN ON TEST	NO DAMAGE 1 HOUR ( MIN )	I/P : 264VAC / 115VAC O/P : FULL LOAD Ta : -30.0°C	TEST : OK	PASS		
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50°C NO DAMAGE	I/P : 272VAC O/P : FULL LOAD Ta : 50°C HUMIDITY= 95.0% RH	TEST : OK	PASS		
5	TEMPERATURE COEFFICIENT	±0.03% / (0°C~50°C)	I/P : 230VAC O/P : FULL LOAD	±0.0022% / (0°C~50°C)	PASS		
6	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -40°C ~ +85°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		TEST : OK	PASS		
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		TEST : OK	PASS		
8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (4) Acceleration : 2G (5) Test Time : 60 min in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK	PASS		
9	CAPACITOR LIFE CYCLE	:SUPPOSE C105 IS THE MOST CRITICAL COMPONENT	(1) I/P : 230VAC O/P : FULL LOAD Ta= 25.0°C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 50.0°C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50.0°C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50.0°C LIFE TIME	(1). 686033.1 HRS (2). 112399.2 HRS (3). 183833.7 HRS (4). 304670.1 HRS	PASS		



10	MTBF	Conducted by Parts Stress Analysis Prediction 160K hrs min. MIL-HDBK-217F (25°C)	PASS
11	DMTBF /Accelerated Life test	Demonstration Mean Time Between Failure (Expected Life): Above 30000HRS @ TA 50°C	PASS

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	FRANK	GESG	WANGDZ

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