



Test Report: MSP-1000-48

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

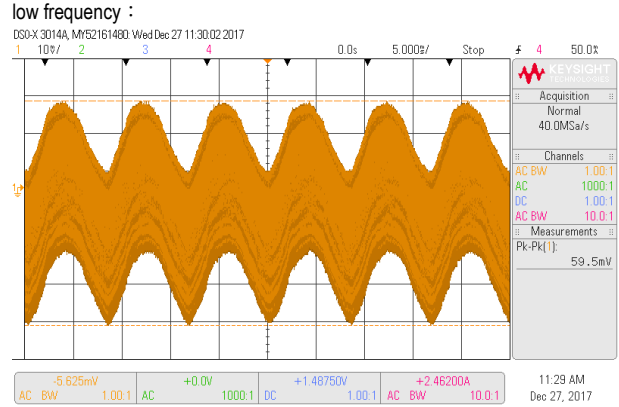
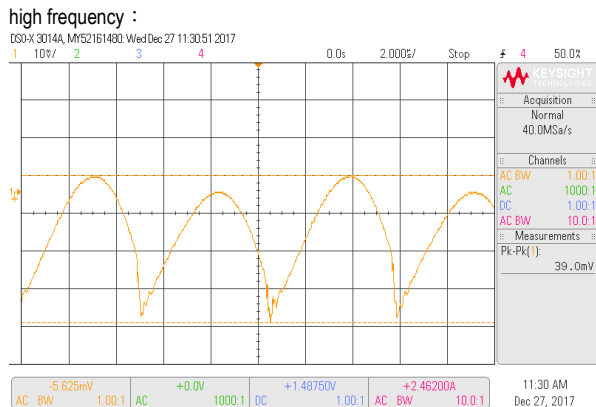
■ RELIABILITY TEST

ENVIRONMENT TEST

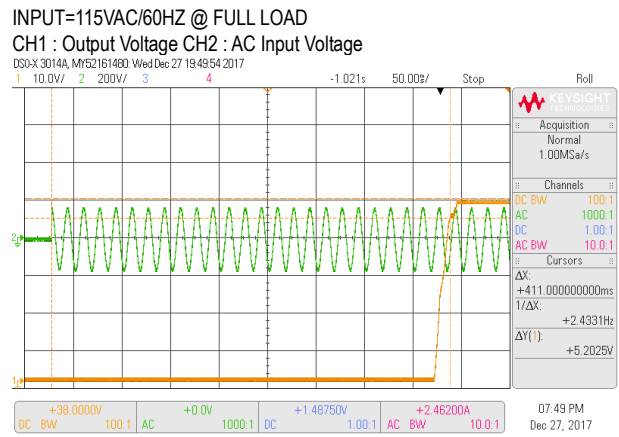
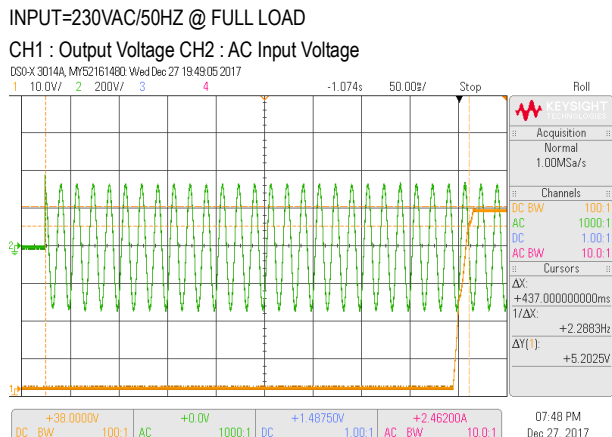
DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-------------------------------|------------------|---|--|
| 1 | OUTPUT VOLTAGE ADJUST RANGE | CH1: 46V~ 56 V | I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C | 43.57V~57.76V/230VAC 43.68V~57.73V/115VAC |
| 2 | OUTPUT VOLTAGE(Max) TOLERANCE | V1: 1%~ -1% | I/P: 200VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C | V1: 0.31 %~ 0 % |
| 3 | LINE REGULATION (Max) | V1: 0.5%~ -0.5 % | I/P: 200VAC~ 264VAC O/P:FULL LOAD Ta:25°C | V1: 0 % |
| 4 | LOAD REGULATION(Max) | V1: 0.5%~ -0.5 % | I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C | V1: 0 % |
| 5 | OVER/UNDERSHOOT TEST | < ±5% | I/P: 230VAC O/P:FULL LOAD Ta:25°C | < 5 % |
| 6 | RIPPLE & NOISE(Max) | V1: 250mVp-p | I/P:230VAC O/P:FULL LOAD Ta:25°C | V1: 39 mVp-p |



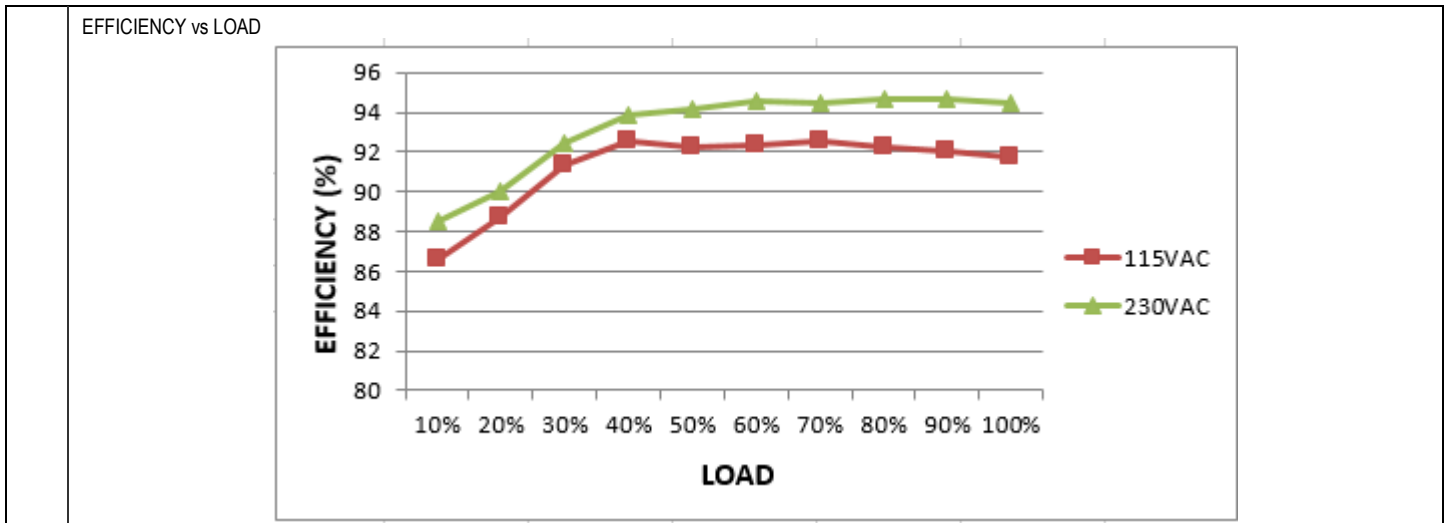
| | | | | |
|---|------------------|--------------------------------|--|----------------------------------|
| 7 | SET UP TIME(Max) | 230VAC/1000ms 115VAC/2000ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 437 ms 115VAC/ 411 ms |
|---|------------------|--------------------------------|--|----------------------------------|



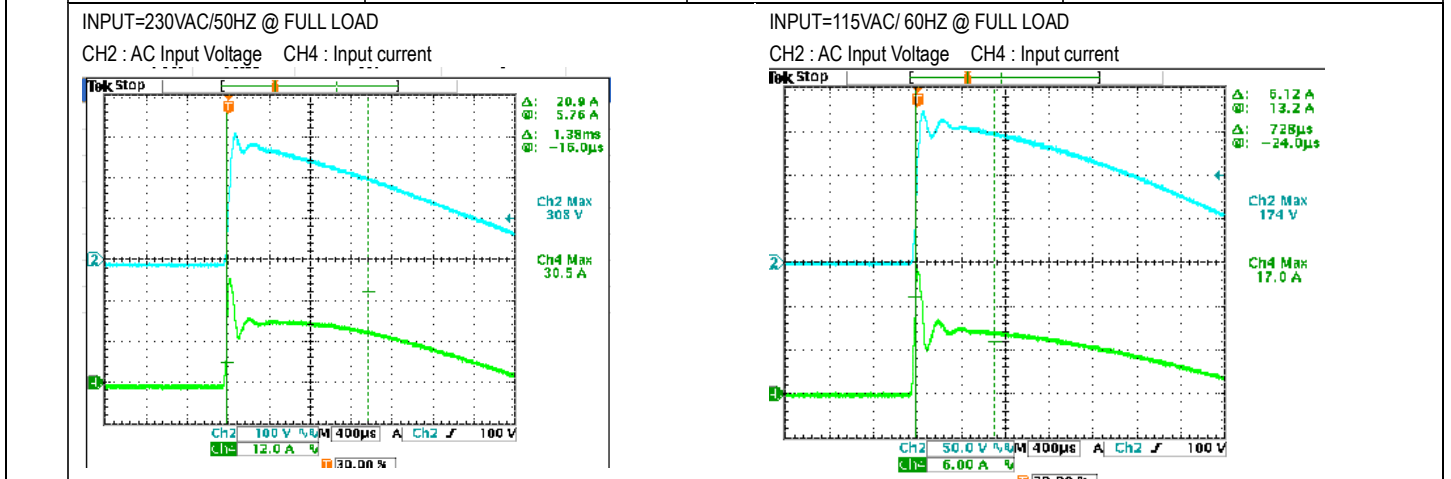
| | | | |
|--|----------------------------|---|----------------------------------|
| 8 RISE TIME (Max) | 230VAC/50ms 115VAC/50ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/18 ms 115VAC/ 16.6 ms |
| INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage | | INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage | |
| 9 HOLD UP TIME (Typ.) | 230VAC/16ms 115VAC/16ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/21.6 ms 115VAC/25.6 ms |
| INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage | | INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage | |
| 10 DYNAMIC LOAD | V1: 4800 mVp-p | I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C | 255mVp-p 225mVp-p |
| FULL /50% LOAD 50%DUTY / 120HZ | | FULL /50% LOAD 50%DUTY / 1KHZ | |

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 | 73V~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=4.8A/ 230VAC I=8.21A/ 115VAC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | LEAKAGE CURRENT | Earth leakage current < 360 uA/264VAC | I/P : 264 VAC O/P : Min LOAD Ta : 25°C | L-FG : 300uA N-FG : 298uA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 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 | < 0.412 W < 0.671 W | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | POWER FACTOR (Typ.) | 0.95/ 230VAC 0.98/115VAC | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | PF=0.973/230VAC PF=0.996/115VAC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>P.F vs LOAD</p> <table border="1"> <caption>Approximate data from P.F vs LOAD graph</caption> <thead> <tr> <th>LOAD (%)</th> <th>PF (115VAC)</th> <th>PF (230VAC)</th> </tr> </thead> <tbody> <tr><td>10%</td><td>0.90</td><td>0.65</td></tr> <tr><td>20%</td><td>0.95</td><td>0.82</td></tr> <tr><td>30%</td><td>0.97</td><td>0.88</td></tr> <tr><td>40%</td><td>0.98</td><td>0.92</td></tr> <tr><td>50%</td><td>0.99</td><td>0.94</td></tr> <tr><td>60%</td><td>0.99</td><td>0.95</td></tr> <tr><td>70%</td><td>0.99</td><td>0.96</td></tr> <tr><td>80%</td><td>0.99</td><td>0.97</td></tr> <tr><td>90%</td><td>0.99</td><td>0.97</td></tr> <tr><td>100%</td><td>0.99</td><td>0.98</td></tr> </tbody> </table> | | | | | LOAD (%) | PF (115VAC) | PF (230VAC) | 10% | 0.90 | 0.65 | 20% | 0.95 | 0.82 | 30% | 0.97 | 0.88 | 40% | 0.98 | 0.92 | 50% | 0.99 | 0.94 | 60% | 0.99 | 0.95 | 70% | 0.99 | 0.96 | 80% | 0.99 | 0.97 | 90% | 0.99 | 0.97 | 100% | 0.99 | 0.98 |
| LOAD (%) | PF (115VAC) | PF (230VAC) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10% | 0.90 | 0.65 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20% | 0.95 | 0.82 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30% | 0.97 | 0.88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40% | 0.98 | 0.92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50% | 0.99 | 0.94 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60% | 0.99 | 0.95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70% | 0.99 | 0.96 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80% | 0.99 | 0.97 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90% | 0.99 | 0.97 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100% | 0.99 | 0.98 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | EFFICIENCY(Typ.) | 94% | I/P:230 VAC O/P:FULL LOAD Ta:25°C | 94.2 % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| | | | | |
|---|----------------------|------------------------------------|--|---|
| 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= 1380 us/230V |
|---|----------------------|------------------------------------|--|---|



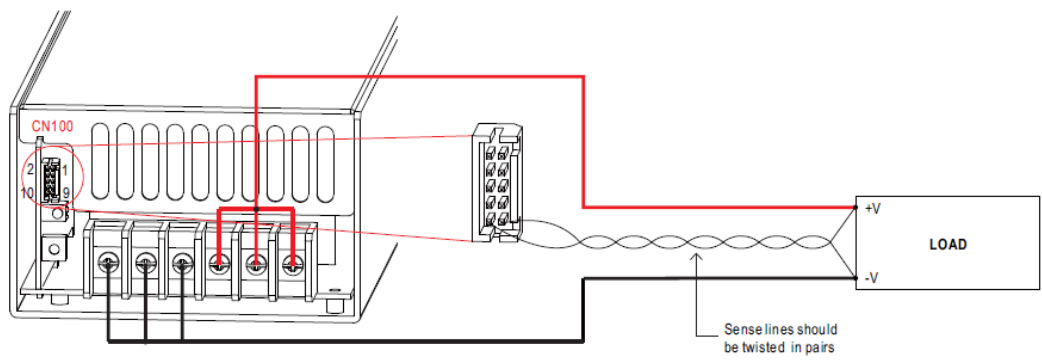
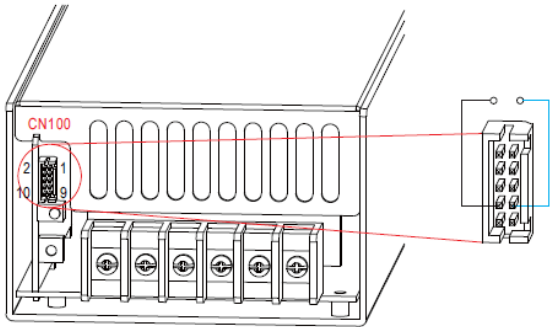
PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDION | 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: 200AC O/P:TESTING Ta:25°C | 115.03%/ 264VAC 115.03%/ 230VAC 115.04%/200VAC PROTECTION TYPE : Constant current limiting, recovers automatically after fault condition is removed |

| | | | | |
|---|-----------------------------|--|--|---|
| 2 | OVER VOLTAGE PROTECTION | 58V~65V 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 | 60.97V/ 264VAC 60.97V/ 230VAC 60.98V/ 90VAC 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 PROTECTION TYPE : | 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 : 19.4A PSU2 : 19.3A PSU3 : 19.4A PSU4 : 20.3A O/P : 50% PSU1 : 10.9A PSU2 : 10.2A PSU3 : 10.3A PSU4 : 11.8A | | | | | | |
| 2 | REMOTE ON/OFF CONTROL | <p>The PSU can be turned ON/OFF by using the "Remote Control" function.</p> <table border="1"> <tr> <td>Between RC+(pin3) and RC-(pin4)</td> <td>Output Status</td> </tr> <tr> <td>SW ON (Short)</td> <td>ON</td> </tr> <tr> <td>SW OFF (Open)</td> <td>OFF</td> </tr> </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 | S+ / S- >0.5V | | | | | | | | |

| | |  <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="454 929 821 1041"> <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 = 5.27V PSU turn off = 0.005V</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 | 5VSB : 5V@0.3A ; tolerance± 5%, ripple : 50mVp-p(max.) | I/P: 230 VAC O/P:FULL LOAD Ta:25°C | TEST RESULT : 5.035V /0.3A Ripple : 3.2 mVp-p | | | | | | | | | |
| 6 | FAN CONTROL | FAN ON/OFF BY BY NTC (RT50) OR LOAD | I/P: 230 VAC O/P:TESTING | <table border="1" data-bbox="1149 1601 1508 1702"> <thead> <tr> <th></th> <th>TEMP.</th> <th>LOAD</th> </tr> </thead> <tbody> <tr> <td>FAN ON</td> <td>55°C</td> <td>>10.4%</td> </tr> <tr> <td>FAN OFF</td> <td>36°C</td> <td><10%</td> </tr> </tbody> </table> | | TEMP. | LOAD | FAN ON | 55°C | >10.4% | FAN OFF | 36°C | <10% |
| | TEMP. | LOAD | | | | | | | | | | | |
| FAN ON | 55°C | >10.4% | | | | | | | | | | | |
| FAN OFF | 36°C | <10% | | | | | | | | | | | |

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 | I/P:High-Line +3V =303V AC ON/OFF VDS: O/P: (1)Full Load (2)Output Short | VDS: (1)506V (2)490V |

| | | | | |
|---|---|--|--|--|
| | | | <p>(3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz</p> <p>(4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz</p> <p>(5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz</p> <p>(6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz</p> <p>(7)0%→400% Load. Ta:25°C</p> | <p>(3)510V</p> <p>(4)510V</p> <p>(5)506V</p> <p>(6)510V</p> <p>(7)490V</p> |
| 2 | P.F.C Transistor (D to S) or (C to E) Peak Voltage | Q1 Rated: 34A / 600V | <p>I/P:High-Line +3V =303V V</p> <p>AC ON/OFF</p> <p>O/P: (1)Full Load</p> <p>(2)Output Short</p> <p>(3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz</p> <p>(4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz</p> <p>(5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz</p> <p>(6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz</p> <p>(7)0%→400% Load. Ta:25°C</p> | <p>VDS:</p> <p>(1) 490V</p> <p>(2) 510V</p> <p>(3) 502V</p> <p>(4) 506V</p> <p>(5) 510V</p> <p>(6) 506V</p> <p>(7) 494V</p> |
| 3 | P.F.C DIODE | D6 Rated: 10A / 600V | <p>I/P:High-Line +3V =303V V</p> <p>AC ON/OFF</p> <p>O/P: (1)Full Load</p> <p>(2)Output Short</p> <p>(3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz</p> <p>(4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz</p> <p>Ta:25°C</p> | <p>(1) 405V</p> <p>(2) 413V</p> <p>(3) 389V</p> <p>(4) 397V</p> |
| 4 | SR MOSFET Peak Voltage | Q508 Rated: 76A / 150V Q506 Rated: 76A / 150V | <p>I/P:High-Line +3V =303V V</p> <p>AC ON/OFF</p> <p>O/P: (1)Full Load</p> <p>(2)Output Short</p> <p>(3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz</p> <p>(4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz</p> <p>(5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz</p> <p>(6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz</p> <p>(7)0%→400% Load.</p> <p>(8).NO LOAD</p> <p>(9) burst mode</p> <p>Ta:25°C</p> | <p>Q508: Q506:</p> <p>VDS: VDS:</p> <p>(1)118.2V (1)119.4V</p> <p>(2)6.0V (2)13.3V</p> <p>(3)118.6V (3)118.6V</p> <p>(4)117.8V (4)120.2V</p> <p>(5)116.2V (5)118.6V</p> <p>(6)117.8V (6)118.6V</p> <p>(7)113.8V (7)114.6V</p> <p>(8)48.4V (8)113.8V</p> <p>(9)116.2V (9)117.8V</p> |
| 5 | Input Capacitor Voltage | C5 220μF / 400V | <p>I/P:High-Line +3V =303VV</p> <p>O/P: (1)Full Load input on/off</p> <p>(2) Min load input on /Off</p> <p>(3)Full Load /Min load Change</p> <p>(4)Full load continue</p> <p>Ta:25°C</p> | <p>(1)399V</p> <p>(2)399V</p> <p>(3)398V</p> <p>(4) 398V</p> |

| | | | | |
|---|------------------------------|--|---|--|
| 6 | Control IC Voltage Test | <p>PFC IC U1 Absolute Rating: -0.3 V ~ 26 V Operating Range: 12.9 V ~ 25 V</p> <p>PWM IC U900 Absolute Rating: Self-limited Operating Range: 8.85 V ~ 16 V</p> | <p>I/P:High-Line +3V =303V V 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</p> | <p>(1) 21.5V (2) 21.9V (3) 21.3V (4) 19.5V (5) 15.2V</p> <p>(1) 14.63V (2) 14.87V (3) 15.03V (4) 14.07V (5) 13.51V</p> |
| 7 | TOP SWITCHING STAND BY POWER | U971 Rated : 1.8 A / 700V | <p>I/P:High-Line +3V =303V V AC ON/OFF O/P: (1)Full Load (2)Remote On/Off Ta:25°C</p> | <p>(1) 535V (2) 543V</p> |

SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------|---|--|--|
| 1 | WITHSTAND VOLTAGE | <p>I/P-O/P: 4.5KVAC/min I/P-FG :2KVAC/min O/P-FG:1.5KVAC/min</p> | <p>I/P-O/P: 4.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.8KVAC/min Ta:25°C</p> | <p>I/P-O/P:6.7mA I/P-FG:5.44mA O/P-FG:5.2m A NO DAMAGE</p> |
| 2 | ISOLATION RESISTANCE | <p>I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ</p> | <p>I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C</p> | <p>I/P-O/P: 23.8GΩ I/P-FG:23.2 GΩ O/P-FG:30 GΩ NO DAMAGE</p> |
| 3 | GROUNDING CONTINUITY | <p>FG(PE) TO CHASSIS OR TRACE < 100 mΩ</p> | <p>40A / 2min Ta:25°C</p> | <p>13 mΩ</p> |

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|------------|---|---|---------------------------------------|
| 1 | HARMONIC | <p>EN61000-3-2 CLASS A</p> | <p>I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C</p> | <p>PASS</p> |
| 2 | CONDUCTION | <p>EN55032 /EN55011 CLASS B</p> | <p>I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C</p> | <p>PASS Test by certified Lab</p> |
| 3 | RADIATION | <p>EN55032 /EN55011 CLASS B</p> | <p>I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C</p> | <p>PASS Test by certified Lab</p> |
| 4 | E.S.D | <p>EN61000-4-2 MEDICAL AIR: 15KV / Contact: 8KV</p> | <p>I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C</p> | <p>CRITERIA A</p> |
| 5 | E.F.T | <p>EN61000-4-4 MEDICAL INDUSTRY INPUT : 2KV</p> | <p>I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C</p> | <p>CRITERIA A</p> |
| 6 | SURGE | <p>IEC61000-4-5 MEDICAL INDUSTRY L-N : 2KV L,N-PE : 4KV</p> | <p>I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C</p> | <p>CRITERIA A</p> |

| | |
|---|---|
| 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-1000-48 | | | | | |
| | | 1. ROOM AMBIENT BURN-IN : 1.5 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25 °C | | | | | |
| | | 2. HIGH AMBIENT BURN-IN : 1 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 | 47.0°C | 83.0°C |
| | | | | 2 | R6 | 48.5°C | 85.1°C |
| | | | | 3 | Q1 | 40.5°C | 77.3°C |
| | | | | 4 | U1 | 39.9°C | 76.1°C |
| | | | | 5 | D5 | 35.5°C | 71.9°C |
| | | | | 6 | D6 | 45.3°C | 83.1°C |
| | | | | 7 | C6 | 33.0°C | 68.5°C |
| | | | | 8 | D981 | 40.0°C | 76.3°C |
| | | | | 9 | RY1 | 36.3°C | 73.0°C |
| | | | | 10 | RG2 | 45.3°C | 82.2°C |
| | | | | 11 | D431 | 46.3°C | 81.4°C |
| | | | | 12 | C406 | 26.6°C | 62.7°C |
| | | | | 13 | TSW4 | 34.2°C | 70.6°C |
| | | | | 14 | L1 | 47.5°C | 82.2°C |
| | | | | 15 | T951 | 39.7°C | 75.8°C |
| | | | | 16 | C2 | 33.0°C | 69.6°C |
| | | | | 17 | LF3 | 36.5°C | 73.5°C |
| | | | | 18 | T1-1 | 51.5°C | 87.4°C |
| | | | | 19 | T1-2 | 48.4°C | 84.4°C |
| | | | | 20 | T2-1 | 49.9°C | 85.6°C |
| | | | | 21 | T2-2 | 42.7°C | 79.1°C |
| | | | | 22 | L900 | 43.3°C | 80.2°C |
| | | | | 23 | Q910 | 50.1°C | 90.1°C |
| | | | | 24 | C933 | 31.2°C | 67.4°C |
| | | | | 25 | Q911 | 47.4°C | 87.0°C |
| | | | | 26 | U900 | 30.4°C | 66.6°C |
| | | | | 27 | C906 | 26.7°C | 62.9°C |
| | | | | 28 | C106 | 30.9°C | 67.2°C |
| | | | | 29 | C109 | 28.0°C | 64.0°C |
| | | | | 30 | U501 | 33.0°C | 69.7°C |
| | | | | 31 | Q502 | 44.3°C | 81.2°C |
| | | | | 32 | Q504 | 43.1°C | 79.6°C |
| | | | | 33 | U504 | 37.2°C | 73.8°C |
| | | 34 | Q506 | 51.5°C | 88.7°C | | |
| | | 35 | Q508 | 43.4°C | 80.3°C | | |
| | | 36 | TSW3 | 27.6°C | 63.7°C | | |



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|----|---|---|---|---|
| 2 | OVER LOAD BURN-IN TEST | NO DAMAGE 1 HOUR (MIN) | I/P : 230 VAC O/P : 115 % 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 | ± 0.009 %/°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) 2272135HRS (2) 183566HRS (3) 236909HRS (4) 268024HRS |
| 10 | MTBF | Conducted by Parts Stress Analysis Prediction 850.5K hrs min. Telcordia SR-332 (Bellcore) ; 105.8K hrs min. MIL-HDBK-217F (25) | | |
| 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 |

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