



Test Report: MSP-1000-24

1000W Single Output Medical Type

■ 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

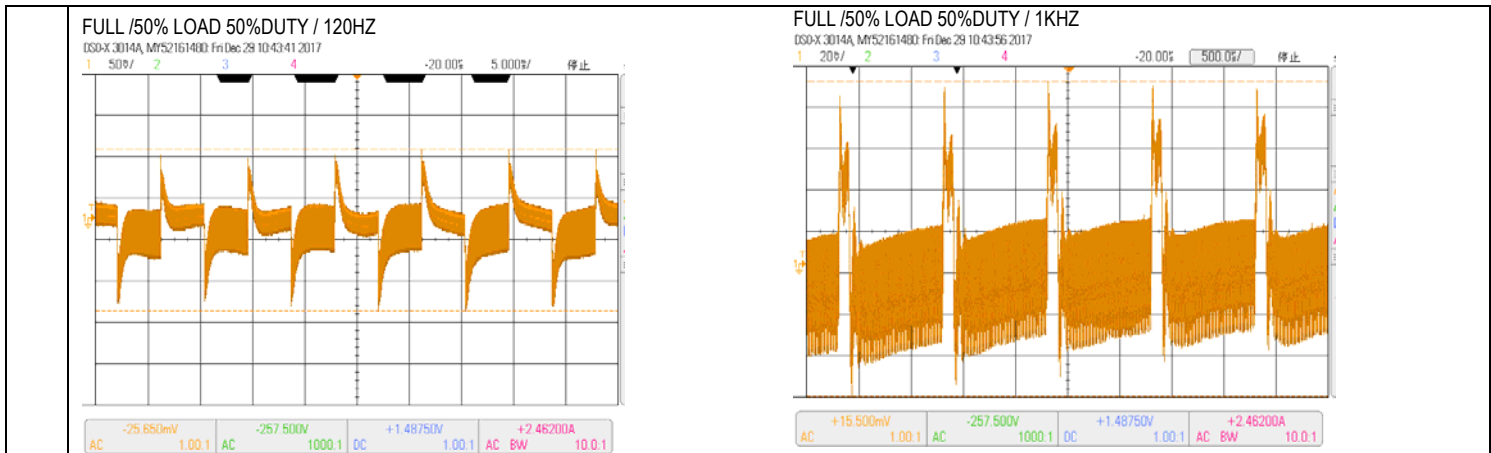
ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

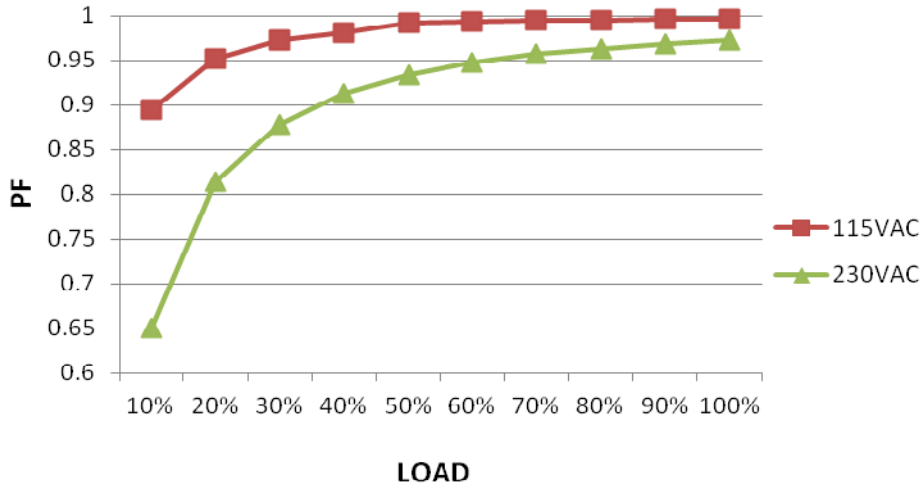
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 22V~ 28 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	20.772V~28.96V/230VAC 20.779V~28.96V/115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: 1%~ -1%	I/P: 200VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: 0.06%~ -0.06 %
3	LINE REGULATION (Max)	V1: 0.5%~ -0.5 %	I/P: 200VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0.042%~ 0%
4	LOAD REGULATION(Max)	V1: 0.5%~ -0.5 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.042%~ -0.042%
5	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	<5%
6	RIPPLE & NOISE(Max)	V1: 200mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 68.3mVp-p
<div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p>high frequency :</p> </div> <div style="width: 45%;"> <p>low frequency :</p> </div> </div>				
7	SET UP TIME(Max)	230VAC/1000ms 115VAC/2000ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 370 ms 115VAC/ 458 ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage			INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input	

<p>8 RISE TIME (Max)</p>	<p>230VAC/50ms 115VAC/50ms</p>	<p>I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C</p>	<p>230VAC/ 12.8 ms 115VAC/ 12.2 ms</p>
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage</p>		<p>INPUT=115VAC/60HZ @ FULL LOAD</p> <p>CH1 : Output Voltage</p>	
<p>9 HOLD UP TIME (Typ.)</p>	<p>230VAC/16ms 115VAC/16ms</p>	<p>I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C</p>	<p>230VAC/ 21.6 ms 115VAC/ 25.6 ms</p>
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p>		<p>INPUT=115VAC/60HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p>	
<p>10 DYNAMIC LOAD</p>	<p>V1: 2400 mVp-p</p>	<p>I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C</p>	<p>195mVp-p 152mVp-p</p>



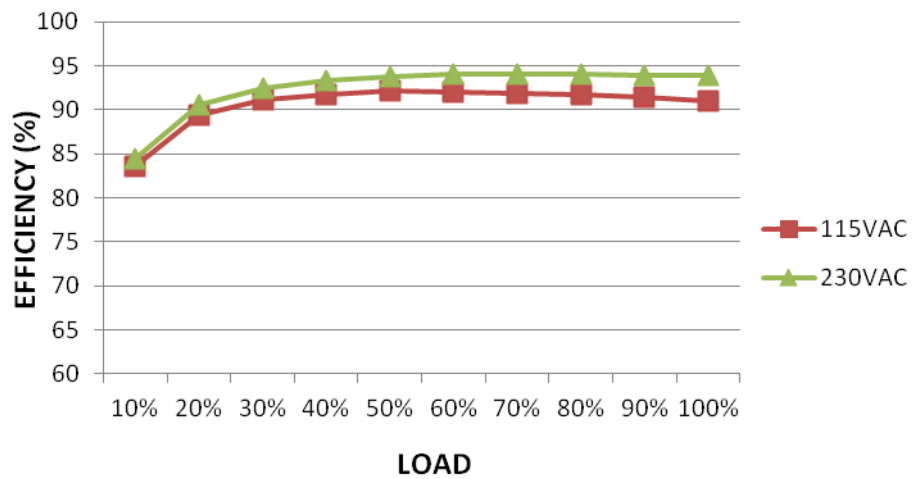
INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~264VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	74V~264V
			I/P: LOW-LINE-3V=87 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:100 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK
3	INPUT CURRENT (Typ.)	230V/ 5A 115V/ 8.5A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I=4.83A/ 230VAC I=8.255A/ 115VAC
4	LEAKAGE CURRENT	Earth leakage current <360uA/264VAC	I/P : 264 VAC O/P : Min LOAD Ta : 25°C	L-FG : 287uA N-FG : 290uA
		Touch leakage current < 100 uA/264VAC	I/P : 264 VAC O/P : Min LOAD Ta : 25°C	L-V+ : 84.6uA L-V-: 84.7uA N-V+: 84.5uA N-V-: 84.6uA
5	NO LOAD CONSUMPTION	< 0.75W	I/P : 115VAC I/P : 230VAC O/P : NO LOAD Ta : 25°C	< 0.394 W < 0.642 W
6	POWER FACTOR (Typ.)	0.95/ 230VAC 0.98/115VAC	I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC Ta : 25°C	PF=0.973/230VAC PF= 0.996/115VAC
			P.F vs LOAD	



7	EFFICIENCY(Typ.)	93%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	93.37%
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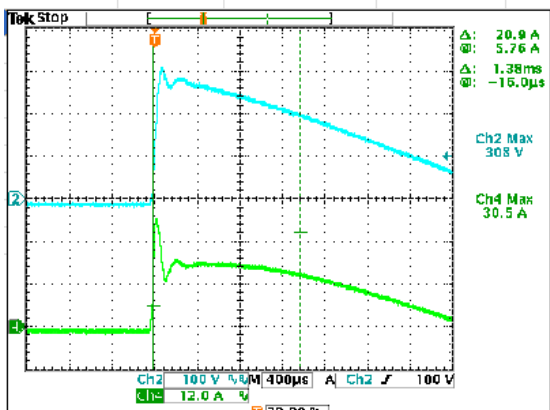
EFFICIENCY vs LOAD



8	INRUSH CURRENT(Typ.)	230V/40A 115V/20A COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I=30.5A/ 230VAC I=17A/ 115VAC T50= 1380us/230V
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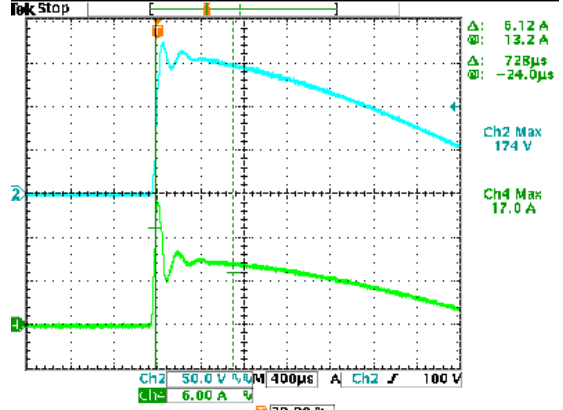
INPUT=230VAC/50HZ @ FULL LOAD

CH2 : AC Input Voltage CH4 : Input current (1V=1A)



INPUT=115VAC/ 60HZ @ FULL LOAD

CH2 : AC Input Voltage CH4 : Input current (1V=1A)

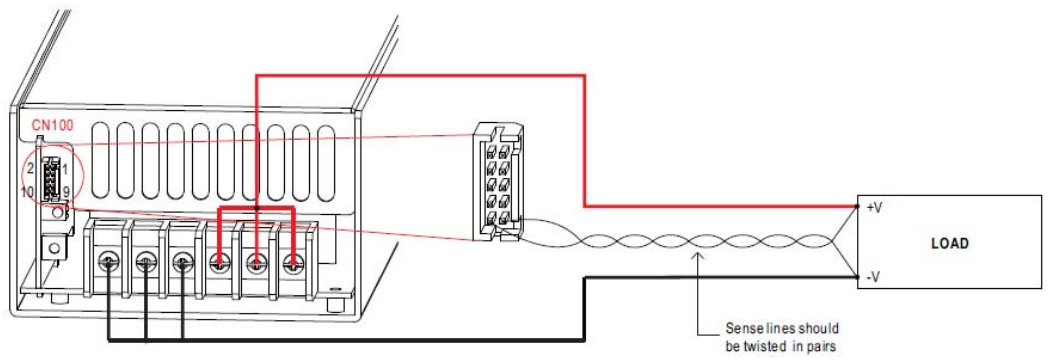
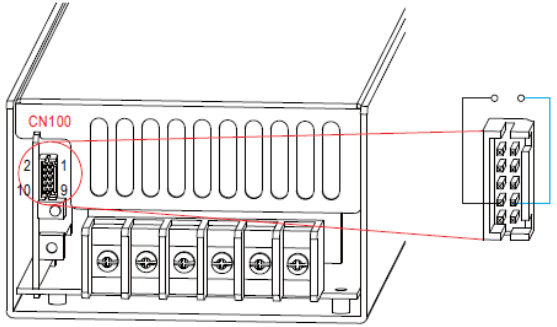


PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~ 135 % Protection type : Constant current limiting, recovers automatically after fault condition is removed	I/P: 264VAC I/P: 230VAC I/P: 115VAC O/P: TESTING Ta:25°C	118.41%/ 264VAC 118.44%/ 230VAC 118.41%/200VAC PROTECTION TYPE : Constant current limiting, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	29V~33V Protection type : Shut down o/p voltage, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 90VAC O/P: MIN LOAD Ta:25°C	30.741V/ 264VAC 30.797V/ 230VAC 30.737V/ 90VAC PROTECTION TYPE : Protection type : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	Protection type : Shut down o/p voltage, recovers automatically after temperature goes down	I/P: 264VAC I/P: 90VAC O/P: FULL LOAD	O.T.P. Active Protection type : Shut down o/p voltage, recovers automatically after temperature goes down
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 PROTECTION TYPE : Constant current limiting, recovers automatically after fault condition is removed

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT						
1	CURRENT SHARING	< 10%	I/P : 230 VAC O/P : FULL/50% LOAD Ta : 25°C	O/P : 90% PSU1 : 40.6A PSU2 : 38.9A PSU3 : 38.5A PSU4 : 38.8A O/P : 50% PSU1 : 22.9 A PSU2 : 22.2 A PSU3 : 22.5A PSU4 : 19.6A						
2	REMOTE ON/OFF CONTROL	<p>The PSU can be turned ON/OFF by using the "Remote Control" function.</p> <table border="1"> <thead> <tr> <th>Between RC+(pin3) and RC-(pin4)</th> <th>Output Status</th> </tr> </thead> <tbody> <tr> <td>SW ON (Short)</td> <td>ON</td> </tr> <tr> <td>SW OFF (Open)</td> <td>OFF</td> </tr> </tbody> </table> <p>I/P: 230 VAC O/P: FULL LOAD Ta:25°C TEST RESULT : OK</p>	Between RC+(pin3) and RC-(pin4)	Output Status	SW ON (Short)	ON	SW OFF (Open)	OFF		
Between RC+(pin3) and RC-(pin4)	Output Status									
SW ON (Short)	ON									
SW OFF (Open)	OFF									

3	REMOTE SENSE	<p>S+ / S- >0.5V</p>  <p>Sense lines should be twisted in pairs</p> <p>I/P: 230 VAC O/P:FULL LOAD Ta:25°C TEST RESULT: > 0.5 V</p>											
4	DC OK SIGNAL	<p>The TTL signal out, PSU turn on = 3.3 ~ 5.6V ; PSU turn off = 0 ~ 1V DC-OK signal is a TTL level signal. High when PSU turns on.</p> <table border="1" data-bbox="454 996 821 1097"> <thead> <tr> <th>Between DC-OK(pin7) and GND(pin6,8)</th> <th>Output Status</th> </tr> </thead> <tbody> <tr> <td>3.3 ~ 5.6V</td> <td>ON</td> </tr> <tr> <td>0 ~ 1V</td> <td>OFF</td> </tr> </tbody> </table>  <p>I/P:230VAC O/P:FULL LOAD Ta:25°C TEST RESULT: PSU turn on = 5.278V ; PSU turn off = 0.0048V.</p>	Between DC-OK(pin7) and GND(pin6,8)	Output Status	3.3 ~ 5.6V	ON	0 ~ 1V	OFF					
Between DC-OK(pin7) and GND(pin6,8)	Output Status												
3.3 ~ 5.6V	ON												
0 ~ 1V	OFF												
5	5V STANDBY	<p>5VSB : 5V@0.3A ; tolerance± 5%, ripple : 50mVp-p(max.)</p>	<p>I/P: 230 VAC O/P:FULL LOAD Ta:25°C</p>	<p>TEST RESULT : 4.93V / 0.304A Ripple : 4.2mVp-p</p>									
6	FAN CONTROL	<p>FAN ON/OFF BY BY NTC (RT50) OR LOAD</p>	<p>I/P: 230 VAC O/P:TESTING</p>	<p>TEST RESULT :</p> <table border="1" data-bbox="1149 1680 1500 1792"> <thead> <tr> <th></th> <th>TEMP.</th> <th>LOAD</th> </tr> </thead> <tbody> <tr> <td>FAN ON</td> <td>55°C</td> <td>>17.8%</td> </tr> <tr> <td>FAN OFF</td> <td>36°C</td> <td><17.1%</td> </tr> </tbody> </table>		TEMP.	LOAD	FAN ON	55°C	>17.8%	FAN OFF	36°C	<17.1%
	TEMP.	LOAD											
FAN ON	55°C	>17.8%											
FAN OFF	36°C	<17.1%											

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q911 Rated: 26A / 600V VGS : ±25V	I/P:High-Line +3V =303V AC ON/OFF 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. Ta:25°C	VDS: (1) 472V (2) 533V (3) 525V (4) 525V (5) 529V (6) 521V (7) 525V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated :34A / 600V VGS:±25V	I/P:High-Line +3V =303V 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)480 V (2)484V (3)496V (4)492V (5) 488V (6) 492V (7) 436V
3	P.F.C DIODE	D6 Rated : 10A / 600V	I/P:High-Line +3V =303V 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)393 V (2) 389V (3) 393V (4) 401V
4	SR MOSFET Peak Voltage	Q508 Rated: 100A / 80V Q506 Rated: 100A / 80V	I/P:High-Line +3V =303V 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. (8).NO LOAD (9) burst mode	Q508: VDS: (1) 67.4V (2)13.6 V (3) 65.8V (4) 66.6V (5) 66.6V (6) 65.8V (7) 68.2V (8)61.8V (9) 64.2V Q506: VDS: (1) 65V (2) 16V (3) 65.8V (4) 64.2V (5) 65V (6) 62.6V (7) 60.2V (9) 62.6V

			Ta:25°C													
5	Input Capacitor Voltage	C5 220µF / 400V	I/P:High-Line +3V =303V 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) 399V (2)399V (3) 398V (4) 398V												
6	Control IC Voltage Test	PFC IC U1 Absolute Rating: -0.3 V ~ 26 V Operating Range: 12.9 V ~ 25 V PWM IC U900 Absolute Rating: Self-limited Operating Range: 8.85 V ~ 16 V	I/P:High-Line +3V =303V AC ON/OFF 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	<table border="0"> <tr> <td>PFC IC</td> <td>PWM IC</td> </tr> <tr> <td>(1) 22.2V</td> <td>(1) 14.67V</td> </tr> <tr> <td>(2) 20.2V</td> <td>(2) 15.8V</td> </tr> <tr> <td>(3) 20.6V</td> <td>(3) 14.59V</td> </tr> <tr> <td>(4) 20.4V</td> <td>(4) 14.19V</td> </tr> <tr> <td>(5) 19.4V</td> <td>(5) 13.55V</td> </tr> </table>	PFC IC	PWM IC	(1) 22.2V	(1) 14.67V	(2) 20.2V	(2) 15.8V	(3) 20.6V	(3) 14.59V	(4) 20.4V	(4) 14.19V	(5) 19.4V	(5) 13.55V
PFC IC	PWM IC															
(1) 22.2V	(1) 14.67V															
(2) 20.2V	(2) 15.8V															
(3) 20.6V	(3) 14.59V															
(4) 20.4V	(4) 14.19V															
(5) 19.4V	(5) 13.55V															
7	TOP SWITCHING STAND BY POWER	U971 Rated: 1.8 A / 700V	I/P:High-Line +3V =303V AC ON/OFF O/P: (1)Full Load (2)Remote On/Off Ta:25°C	<table border="0"> <tr> <td>(1)548 V</td> <td>(1) 520V</td> </tr> <tr> <td>(2) 556V</td> <td>(2) 512V</td> </tr> </table>	(1)548 V	(1) 520V	(2) 556V	(2) 512V								
(1)548 V	(1) 520V															
(2) 556V	(2) 512V															
8	STAND BY Rectifier	D431 80V/5A (Ifsm 120A)	I/P:High-Line +3V =303 V AC ON/OFF O/P: (1)Full Load (2)Remote On/Off	(1) 79.1 V (2)80V												

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4.5KVAC/min I/P-FG :2KVAC/min O/P-FG:1.5KVAC/min	I/P-O/P: 4.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.8KVAC/min Ta:25°C	I/P-O/P:6.7 mA I/P-FG: 5.1mA O/P-FG: 5.1mA NO DAMAGE
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: 13.7GΩ I/P-FG: 30GΩ O/P-FG:21.2 GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	13mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	EN55032 /EN55011 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	Test by certified Lab
3	RADIATION	EN55032 /EN55011 CLASS A	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	Test by certified Lab



4	E.S.D	EN61000-4-2 MEDICAL AIR: 15KV / Contact: 8KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	EN61000-4-4 MEDICAL INDUSTRY INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-4-5 MEDICAL INDUSTRY L-N : 2KV L,N-PE : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	TEMPERATURE RISE TEST	MODEL : MSP-1000-24 1. ROOM AMBIENT BURN-IN : 1.5 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25 °C 2. HIGH AMBIENT BURN-IN : 1.5 HRS I/P : 230VAC O/P : FULL LOAD Ta= 60 °C		



		NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 60 °C
		1	BD1	44.4°C	78.3°C
		2	R6	48.0°C	81.7°C
		3	Q1	42.3°C	76.3°C
		4	U1	39.5°C	72.8°C
		5	D5	41.6°C	76.3°C
		6	D6	46.8°C	80.5°C
		7	C6	37.6°C	71.1°C
		8	D981	47.8°C	76.9°C
		9	RY1	47.1°C	79.6°C
		10	RG2	35.0°C	70.0°C
		11	D431	43.2°C	76.9°C
		12	C406	28.9°C	62.8°C
		13	TSW4	36.1°C	70.0°C
		14	L1	38.8°C	71.9°C
		15	T951	35.9°C	70.0°C
		16	C2	46.8°C	79.3°C
		17	LF3	44.5°C	79.7°C
		18	T1-1	57.6°C	92.0°C
		19	T1-2	55.3°C	89.6°C
		20	T2-1	50.6°C	83.5°C
		21	T2-2	47.2°C	81.3°C
		22	L900	30.5°C	65.0°C
		23	Q910	54.5°C	94.4°C
		24	C933	32.2°C	67.1°C
		25	Q911	54.4°C	92.6°C
		26	U900	42.7°C	78.0°C
		27	C906	30.2°C	65.9°C
		28	C106	33.1°C	68.4°C
		29	C109	27.1°C	62.5°C
		30	U501	41.6°C	78.3°C
		31	Q502	47.4°C	85.6°C
		32	Q504	49.2°C	87.7°C
		33	U504	42.3°C	79.8°C
		34	Q506	53.5°C	93.6°C
		35	Q508	50.0°C	90.8°C
		36	TSW3	31.8°C	67.7°C
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)		I/P : 230 VAC O/P : 127 % LOAD Ta : 25°C	TEST : OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR		I/P : 230VAC/90VAC O/P : 100% /80% LOAD Ta= -45°C	TEST : OK
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60°C HUMIDITY= 90 %R.H NO DAMAGE		I/P : 272 VAC O/P : FULL LOAD Ta= 60°C HUMIDITY= 95 %R.H	TEST : OK
5	TEMPERATURE COEFFICIENT	± 0.03 %/°C (0-60°C)		I/P : 230 VAC O/P : FULL LOAD	± 0.005 %/°C (0-60°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 : 10 CYCLE 5. Input/Output condition : STATIC
7	THERMAL SHOCK TEST	-40~60°C	1. Thermal shock Temperature : -45°C~ +65°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= 60°C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 60°C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 60°C LIFE TIME	(1) 1485023HRS (2) 128548HRS (3) 198531HRS (4) 262922HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 286.3K hrs min. Telcordia SR-332 (Bellcore) ; 105.7K hrs min. MIL-HDBK-217F (25°C)	
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 50,000 hours @ TA 60°C	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	DANIEL GAO	SANFORD SU	VINCENT TSENG

12.10.30 A50-F031