



Test Report: DRS-480-48

480W All-In-One Intelligent Security Power

■ 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

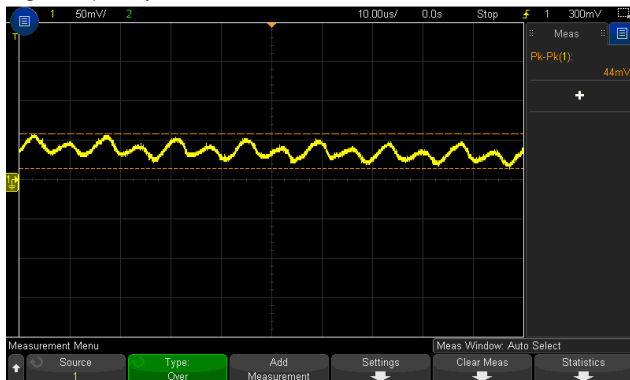
ENVIRONMENT TEST

■ DESIGN VERIFY TEST

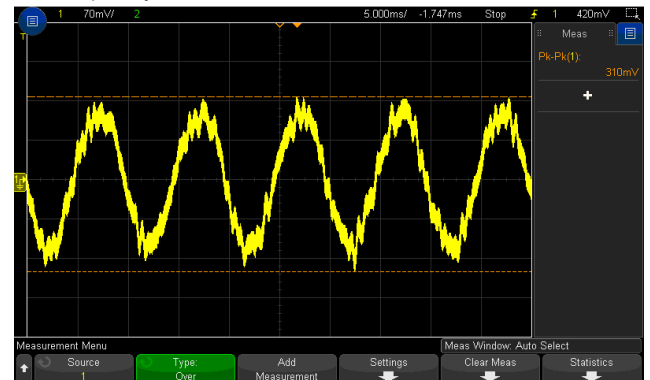
OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-------------------------------|-------------------------|--|----------------------|
| 1 | OUTPUT VOLTAGE(Max) TOLERANCE | V1: -1.0%~ +1.0 % | I/P: 90VAC /305VAC O/P:FULL/ MIN. LOAD Ta:25°C | V1: -0.0209%~0.0625% |
| 2 | LINE REGULATION (Max) | V1: -0.5%~ +0.5 % | I/P: 90VAC~ 305VAC O/P:FULL LOAD Ta:25°C | V1: 0%~ 0.0229 % |
| 3 | LOAD REGULATION(Max) | V1: -0.5%~ +0.5 % | I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C | V1: -0.0209%~0.0625% |
| 4 | OVER/UNDERSHOOT TEST | < ±5% | I/P: 230VAC O/P:FULL LOAD Ta:25°C | 1.30% |
| 5 | RIPPLE & NOISE(Max) | V1: 480mVp-p/ FULL LOAD | I/P:230VAC O/P: TESTING LOAD Ta:25°C | V1: 310mVp-p |

high frequency :



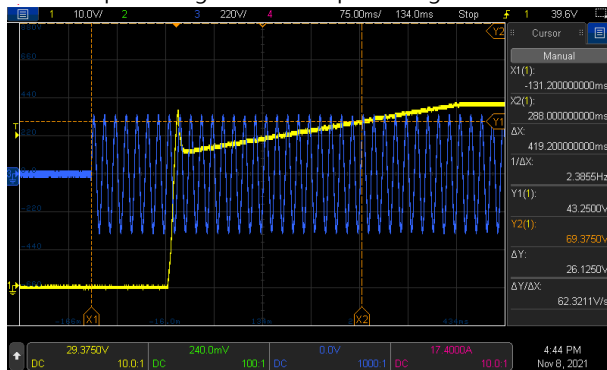
low frequency :



| | | | | |
|---|------------------|--------------------------------|--|--------------------------------|
| 6 | SET UP TIME(Max) | 230VAC/2400ms 115VAC/2400ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/419.2ms 115VAC/430ms |
|---|------------------|--------------------------------|--|--------------------------------|

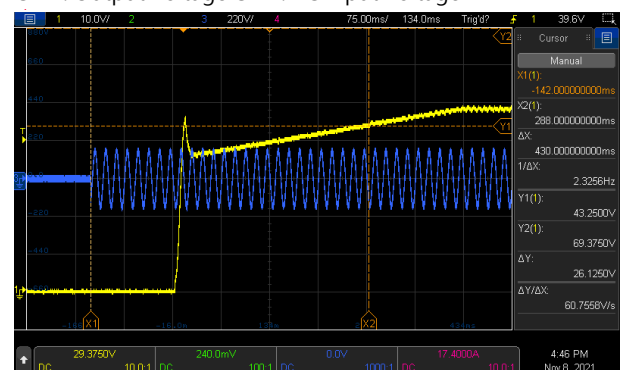
INPUT=230VAC/50HZ @ FULL LOAD

CH1 : Output Voltage CH2 : AC Input Voltage



INPUT=115VAC/60HZ @ FULL LOAD

CH1 : Output Voltage CH2 : AC Input Voltage



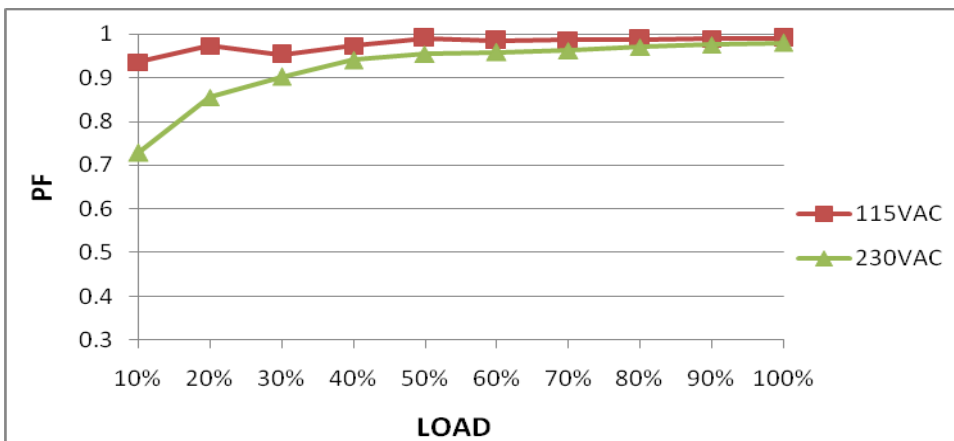
| | | | | |
|--------------------------------|---------------------|--------------------------------|---|--------------------------------|
| 7 | RISE TIME (Max) | 230VAC/1000ms 115VAC/1000ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/305ms 115VAC/298ms |
| INPUT=230VAC/50HZ @ FULL LOAD | | INPUT=115VAC/60HZ @ FULL LOAD | | |
| | | | | |
| 8 | HOLD UP TIME (Typ.) | 230VAC/16ms 115VAC/10ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/20.8ms 115VAC/20.2ms |
| INPUT=230VAC/50HZ @ FULL LOAD | | INPUT=115VAC/60HZ @ FULL LOAD | | |
| | | | | |
| 9 | DYNAMIC LOAD | V1: 4800mVp-p | I/P: 230VAC O/P: (1)FULL/MIN LOAD 50%DUTY / 120HZ (2)FULL/MIN LOAD 50%DUTY / 1KHZ Ta:25°C | (1) 2770mVp-p (2) 1260mVp-p |
| FULL /50% LOAD 50%DUTY / 120HZ | | FULL /50% LOAD 50%DUTY / 1KHZ | | |
| | | | | |

| | | | | |
|---|-------------------------|----------------|---|----------|
| 8 | TRANSIENT RECOVERY TIME | V1: 2400 mVp-p | I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 5A/us | 820mVp-p |
|---|-------------------------|----------------|---|----------|

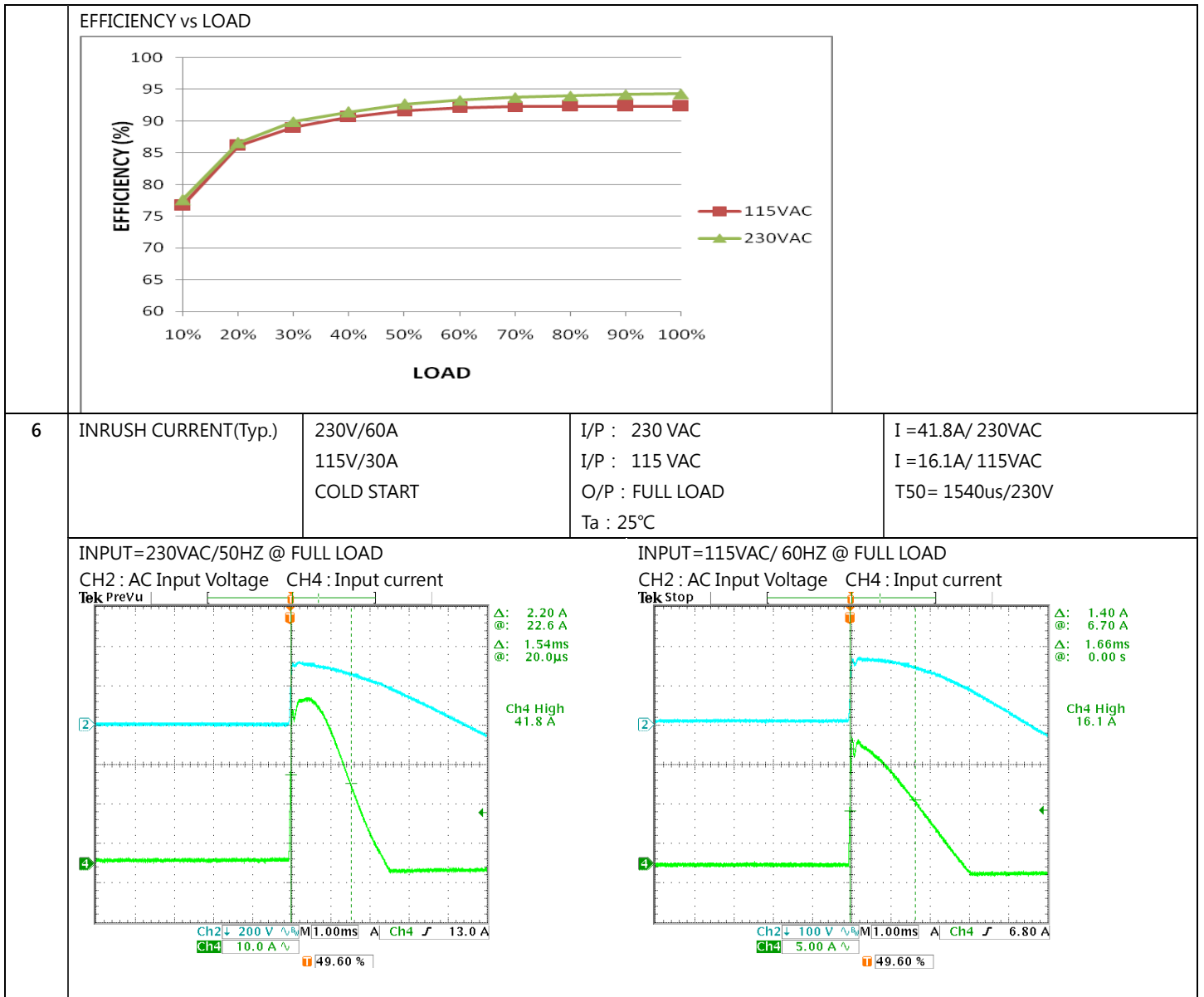
INPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------------------|--------------------------------|--|---|
| 1 | INPUT VOLTAGE RANGE | 90VAC~305VAC 127VDC~ 431VDC | (1) I/P:TESTING O/P:FULL LOAD (2) I/P:DC TESTING(L:+ N:-) O/P: FULL / 50% LOAD (3) I/P:DC TESTING(L:- N:+) O/P: FULL / 50% LOAD Ta:25°C I/P: LOW-LINE =90V HIGH-LINE+10=315 V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE) | (1) 88.7V~305V/full load 88.7V ~305V/90% load (2) 120Vdc~431Vdc/FULL LOAD 120Vdc~431Vdc/50% LOAD (3) 120Vdc~431Vdc/FULL LOAD 120Vdc~431Vdc/50% LOAD TEST: OK |
| 2 | INPUT FREQUENCY RANGE | 47HZ ~63 HZ NO DAMAGE | I/P:90 VAC ~305VAC O/P:FULL~MIN LOAD Ta:25°C | TEST: OK |
| 3 | INPUT CURRENT (Typ.) | 230V/ 2.7 A 115V/ 5.4 A | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I =2.25A/ 230VAC I =4.56A/ 115VAC |
| 4 | 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=0.9814/230VAC PF=0.9889/115VAC |

P.F vs LOAD



| | | | | |
|---|------------------|-----|---|--------|
| 5 | EFFICIENCY(Typ.) | 93% | I/P:230 VAC O/P:FULL LOAD Ta:25°C | 94.20% |
|---|------------------|-----|---|--------|



PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-------------------------|---|---|---|
| 1 | OVER LOAD PROTECTION | 105%~135% Protection type: Constant current limiting, shutdown output voltage after 5 sec | I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P:TESTING Ta:25°C | 120.58%/ 305VAC 120.58%/ 230VAC 120.58%/100VAC Protection type: Constant current limiting, shutdown output voltage after 5 sec |
| 2 | OVER VOLTAGE PROTECTION | Load main output : 64.8V~74.5V Protection type : Shut down o/p voltage, re-power on to recover | I/P: 305VAC I/P: 230VAC I/P: 90VAC O/P:MIN LOAD Ta:25°C | 68.5V/ 305VAC 68.5V/ 230VAC 68.5V/ 90VAC Protection type : Shut down o/p voltage, re-power on to recover |

| | | | | |
|---|-----------------------------|---|--|---|
| 3 | OVER TEMPERATURE PROTECTION | Protection type : Automatically drop load with temperature only for bat. load Shut down o/p voltage, recovers automatically after temperature goes down | I/P: 305VAC I/P: 90VAC O/P:FULL LOAD | O.T.P. Active OK Protection type : Automatically drop load with temperature only for bat. load Shut down o/p voltage, recovers automatically after temperature goes down |
| 4 | SHORT PROTECTION | SHORT EVERY OUTPUT Constant current Range: 11.5A~12.5A 1 HOUR NO DAMAGE | I/P: 305VAC I/P: 90VAC O/P: FULL LOAD Ta:25°C | NO DAMAGE OK Constant current Range: 11.985A |
| 5 | BATTERY CUT OFF | 41.8±1V | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | 41.82 V |
| 6 | REVERSE POLARITY | By internal MOSFET, no damage, recovers automatically after fault condition is removed. | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | OK By internal MOSFET, no damage, recovers automatically after fault condition is removed. |

CONTROL FUNCTION TEST

| N O | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|-----|--------------|---|---|--|
| 1 | FORM-C RELAY | AC FAIL | Signals AC failure and activates when input voltage drops below : 79~89V of 120VAC, 132~187V of 220VAC. Relay contact output, ON : AC OK ; OFF : AC Fail ; max. rating : 30V/1A | TEST : <u>OK</u> <u>84.9 V</u> of 120VAC, <u>171.6V</u> of 220VAC. |
| | | CHARGER FAIL | Relay contact output, ON : Charger OK ; OFF : Charger Fail ; max. rating : 30V/1A | TEST : <u>OK</u> |
| | | DC OK | Signals normal DC output and activates when output voltage > 90% rated value. Relay contact output, ON : DC OK ; OFF : DC Fail ; max. rating : 30V/1A | TEST : <u>OK</u> |
| | | BATTERY LOW/ ABNORMAL/ DISCONNECTED | Relay contact output, ON : Battery OK ; OFF : Battery Low ; max. rating : 30V/1A ; Battery low voltage : < 44V | TEST : <u>OK</u> <u>Vbat <44.13V</u> |

| 2 | BATTERY START | Restart system directly from battery and does not require AC power | I/P: BAT O/P:FULL LOAD Ta:25°C | TEST : <u>OK</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|--|--|--|--|-----------------|-------|---------|------------------|------------------|--------------------|---------|------------|------------|-------------|--------------|-----------------|--------|--------|-----------------|--------|------------------|-------------|-----------------------|--------------|---------------------|--|---------------------|--------------------------|---------------------|---------------------------------------|---------------------|------------------|---------------------|------------------|---------------------|---------|---------------------|------------------|
| 3 | DC-UPS | UPS switch to battery power within 10ms of AC failure | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | TEST : <u>OK</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ADJUSTABLE CURRENT RANGE | 20% ~ 100% charging current adjustable by VR | I/P : 230 VAC O/P : TESTING LOAD Ta : 25°C | 17.11%~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | LED INDICATOR | <table border="1"> <thead> <tr> <th>Function</th> <th>Description</th> <th>Output of alarm</th> </tr> </thead> <tbody> <tr> <td rowspan="2">DC OK</td> <td>DC fail</td> <td>OFF </td> </tr> <tr> <td>DC OK</td> <td>Green </td> </tr> <tr> <td rowspan="2">AC fail</td> <td>AC fail</td> <td>Red </td> </tr> <tr> <td>AC OK</td> <td>OFF </td> </tr> <tr> <td rowspan="2">Charging status</td> <td>Float</td> <td>Green </td> </tr> <tr> <td>Charging: CC/CV</td> <td>Orange </td> </tr> <tr> <td rowspan="8">System diagnosis</td> <td>Discharging</td> <td>Orange: 1 Blink/Pause </td> </tr> <tr> <td>Charger fail</td> <td>Red : 1 Blink/Pause </td> </tr> <tr> <td>Battery overvoltage / Battery reverse polarity</td> <td>Red : 2 Blink/Pause </td> </tr> <tr> <td>Battery low / No Battery</td> <td>Red : 3 Blink/Pause </td> </tr> <tr> <td>Battery discharge peak power timeout.</td> <td>Red : 4 Blink/Pause </td> </tr> <tr> <td>Overload / short</td> <td>Red : 5 Blink/Pause </td> </tr> <tr> <td>Over temperature</td> <td>Red : 6 Blink/Pause </td> </tr> <tr> <td>Timeout</td> <td>Red : 7 Blink/Pause </td> </tr> </tbody> </table> <p>I/P: TESTING VAC O/P:TESTING LOAD Ta:25°C</p> | Function | Description | Output of alarm | DC OK | DC fail | OFF | DC OK | Green | AC fail | AC fail | Red | AC OK | OFF | Charging status | Float | Green | Charging: CC/CV | Orange | System diagnosis | Discharging | Orange: 1 Blink/Pause | Charger fail | Red : 1 Blink/Pause | Battery overvoltage / Battery reverse polarity | Red : 2 Blink/Pause | Battery low / No Battery | Red : 3 Blink/Pause | Battery discharge peak power timeout. | Red : 4 Blink/Pause | Overload / short | Red : 5 Blink/Pause | Over temperature | Red : 6 Blink/Pause | Timeout | Red : 7 Blink/Pause | TEST : <u>OK</u> |
| Function | Description | Output of alarm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC OK | DC fail | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DC OK | Green | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AC fail | AC fail | Red | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | AC OK | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Charging status | Float | Green | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Charging: CC/CV | Orange | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| System diagnosis | Discharging | Orange: 1 Blink/Pause | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Charger fail | Red : 1 Blink/Pause | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Battery overvoltage / Battery reverse polarity | Red : 2 Blink/Pause | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Battery low / No Battery | Red : 3 Blink/Pause | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Battery discharge peak power timeout. | Red : 4 Blink/Pause | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Overload / short | Red : 5 Blink/Pause | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Over temperature | Red : 6 Blink/Pause | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Timeout | Red : 7 Blink/Pause | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | FORCE BUTTON | Bat over discharge protection < 70%Bat rated | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | TEST : <u>70.1%</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Battery Discharge Peak power | a) 2 Peak power > 4 min ; b) 3 Peak power > 4 s ; | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | a) TEST : <u>OK</u> b) TEST : <u>OK</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | TEMPERATURE COMPENSATION | <table border="1"> <thead> <tr> <th colspan="4">Constant Voltage</th> </tr> <tr> <th>SPEC:</th> <th>Ta=0°C (17K Ω)</th> <th>Ta=25°C (5K Ω)</th> <th>Ta=50°C (1.7K Ω)</th> </tr> </thead> <tbody> <tr> <td></td> <td>59.4±0.48V</td> <td>57.6±0.48V</td> <td>56.52±0.48V</td> </tr> <tr> <td>TEST RESULT:</td> <td>59.28V</td> <td>57.49V</td> <td>56.45V</td> </tr> </tbody> </table> <p>I/P: 230 VAC O/P:BAT. LOAD Ta:25°C</p> | Constant Voltage | | | | SPEC: | Ta=0°C (17K Ω) | Ta=25°C (5K Ω) | Ta=50°C (1.7K Ω) | | 59.4±0.48V | 57.6±0.48V | 56.52±0.48V | TEST RESULT: | 59.28V | 57.49V | 56.45V | | | | | | | | | | | | | | | | | | | | |
| Constant Voltage | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SPEC: | Ta=0°C (17K Ω) | Ta=25°C (5K Ω) | Ta=50°C (1.7K Ω) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 59.4±0.48V | 57.6±0.48V | 56.52±0.48V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TEST RESULT: | 59.28V | 57.49V | 56.45V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COMPONENT STRESS TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | |
|----|---|--|--|--|--|
| 1 | PWM Transistor (D to S) or (C to E) Peak Voltage | Q 15/Q16ated : 25 A/ 600V | AC ON/OFF I/P: High-Line +3V =308V 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 | Q15 VDS: (1) 519V (2) 543V (3) 519V (4) 515V (5) 515V (6) 527V (7) 527V | Q16 VDS: (1) 523V (2) 547V (3) 523V (4) 523V (5) 523V (6) 523V (7) 547V |
| 2 | P.F.C Transistor (D to S) or (C to E) Peak Voltage | Q1/Q4 Rated : 22A/ 600V | I/P: High-Line +3V =308V 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 | Q1 VDS: (1) 458V (2) 462V (3) 454V (4) 458V (5) 454V (6) 454V (7) 454V | Q4 VDS: (1) 470V (2) 466V (3) 470V (4) 470V (5) 466V (6) 458V (7) 458V |
| 3 | AUX MOS | U505 Rated : 1.04 A/ 725 V Q504 Rated : 5A/200V | I/P: High-Line +3V =308 V 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 | U505 VDS: (1) 666V (2) 708V (3) 670V (4) 666V (5) 662V (6) 666V (7) 690V | Q504 VDS: (1) 123.1V (2) 133.6V (3) 124.0V (4) 123.2V (5) 123.2V (6) 123.2V (7) 110.9V |
| 4 | P.F.C DIODE | D 8 Rated : 8A/600 V | I/P:High-Line +3V =308V AC ON/OFF | (1) 568V | |

| | | | | | |
|---|-------------------------|---|--|---|--|
| | | | <p>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</p> | <p>(2) 568V (3) 564V (4) 560V</p> | |
| 5 | Diode Peak Voltage | <p>Q100/Q101/Q102/Q103 Rated 150 V/27.4A</p> | <p>AC ON/OFF I/P:High-Line +3V =308V 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 Ta:25°C</p> | <p>Q100: VDS: (1) 124V (2) 132V (3) 124V (4) 124V (5) 124V (6) 131V (7) 138V (8) 121V</p> | <p>Q101: VDS: (1) 127V (2) 132V (3) 129V (4) 127V (5) 129V (6) 132V (7) 143V (8) 126V</p> <p>Q102: VDS: (1) 127V (2) 139V (3) 127V (4) 128V (5) 127V (6) 134V (7) 143V (8) 122V</p> <p>Q103: VDS: (1) 126V (2) 136V (3) 129V (4) 127V (5) 127V (6) 133V (7) 144V (8) 127V</p> |
| 6 | Input Capacitor Voltage | <p>C5 Rated: : 150 μ / 450 V</p> | <p>I/P:High-Line +3V =308V 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</p> | <p>(1)442V (2)438V (3)446V (4)442V</p> | |
| 7 | Control IC Voltage Test | <p>PWM IC U3 Rated 8.9V~15.5 V</p> <p>PFC IC U1 Rated 11V~20 V</p> <p>O/P IC U100 Rated 8V~24V</p> <p>IC U801 Rated 4.5V~36V</p> <p>MCU IC U303 Rated 2.4V~3.6 V</p> | <p>AC ON/OFF I/P:High-Line +3V =308V O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD (LOW LINE) Ta:25°C</p> | <p>U3 (1) 14.8V (2) 14.9V (3) 14.9V (4) 14.9V (5) 14.8V</p> <p>U1 (1) 15.5V (2) 15.5V (3) 15.5V (4) 15.5V (5) 15.5V</p> <p>U801</p> | <p>U303 (1) 3.37V (2) 3.37V (3) 3.37V (4) 3.37V (5) 3.37V</p> <p>U502 (1) 11.70V (2) 11.80V (3) 11.70V (4) 11.70V (5) 11.70V</p> |

| | | | | | |
|--|--|-------------------------------|--|---|--|
| | | AUX IC U502 Rated 8.5V~30V | | (1) 12.5V (2) 12.5V (3) 12.5V (4) 12.5V (5) 12.5V | |
|--|--|-------------------------------|--|---|--|

■ SAFETY& E.M.C. TEST

SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------|---|---|--|
| 1 | WITHSTAND VOLTAGE | I/P-O/P: 4 KVAC/min I/P-FG: 2 KVAC/min O/P-FG:1.5 KVAC/min | I/P-O/P: 4.2 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.8 KVAC/min Ta:25°C | I/P-O/P:6.45mA I/P-FG:5.12mA O/P-FG:15.41m A 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: 9999MΩ I/P-FG: 9999MΩ O/P-FG: 9999MΩ NO DAMAGE |
| 3 | GROUNDING CONTINUITY | FG(PE) TO CHASSIS OR TRACE < 100 mΩ | 40A / 2min Ta:25°C | 6 mΩ |

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 CLASS B | I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C | PASS Test by certified Lab |
| 3 | RADIATION | EN55032 CLASS B | I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C | PASS Test by certified Lab |
| 4 | E.S.D | EN61000-4-2 AIR : 8KV / Contact : 4KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | ■ CRITERIA A |
| 5 | E.F.T | EN61000-4-4 INPUT : 2KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | ■ CRITERIA A |
| 6 | SURGE | IEC61000-4-5 L-N : 1KV L,N-PE : 2KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | ■ CRITERIA A |
| 7 | Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report | | | |



| | | | | ROOM AMBIENT Ta= 25.0°C | HIGH AMBIENT Ta= 50.0 °C |
|----|---|---|---|-------------------------|--------------------------|
| | | NO | Position | | |
| | | 33 | U600 | 38.9°C | 66.5°C |
| | | 34 | C113 | 49.0°C | 77.2°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 | |
| 3 | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 2 HOUR | I/P : 264VAC/100VAC O/P : 100%LOAD Ta= -35°C | TEST : OK | |
| 4 | HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST | AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C/95 %R.H NO DAMAGE | I/P : 272 VAC O/P : FULL LOAD Ta=50.8°C HUMIDITY= 95 %R.H | TEST : OK | |
| 5 | TEMPERATURE COEFFICIENT | ± 0.03%/°C(0~50°C) | I/P : 230 VAC O/P : FULL LOAD | ±0.009%/°C(0~50°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 | -30~50°C | 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 : 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 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) 719349.8HRS (2) 117015HRS (3) 231125.9HRS (4) 130244.2HRS | | |
| 10 | MTBF | Conducted by Parts Stress Analysis Prediction 556.6K hrs min. Telcordia SR-332 (Bellcore) ; 74.5K hrs min. MIL-HDBK-217F (25°C) | | | |
| 11 | Ongoing Reliability Test | I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 30,000 hours | | | |

| TEST RESULT | TESTER | REVIEW | APPROVAL |
|-------------|--------|--------|----------|
| PASS | Liutt | | Wangdz |