



Test Report: LAD-240B

240W Economical Security/ Fire Alarm PSU with Battery
Charger/UPS

■ 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

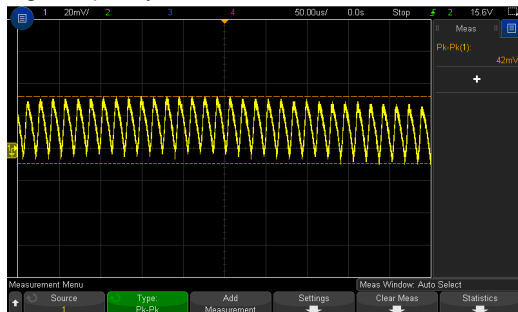
ENVIRONMENT TEST

DESIGN VERIFY TEST

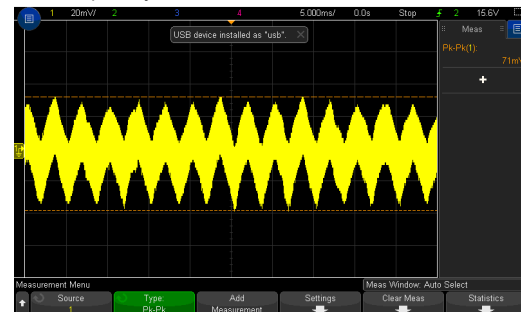
OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------------------|--------------------|---|--|
| 1 | OUTPUT VOLTAGE ADJUST RANGE | CH1: 21.6 V~ 29 V | I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C | 20.600V~29.868V/230VAC 20.612V~29.869V/115VAC |
| 2 | OUTPUT VOLTAGE(Max) TOLERANCE | V1: -1.0%~ +1.0 % | I/P: 90VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C | V1: -0.21% ~0.11% |
| 3 | LINE REGULATION (Max) | V1: -0.5 %~ +0.5 % | I/P: 90VAC~ 264VAC O/P:FULL LOAD Ta:25°C | V1: -0.10% ~ 0.04% |
| 4 | LOAD REGULATION(Max) | V1: -0.5 %~ +0.5 % | I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C | V1: -0.21% ~0.11% |
| 5 | OVER/UNDERSHOOT TEST | < ±5% | I/P: 230VAC O/P:FULL LOAD Ta:25°C | 3.3% |
| 6 | RIPPLE & NOISE(Max) | V1: 150mVp-p | I/P:230VAC O/P: TESTING LOAD Ta:25°C | V1: 71mVp-p |

high frequency :

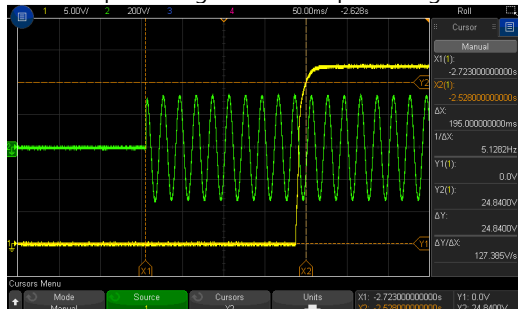


low frequency :

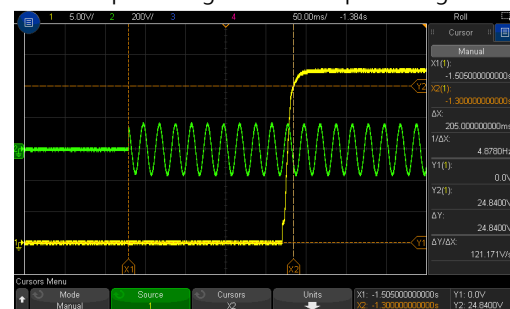


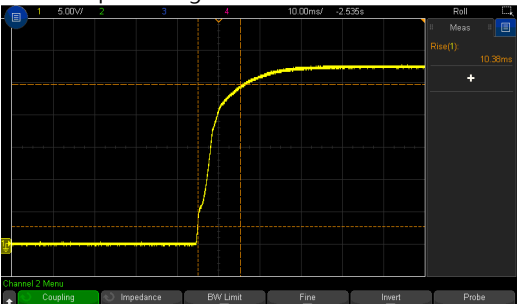
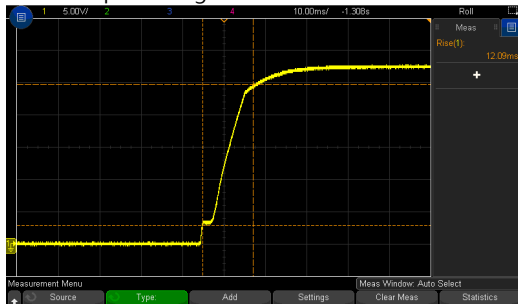
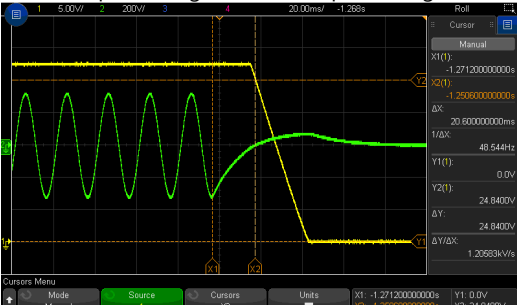
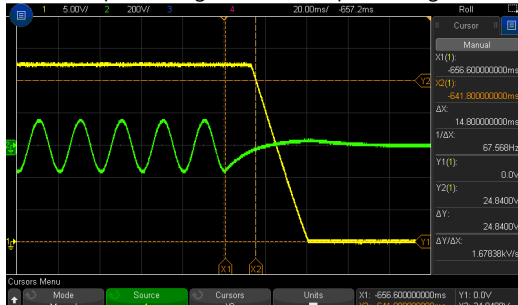
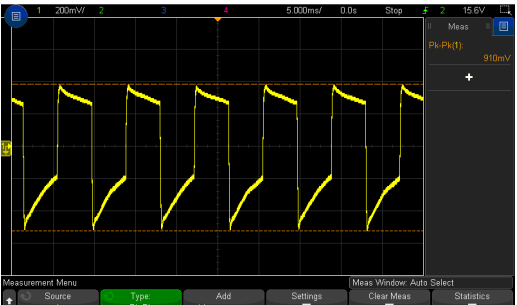
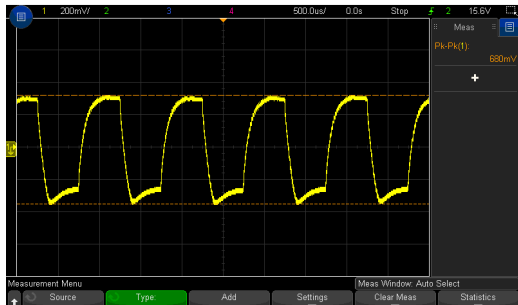
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|---|------------------|--------------------------------|--|----------------------------------|
| 7 | SET UP TIME(Max) | 230VAC/2000ms 115VAC/2000ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 195 ms 115VAC/ 205 ms |
|---|------------------|--------------------------------|--|----------------------------------|

INPUT=230VAC/50HZ @ FULL LOAD
CH1 : Output Voltage CH2 : AC Input Voltage



INPUT=115VAC/60HZ @ FULL LOAD
CH1 : Output Voltage CH2 : AC Input Voltage



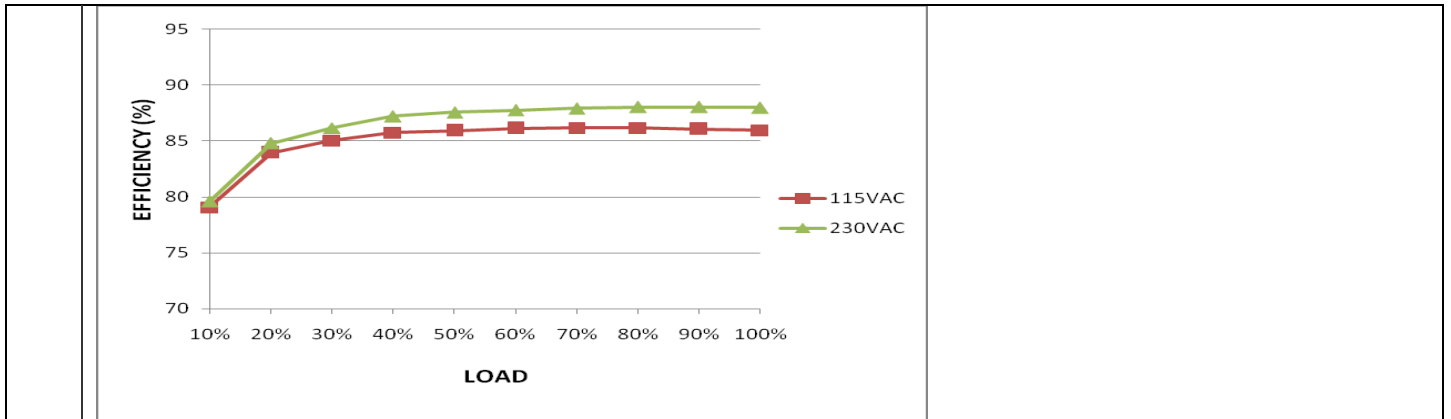
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|---|-------------------------|--|---|--------------------------------------|
| 8 | RISE TIME (Max) | 230VAC/50ms 115VAC/50ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 10.38 ms 115VAC/ 12.09 ms |
| <p>INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage</p>  | | <p>INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage</p>  | | |
| 9 | HOLD UP TIME (Typ.) | 230VAC/16ms 115VAC/12ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 20.6ms 115VAC/ 14.8 ms |
| <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>  | | |
| 10 | DYNAMIC LOAD | V1: 2760mVp-p | I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C | 910mVp-p 680mVp-p |
| <p>FULL /50% LOAD 50%DUTY / 120HZ</p>  | | <p>FULL /50% LOAD 50%DUTY / 1KHZ</p>  | | |
| 11 | TRANSIENT RECOVERY TIME | V1: 2760mVp-p | I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us | 470mVp-p |



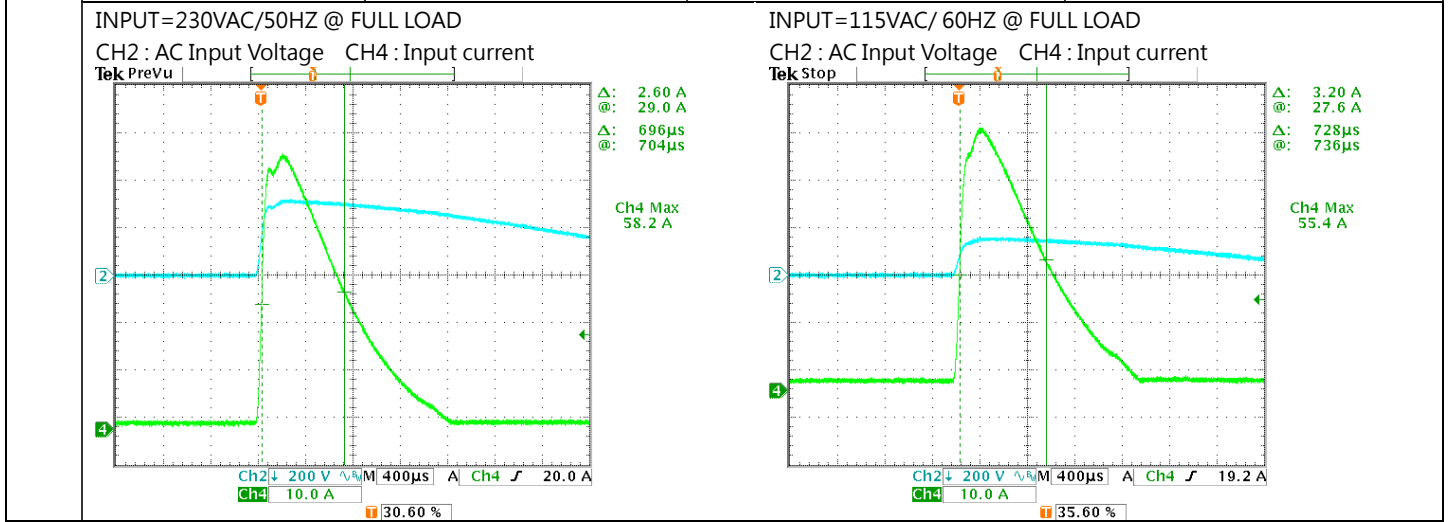
| | | | | |
|----|----------------------------------|-------------------------------------|---|-------|
| 12 | Battery static discharge current | After battery low protection <100uA | I/P : 230 VAC O/P : TESTING Ta : 25°C | 0uA |
| 13 | BAT RATED CURRENT | 1± 0.1A | I/P: 230VAC O/P:CV=24V Ta:25°C | 1.04A |

INPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------------------|---|---|---|
| 1 | INPUT VOLTAGE RANGE | 90 ~ 132VAC / 180 ~ 264VAC by switch 240 ~ 370VDC (Default switch at 230VAC) | (1) I/P:TESTING O/P:FULL LOAD (2) I/P:DC TESTING(L:+ N:-) O/P: FULL / 80% LOAD (switch on 230VAC) (3) I/P:DC TESTING(L:- N:+) O/P: FULL /80% LOAD (switch on 230VAC) Ta:25°C | (1) 93.0V~132V/ FULL LOAD 84V~132V/ 80% LOAD 165V~264V / FULL LOAD (switch on 230VAC) (2) 226.3Vdc~370Vdc/FULL LOAD 226.3Vdc~370Vdc/80% LOAD (3) 226.3Vdc~370Vdc/FULL LOAD 226.3Vdc~370Vdc/80% LOAD |
| | | | I/P: switch on 115VAC : LOW-LINE-3V=87 V HIGH-LINE+15%=150V switch on 230VAC : LOW-LINE-3V=177 V HIGH-LINE+15%=300 VO/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: 90 ~ 132VAC / 180 ~ 264VAC by switch O/P:FULL~MIN LOAD Ta:25°C | TEST: OK |
| 3 | INPUT CURRENT (Typ.) | 230V/2.4A 115V/ 4.4A | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I =2.20A/ 230VAC I =4.03A/ 115VAC |
| 4 | LEAKAGE CURRENT | < 0.5mA / 240 VAC | I/P : 240 VAC O/P : Min LOAD Ta : 25°C | 0.398mA / (PEAK) 0.187mA / (RMS) |
| 5 | EFFICIENCY(Typ.) | 87.5% | I/P:230 VAC O/P:FULL LOAD Ta:25°C | 88.16% |
| | EFFICIENCY vs LOAD | | | |



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| 6 | INRUSH CURRENT(Typ.) | 230V/60A 115V/60A COLD START | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I =58.2A/ 230VAC T50= 696 us/230V I =55.4A/ 115VAC T50= 728 us/115V |
|---|----------------------|------------------------------------|--|--|



PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------|--|---|--|
| 1 | OVER LOAD PROTECTION | CH1 : 105%~135 % CH2 : 90 ~ 110% Protection type : CH1 OLP, CH2 with battery: The unit will enter to UPS mode when CH1 is around 105%~120%, when total output of CH1 + CH2 reach around 125%~135% output shuts down CH1 OLP, CH2 without battery: Shut down o/p voltage, re-power on to removed CH2 : Constant current limiting; fault condition does not affect CH1 working, | I/P: 264VAC I/P: 230VAC I/P: 100VAC O/P:TESTING Ta:25°C | 115.9%/ 264VAC 115.1%/ 230VAC 115.1%/ 100VAC Protection type : CH1 OLP, CH2 with battery: The unit will enter to UPS mode when CH1 is around 105%~120%, when total output of CH1 + CH2 reach around 125%~135% output shuts down CH1 OLP, CH2 without battery: Shut down o/p voltage, re-power on to removed CH2 : Constant current limiting; fault condition does not affect CH1 working, recovers |



| | | | | |
|---|-----------------------------|---|---|--|
| | | recovers automatically after fault condition is removed (External fuse is mandatory in series connection with battery for protection) | | automatically after fault condition is removed (External fuse is mandatory in series connection with battery for protection) |
| 2 | OVER VOLTAGE PROTECTION | CH1: 31V~36V Protection type : Shut down o/p voltage , re-power on to removed | I/P: 264VAC I/P: 230VAC I/P: 90VAC O/P:MIN LOAD Ta:25°C | 32.0V/ 264VAC 32.0V/ 230VAC 32.0V/ 90VAC Protection type : Shut down o/p voltage , re-power on to removed |
| 3 | OVER TEMPERATURE PROTECTION | Protection type : Protection type : Shut down o/p voltage , re-power on to removed. | I/P: 264VAC I/P: 90VAC O/P:FULL LOAD | O.T.P. Active OK Protection type : Shut down o/p voltage , re-power on to removed |
| 4 | BATTERY CUTOFF | 21.5±0.5V | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | <u>21.85 V</u> |
| 5 | BATTERY REVERSE POLARITY | Protection type : Protected when reverse polarity , no damage, recovers automatically after fault condition is removed | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | TEST : <u>OK</u> |

CONTROL FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|---|---|--|-----------------|
| 1 | AC OK | TTL signal, High / Open : AC Fail ; Low : AC OK ; Ice : max. 30mA@ 50VDC | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | Test: <u>OK</u> |
| 2 | DISCHARGE | TTL signal, High / Open : Charge ; Low : Discharge ; Ice : max. 30mA@ 50VDC | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | Test: <u>OK</u> |
| 3 | BATTERY FULL | TTL signal, High / Open : Battery charging ; Low : Battery full ; Ice : max. 30mA@ 50VDC | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | Test: <u>OK</u> |
| 4 | BATTERY DISCONNECT/ REVERSE POLARITY | TTL signal, High / Open : Battery connect/normal ; Low : Battery disconnect/reverse polarity; Ice : max. 30mA@ 50VDC | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | Test: <u>OK</u> |
| 5 | BATTERY LOW | TTL signal, High / Open : Battery normal ; Low : Battery low; Ice : max. 30mA@ 50VDC | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | Test: <u>OK</u> |



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|---|-------------|----------------------|--|------------------|
| 6 | FORCE START | CN2: PIN7&PIN8 SHORT | I/P: 230 VAC O/P:BAT. LOAD Ta:25°C | TEST : <u>OK</u> |
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COMPONENT STRESS TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|---|--------------------------------|---|--|
| 1 | PWM Transistor (D to S) or (C to E) Peak Voltage | Q 1/Q2 Rated : 13 A/ 600 V | AC ON/OFF I/P: High-Line +3V =267V 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 | Q1 Q2 VDS: VDS: (1) 483V (1) 503V (2) 519V (2) 551V (3) 483V (3) 503V (4) 483V (4) 507V (5) 483V (5) 503V (6) 483V (6) 507V (7) 511V (7) 547V |
| 2 | Diode Peak Voltage | D101 20A/200V D102 20A/300V | AC ON/OFF I/P:High-Line +3V =267V <u>Vo=Vmax</u> 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 <u>Vo=Vnormal</u> O/P: (1)Full Load Ta:25°C | D101: <u>Vo=Vmax</u> D102: <u>Vo=Vmax</u> VDS: VDS: (1) 178V (1) 204V (2) 178V (2) 222V (3) 178V (3) 210V (4) 176V (4) 212V (5) 175V (5) 212V (6) 176V (6) 202V (7) 163V (7) 208V (8) 155V (8) 192V <u>Vo=Vnormal</u> <u>Vo=Vnormal</u> (1) 175V (1) 210V |
| 3 | BAT BUCK Transistor (D to S) or (C to E) Peak Voltage | Q 304 Rated : 12A/60V | AC ON/OFF I/P:High-Line +3V = 267 V VDS : O/P: (1)CV (max)-1 (2)CV(min)=21V (3)no load | Q304 VDS : (1) 41.3V (2) 43.3V (3) 44.5V (4) 44.1V |

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|---|--------------------------------|---|---|---|
| | | | (4)OUTPUT SHORT Ta:25°C | |
| 4 | BAT BUCK Diode Peak Voltage | D320 Rated: 5A/ 100V | AC ON/OFF I/P:High-Line +3V = 267 V VDS : O/P: (1)CV (max)-1 (2)CV(min)=21V (3)no load (4)OUTPUT SHORT Ta:25°C | D320 VDS : (1) 34.3V (2) 33.5V (3) 33.9V (4) 33.5V |
| 5 | Input Capacitor Voltage | C5/C6 Rated: : 330 μ / 200 V | I/P:High-Line +3V =267V 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 | C5 C6 (1)198V (1)199V (2)192V (2)191V (3)192V (3)191V (4)192V (4)191V |
| 6 | Control IC Voltage Test | PWM IC U1 Rated 8V~28V BAT BUCK IC U304 Rated 8.4V~30V | AC ON/OFF U1: I/P:High-Line +3V =267V O/P:(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD VRmin(Low LINE) U304: I/P:High-Line +3V = 267 V VDS : O/P: (1)CV (max)-1 (2)CV(min)=21V (3)no load (4)OUTPUT SHORT Ta:25°C | U1 (1) 19.2V (2) 19.4V (3) 19.4V (4) 19.4V (5) 19.2V U304 (1) 13.56V (2) 13.56V (3) 13.56V (4) 13.56V |

■ SAFETY& E.M.C. TEST

SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------|---|---|--|
| 1 | WITHSTAND VOLTAGE | I/P-O/P: 3KVAC/min I/P-FG :2KVAC/min O/P-FG:0.5KVAC/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: 2.51mA I/P-FG: 2.22mA O/P-FG: 2.68 mA NO DAMAGE |
| 2 | ISOLATION RESISTANCE | I/P-O/P:500VDC>100M Ω I/P-FG: 500VDC>100M Ω O/P-FG:500VDC>100M Ω | I/P-O/P: 600 VDC I/P-FG: 600 VDC O/P-FG: 600 VDC Ta:25°C | I/P-O/P: 9999M Ω I/P-FG: 9999M Ω O/P-FG: 9999M Ω NO DAMAGE |

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|---|-------------------------|---------------------------------------|-----------------------|-----|
| 3 | GROUNDING CONTINUITY | FG(PE) TO CHASSIS OR TRACE < 100mΩ | 40A / 2min Ta:25°C | 8mΩ |
|---|-------------------------|---------------------------------------|-----------------------|-----|

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|---|---|--|---|
| 1 | CONDUCTION | BS EN/EN55032 (CISPR32), EAC TP TC 020 CLASS A | I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C | PASS Test by certified Lab |
| 2 | RADIATION | BS EN/EN55032 (CISPR32), EAC TP TC 020 CLASS A | I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C | PASS Test by certified Lab |
| 3 | E.S.D | BS EN/EN61000-4-2 Level 3, 8KV air Level 2, 6KV contact | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | <input checked="" type="checkbox"/> CRITERIA A <input type="checkbox"/> CRITERIA B |
| 4 | E.F.T | BS EN/EN61000-4-4 INPUT : 2KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | <input checked="" type="checkbox"/> CRITERIA A <input type="checkbox"/> CRITERIA B |
| 5 | SURGE | BS EN/EN61000-4-5 Level 3, 1KV/Line-Line 2KV/Line-FG | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | <input checked="" type="checkbox"/> CRITERIA A <input type="checkbox"/> CRITERIA B |
| 6 | Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report | | | |

RELIABILITY TEST

ENVIRONMENT TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|-----------------------|---|------------------------|----------|------------------------|------------------------|---|-----|--------|--------|---|------|--------|--------|---|----|--------|--------|---|------|--------|--------|---|----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|--|--|
| 1 | TEMPERATURE RISE TEST | MODEL : LAD-240B 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25 °C</th> <th>HIGH AMBIENT Ta= 50 °C</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BD1</td> <td>37.5°C</td> <td>62.2°C</td> </tr> <tr> <td>2</td> <td>RTH1</td> <td>75.3°C</td> <td>91.9°C</td> </tr> <tr> <td>3</td> <td>C5</td> <td>32.3°C</td> <td>57.1°C</td> </tr> <tr> <td>4</td> <td>ZNR1</td> <td>33.3°C</td> <td>58.7°C</td> </tr> <tr> <td>5</td> <td>T2</td> <td>28.4°C</td> <td>54.2°C</td> </tr> <tr> <td>6</td> <td>C37</td> <td>27.5°C</td> <td>53.1°C</td> </tr> <tr> <td>7</td> <td>LF2</td> <td>37.4°C</td> <td>62.1°C</td> </tr> </tbody> </table> | NO | Position | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 50 °C | 1 | BD1 | 37.5°C | 62.2°C | 2 | RTH1 | 75.3°C | 91.9°C | 3 | C5 | 32.3°C | 57.1°C | 4 | ZNR1 | 33.3°C | 58.7°C | 5 | T2 | 28.4°C | 54.2°C | 6 | C37 | 27.5°C | 53.1°C | 7 | LF2 | 37.4°C | 62.1°C | | |
| NO | Position | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 50 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | BD1 | 37.5°C | 62.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | RTH1 | 75.3°C | 91.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | C5 | 32.3°C | 57.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ZNR1 | 33.3°C | 58.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | T2 | 28.4°C | 54.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | C37 | 27.5°C | 53.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | LF2 | 37.4°C | 62.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| | | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25 °C</th> <th>HIGH AMBIENT Ta= 50 °C</th> </tr> </thead> <tbody> <tr><td>8</td><td>Q1</td><td>39.0°C</td><td>67.0°C</td></tr> <tr><td>9</td><td>Q2</td><td>39.2°C</td><td>67.2°C</td></tr> <tr><td>10</td><td>RY101</td><td>33.3°C</td><td>58.7°C</td></tr> <tr><td>11</td><td>T1coil</td><td>47.9°C</td><td>74.2°C</td></tr> <tr><td>12</td><td>T1core</td><td>44.1°C</td><td>69.7°C</td></tr> <tr><td>13</td><td>Q405</td><td>36.4°C</td><td>63.7°C</td></tr> <tr><td>14</td><td>Q305</td><td>38.1°C</td><td>63.4°C</td></tr> <tr><td>15</td><td>D101</td><td>47.3°C</td><td>72.4°C</td></tr> <tr><td>16</td><td>D102</td><td>69.1°C</td><td>89.7°C</td></tr> <tr><td>17</td><td>L100</td><td>49.9°C</td><td>76.3°C</td></tr> <tr><td>18</td><td>RTH3</td><td>46.2°C</td><td>72.1°C</td></tr> <tr><td>19</td><td>C105</td><td>35.5°C</td><td>60.8°C</td></tr> <tr><td>20</td><td>L301</td><td>34.8°C</td><td>60.6°C</td></tr> <tr><td>21</td><td>C110</td><td>35.3°C</td><td>60.6°C</td></tr> <tr><td>22</td><td>U6</td><td>41.1°C</td><td>66.4°C</td></tr> <tr><td>23</td><td>U304</td><td>41.8°C</td><td>71.0°C</td></tr> <tr><td>24</td><td>Q304</td><td>39.6°C</td><td>65.5°C</td></tr> <tr><td>25</td><td>U1</td><td>29.6°C</td><td>56.2°C</td></tr> <tr><td>26</td><td>R101</td><td>47.9°C</td><td>75.2°C</td></tr> <tr><td>27</td><td>R113</td><td>42.1°C</td><td>86.7°C</td></tr> <tr><td>28</td><td>Q200</td><td>45.9°C</td><td>71.5°C</td></tr> <tr><td>29</td><td>J107</td><td>44.9°C</td><td>78.5°C</td></tr> </tbody> </table> | | | | NO | Position | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 50 °C | 8 | Q1 | 39.0°C | 67.0°C | 9 | Q2 | 39.2°C | 67.2°C | 10 | RY101 | 33.3°C | 58.7°C | 11 | T1coil | 47.9°C | 74.2°C | 12 | T1core | 44.1°C | 69.7°C | 13 | Q405 | 36.4°C | 63.7°C | 14 | Q305 | 38.1°C | 63.4°C | 15 | D101 | 47.3°C | 72.4°C | 16 | D102 | 69.1°C | 89.7°C | 17 | L100 | 49.9°C | 76.3°C | 18 | RTH3 | 46.2°C | 72.1°C | 19 | C105 | 35.5°C | 60.8°C | 20 | L301 | 34.8°C | 60.6°C | 21 | C110 | 35.3°C | 60.6°C | 22 | U6 | 41.1°C | 66.4°C | 23 | U304 | 41.8°C | 71.0°C | 24 | Q304 | 39.6°C | 65.5°C | 25 | U1 | 29.6°C | 56.2°C | 26 | R101 | 47.9°C | 75.2°C | 27 | R113 | 42.1°C | 86.7°C | 28 | Q200 | 45.9°C | 71.5°C | 29 | J107 | 44.9°C | 78.5°C |
|----|---|---|---|---------------------|--|----|----------|------------------------|------------------------|---|----|--------|--------|---|----|--------|--------|----|-------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|----|--------|--------|----|------|--------|--------|----|------|--------|--------|----|----|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|----|------|--------|--------|
| NO | Position | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 50 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Q1 | 39.0°C | 67.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Q2 | 39.2°C | 67.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | RY101 | 33.3°C | 58.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | T1coil | 47.9°C | 74.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | T1core | 44.1°C | 69.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | Q405 | 36.4°C | 63.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | Q305 | 38.1°C | 63.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | D101 | 47.3°C | 72.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | D102 | 69.1°C | 89.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | L100 | 49.9°C | 76.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | RTH3 | 46.2°C | 72.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | C105 | 35.5°C | 60.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | L301 | 34.8°C | 60.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | C110 | 35.3°C | 60.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | U6 | 41.1°C | 66.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | U304 | 41.8°C | 71.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | Q304 | 39.6°C | 65.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | U1 | 29.6°C | 56.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | R101 | 47.9°C | 75.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | R113 | 42.1°C | 86.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | Q200 | 45.9°C | 71.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | J107 | 44.9°C | 78.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | OVER LOAD BURN-IN TEST | NO DAMAGE 1 HOUR (MIN) | I/P : 230 VAC O/P : 115.7%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= -25°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= 51 °C HUMIDITY= 95 %R.H | TEST : OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | TEMPERATURE COEFFICIENT | ±0.03%/°C(0~50°C) | I/P : 230 VAC O/P : FULL LOAD | ±0.0081%/°C(0~50°C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | STORAGE TEMPERATURE TEST | -30~85°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 | -20~50°C | 1. Thermal shock Temperature : -25°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 C110 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) 1479801.8HRS (2) 256210.9HRS (3) 312018.3HRS (4) 361675.4HRS |
| 10 | MTBF | Conducted by Parts Stress Analysis Prediction 1394.9K hrs min. Telcordia SR-332 (Bellcore); 156.7K 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 | Yuwei | Liutt | Wangdz |

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