



# Test Report: NPB-750-48

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750W High Reliable Ultra Wide Output Range  
Intelligent Battery Charger

## ■ 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  | BOOST CHARGE VOLTAGE               | 57.6V± 0.96 V  | I/P: 230 VAC<br>O/P:BAT. LOAD<br>Ta:25°C  | 57.609 V       |
| 2  | FLOAT CHARGE VOLTAGE               | 55.2V± 0.48 V  | I/P: 230 VAC<br>O/P:BAT. LOAD<br>Ta:25°C  | 55.238 V       |
| 3  | OUTPUT CURRENT                     | 11.3A± 0.113 A | I/P: 230 VAC<br>O/P:C.V =56.6V<br>Ta:25°C | 11.363A        |
| 4  | MAX. POWER                         | 759.4W         | I/P: 230 VAC<br>O/P:C.V =67.2V<br>Ta:25°C | 762W           |
| 5  | LEAKAGE CURRENT FROM BATTERY (TYP) | <1mA           | I/P: AC OFF<br>O/P:BAT. LOAD<br>Ta:25°C   | 0.338mA        |
| 6  | OUTPUT CURRENT RANGE               | 50%~100%Io     | I/P: 230 VAC<br>O/P:C.V =56.6V<br>Ta:25°C | 5.331~ 11.358A |

### INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECIFICATION                 | TEST CONDITION  | RESULT   |
|----|-----------------------|-------------------------------|---|--|
| 1  | INPUT VOLTAGE RANGE   | 90VAC~264VAC<br>127VDC~370VDC | (1) I/P:TESTING<br>O/P:FULL LOAD<br>(2) I/P:DC TESTING(L:+ N:-)<br>O/P: FULL LOAD<br>(3) I/P:DC TESTING(L:- N:+)<br>O/P: FULL LOAD<br>Ta:25°C                         | (1) 85.7V~264V<br>(2) 120Vdc~370Vdc/FULL LOAD<br>(3) 120Vdc~370Vdc/FULL LOAD |
|    |                       |                               | I/P:<br>LOW-LINE-3V=87 V<br>HIGH-LINE+15%= 300 V<br>O/P:BAT. LOAD<br>(PLEASE CHECK DERATING CURVE)<br>ON: 30 Sec . OFF: 30 Sec 10MIN<br>( AC POWER ON/OFF NO DAMAGE ) | TEST: OK   |
| 2  | INPUT FREQUENCY RANGE | 47HZ ~63 HZ<br>NO DAMAGE      | I/P: 90 VAC ~264 VAC<br>O/P:FULL~MIN LOAD<br>Ta:25°C  | TEST: OK   |
| 3  | LEAKAGE CURRENT       | < 1 mA / 240VAC               | I/P: 240 VAC<br>O/P:Min LOAD<br>Ta:25°C   | 0.461 mA   |
| 4  | INPUT CURRENT (TYP)   | 230 V/ 4A<br>115 V/ 8.7A      | I/P: 230 VAC<br>I/P: 115 VAC  | I =3.545A/ 230VAC<br>I =7.382A/ 115VAC                                       |

|   |                        |  |  |  |
|---|------------------------|--|--|--|
|   |                        |  | O/P:BAT. LOAD<br>Ta:25°C   |  |
| 5   | POWER FACTOR (TYP)     | 0.95/ 230 VAC<br>0.98/ 115 VAC   | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P:BAT. LOAD<br>Ta:25°C                                       | PF=0.9936 / 230VAC<br>PF=0.9979 / 115VAC                                   |
| 6   | EFFICIENCY (TYP)       | 93%  | I/P: 230 VAC<br>O/P:BAT. LOAD(C.V =67.2V)<br>Ta:25°C   | 93.98%   |
| 7   | INRUSH CURRENT (TYP)   | 230 V/ 50 A<br>COLD START  | I/P: 230 VAC<br>O/P:BAT. LOAD<br>Ta:25°C   | I =39.5A/ 230VAC<br>T50=1.763ms/230V                                       |
| <p>INPUT=230VAC/50HZ @ FULL LOAD<br/>CH1 : AC Input Voltage CH4 : Input current (1V=1A)</p> |                        |  |  |  |
| 8   | GAIN-PHASE MARGIN TEST | GAIN MARGIN < -10dB<br>PHASE MARGIN > =60<br>Gain Curve slope:<br><u>-10dB/dec~-40dB/dec</u> | (1) CC MODE(Vboost)/<br>90% LOAD /264Vac<br>(2) CC MODE(Vboost)/<br>90% LOAD /90Vac<br>Ta:25°C | (1) 94.1640°/-17.137dB/-19.4 dB/dec<br>(2) 94.0010°/-17.943dB/-16.0 dB/dec |

**PROTECTION FUNCTION TEST**

| NO | TEST ITEM                   | SPECIFICATION   | TEST CONDITION  | RESULT   |
|----|-----------------------------|---|---|--|
| 1  | OVER VOLTAGE PROTECTION     | CH1:82V~100V<br>PROTECTION RESULT<br>Shut down and latch off o/p voltage, re-power on to recover. | I/P: 264 VAC<br>I/P: 90 VAC<br>O/P:TESTING<br>Ta:25°C | 93.1V/ 264VAC<br>93.1V/230VAC<br>93.1V/ 90VAC<br>PROTECTION TYPE :<br>Shut down and latch off o/p voltage, re-power on to recover. |
| 2  | OVER TEMPERATURE PROTECTION | SPEC:<br>NO DAMAGE<br>Shut down o/p voltage, recover automatically after temperature goes on.     | I/P: 264 VAC<br>I/P: 90 VAC<br>O/P:BAT. LOAD          | O.T.P Active<br>PROTECTION TYPE :<br>Shut down o/p voltage, recover automatically after temperature goes on.                       |
| 3  | SHORT PROTECTION            | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE<br>11.3A±10%   | I/P: 264 VAC<br>O/P: BAT. LOAD<br>Ta:25°C             | NO DAMAGE<br>11.280 A<br>PROTECTION TYPE :   |



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**NPB-750 series**

|   |                                  |  |  |   |
|---|----------------------------------|--|--|---|
|   |                                  | Constant current limiting ,charger will shut down after 5 sec, re-power on to recover.               |  | Constant current limiting ,charger will shut down after 5 sec, re-power on to recover.              |
| 4 | BATTERY REVERSE POLARITY         | Protected internal reverse detection, No damage, re-power on to recover after conduction is removed. | I/P: 230 VAC<br>O/P:BAT. LOAD<br>Ta:25°C | Protected internal reverse detection, No damage, re-power on to recover after conduction is removed |
| 5 | ERROR INPUT HIGH VOLTAGE BATTERY | Shut down o/p voltage, re-power on to recover  | I/P: 230 VAC<br>O/P:BAT. LOAD<br>Ta:25°C | PROTECTION TYPE :<br>Shut down o/p voltage, re-power on to recover                                  |

**CONTROL FUNCTION TEST**

| N<br>O            | TEST ITEM  | SPECIFICATION   | TEST CONDITION   | RESULT  |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
|-------------------|--|---|--|---|-------|--------------------------------|--------|-------------------------------|-------------------|---------------------------|--------------------|---|----------------|--|---|------------------|---------|---------|---------|--|
| 1                 | FAN SPEED CONTROL  | FAN control mosfet duty:<br>30% (-1%) @RTH5<35°C<br>FAN control mosfet duty :<br>100% (-1%) @RTH5>50°C  | I/P: 230 VAC<br>O/P:BAT. LOAD<br>Ta:25°C   | <u>29.2%</u> @RTH5<35°C<br><u>100%</u> @RTH5>50°C   |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
| 2                 | REMOTE CONTROL   | Rc+ / Rc-<br>OPEN/(-0.5~0.5V):<br>Charger stop charging<br>SHORT/(10.8~13.2V) :<br>Charger normal work  | I/P: 230 VAC<br>O/P:BAT. LOAD<br>Ta:25°C   | TEST:<br>OPEN: <u>-0.5~2.3V</u><br>SHORT: <u>2.5 ~ 13.2V</u><br>(1) Remote off Pin= <u>2.82W</u><br>(2) Remote off Vo= <u>0.06V</u> |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
| 3                 | AUX POWER  | OUTPUT VOLTAGE RANGE :<br>10.8~13.2V<br>OUTPUT RIPPLE&NOISE:<br>150mVp-p  | I/P: 230 VAC<br>O/P:BAT. LOAD<br>Ta:25°C   | TEST: <u>11.882</u> V<br><u>37</u> mVp-p  |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
| 4                 | LED INDICATOR  | <table border="1"> <thead> <tr> <th>LED</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Green</td> <td>Float(stage 3) or Battery full</td> </tr> <tr> <td>Orange</td> <td>Charging (stage 1 or stage 2)</td> </tr> <tr> <td>Orange (Flashing)</td> <td>Auto sensing for charging</td> </tr> <tr> <td>Red</td> <td>Abnormal status (OTP,OVP, Short, Reverse polarity, Charging timeout.)</td> </tr> <tr> <td>Red (Flashing)</td> <td>The LED will flash with the red light when the internal temperature reaches 95°C; under this condition, the unit still operates normally without entering OTP.</td> </tr> </tbody> </table> | LED  | Description   | Green | Float(stage 3) or Battery full | Orange | Charging (stage 1 or stage 2) | Orange (Flashing) | Auto sensing for charging | Red                | Abnormal status (OTP,OVP, Short, Reverse polarity, Charging timeout.) | Red (Flashing) | The LED will flash with the red light when the internal temperature reaches 95°C; under this condition, the unit still operates normally without entering OTP. | I/P: TESTING VAC<br>O/P:TESTING LOAD<br>Ta:25°C | TEST : <u>OK</u> |         |         |         |  |
| LED               | Description  |   |  |   |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
| Green             | Float(stage 3) or Battery full   |   |  |   |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
| Orange            | Charging (stage 1 or stage 2)  |   |  |   |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
| Orange (Flashing) | Auto sensing for charging  |   |  |   |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
| Red               | Abnormal status (OTP,OVP, Short, Reverse polarity, Charging timeout.)  |   |  |   |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
| Red (Flashing)    | The LED will flash with the red light when the internal temperature reaches 95°C; under this condition, the unit still operates normally without entering OTP. |   |  |   |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
| 5                 | TEMPERATURE COMPENSATION   | I/P: 230 VAC<br>O/P:BAT. LOAD<br>Ta:25°C  | <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±0.96V</td> <td>57.6±0.96V</td> <td>56.52±0.96V</td> </tr> <tr> <td>TEST RESULT:</td> <td>59.342V</td> <td>57.551V</td> <td>56.495V</td> </tr> </tbody> </table> | Constant Voltage  |       |                                |        | SPEC:                         | Ta=0°C ( 17K Ω )  | Ta=25°C ( 5K Ω )          | Ta=50°C ( 1.7K Ω ) |   | 59.4±0.96V     | 57.6±0.96V   | 56.52±0.96V                                     | TEST RESULT:     | 59.342V | 57.551V | 56.495V |  |
| Constant Voltage  |  |   |  |   |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
| SPEC:             | Ta=0°C ( 17K Ω )   | Ta=25°C ( 5K Ω )  | Ta=50°C ( 1.7K Ω )   |   |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
|                   | 59.4±0.96V   | 57.6±0.96V  | 56.52±0.96V  |   |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |
| TEST RESULT:      | 59.342V  | 57.551V   | 56.495V  |   |       |                                |        |                               |                   |                           |                    |   |                |  |   |                  |         |         |         |  |



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|   |            |   |  |  |
|---|------------|---|--|--|
| 6 | CHARGE OK  | The TTL signal out, Charger OK = 4.5 ~ 5.5V;<br>Charger failure or protection = -0.5 ~ 0.5V | I/P: 230 VAC<br>O/P:BAT. LOAD<br>Ta:25°C | TEST:<br>Charger OK = <u>5.192</u> V;<br>Charger failure = <u>21.52</u> mV;<br>Charger protection= <u>21.55</u> mV |
| 7 | BATTERY OK | The TTL signal out, Battery full = 4.5 ~ 5.5V ;<br>Charging = -0.5 ~ 0.5V                   | I/P: 230 VAC<br>O/P:BAT. LOAD<br>Ta:25°C | TEST:<br>Battery full = <u>5.199</u> V<br>Charging = <u>21.06</u> mV   |

**COMPONENT STRESS TEST**

| NO | TEST ITEM   | SPECIFICATION                  | TEST CONDITION  | RESULT   |
|----|---|--------------------------------|---|--|
| 1  | Power Transistor<br>( D to S) or (C to E)<br>Peak Voltage | Q 5/Q6 Rated<br>: 600V/25 A    | AC ON/OFF<br>I/P:High-Line +3V = 267 V<br>O/P: (1)CV(max)=79V<br>(2) CV(min)=42V<br>(3)no load<br>(4)OUTPUT SHORT<br>(5) CV(min)=67.2V<br>Ta:25°C | Q5<br>VDS :<br>(1) 524V<br>(2) 496V<br>(3) 504V<br>(4) 520V<br>(5) 524V<br>Q6<br>VDS :<br>(1) 516V<br>(2) 498V<br>(3) 496V<br>(4) 524V<br>(5) 500V |
| 2  | P.F.C Transistor<br>( D to S) or (C to E)<br>Peak Voltage | Q 1Rate<br>: 600V /18 A        | AC ON/OFF<br>I/P:High-Line +3V = 267 V<br>O/P: (1)CV(max)<br>(2) CV(min)<br>(3)no load<br>(4)OUTPUT SHORT<br>(5) CV(min)=67.2V<br>Ta:25°C         | VDS :<br>(1) 479V<br>(2) 439V<br>(3) 479V<br>(4) 463V<br>(5) 479V  |
| 3  | AUX MOS   | U600 Rate<br>: 725V/ 1.04A     | AC ON/OFF<br>I/P:High-Line +3V = 267 V<br>O/P: (1)CV(max)<br>(2) CV(min)<br>(3)no load<br>(4)OUTPUT SHORT<br>(5) CV(min)=67.2V<br>Ta:25°C         | VDS :<br>(1) 640V<br>(2) 596V<br>(3) 628V<br>(4) 620V<br>(5) 640V  |
| 4  | P.F.C DIODE   | D19 Rated<br>: 650 V/ 6 A      | AC ON/OFF<br>I/P:High-Line +3V = 267 V<br>O/P: (1)CV(max)<br>(2) CV(min)<br>(3)no load<br>(4)OUTPUT SHORT<br>(5) CV(min)=67.2V<br>Ta:25°C         | (1) 463V<br>(2) 419V<br>(3) 464V<br>(4) 459V<br>(5) 463V   |
| 5  | Diode Peak Voltage  | Q211/ Q214 Rated<br>:200V/ 20A | AC ON/OFF<br>I/P:High-Line +3V = 267 V<br>O/P: (1)CV(max)<br>(2) CV(min)<br>(3)no load<br>(4)OUTPUT SHORT   | Q210<br>VDS :<br>(1) 180V<br>(2) 121.2V<br>(3) 176V<br>(4) 184V<br>Q214<br>VDS :<br>(1) 180V<br>(2) 125.2V<br>(3) 180V<br>(4) 176V                 |



|   |                         |  |   |  |  |
|---|-------------------------|--|---|--|--|
|   |                         |  | (5)CV(min)=67.2V<br>Ta:25°C   | (5) 154V   | (5) 154V   |
| 6 | Input Voltage           | Capacitor C 5 Rated<br>: 220u / 450 V<br>°C/ Series  | AC ON/OFF<br>I/P:High-Line +3V = 267 V<br>O/P: (1)CV(max) =79V<br>(2) CV(min) =42V<br>(3)no load<br>(4)OUTPUT SHORT<br>(5) CV(min)=67.2V<br>Ta:25°C | (1) 439V<br>(2) 395V<br>(3) 431V<br>(4) 391V<br>(5) 439V   |  |
| 7 | Control IC Voltage Test | PWM IC U3Rated<br>8.9V~15.5V<br><br>PFC IC U2Rated<br>11V~26V<br><br>O/P IC U801 Rated<br>4.5V~36V<br>U100 Rated<br>6.5V~35V<br><br>MCU IC U303 Rated<br>2.4V~ 3.6 V | AC ON/OFF<br>I/P:High-Line +3V = 267 V<br>O/P: (1)CV(max)<br>(2) CV(min)<br>(3)no load<br>(4)OUTPUT SHORT<br>(5) CV(min)=67.2V<br>Ta:25°C           | U3<br>(1) 13.41V<br>(2) 13.33V<br>(3) 13.41V<br>(4) 13.41V<br>(5)13.33V<br><br>U2<br>(1) 13.81V<br>(2) 13.81V<br>(3) 13.81V<br>(4) 13.81V<br>(5)13.81V | U801<br>(1) 11.0V<br>(2) 11.0V<br>(3) 10.92V<br>(4) 10.84V<br>(5) 11.0V<br><br>U303<br>(1) 3.43V<br>(2) 3.45V<br>(3) 3.49V<br>(4) 3.47V<br>(5) 3.39V |

## ■ SAFETY & E.M.C. TEST

### SAFETY TEST

| NO | TEST ITEM            | SPECIFICATION  | TEST CONDITION   | RESULT   |
|----|----------------------|--|--|--|
| 1  | WITHSTAND VOLTAGE    | EN 60950-1<br>I/P-O/P: 3 KVAC/min<br>I/P-FG:2 KVAC/min<br>O/P-FG:0.5KVAC/min | I/P-O/P: 3.6 KVAC/min<br>I/P-FG: 2.4 KVAC/min<br>O/P-FG: 0.6 KVAC/min<br>Ta:25°C | I/P-O/P: 3.242 mA<br>I/P-FG: 2.825 mA<br>O/P-FG: 3.016 mA<br>NO DAMAGE |
| 2  | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ<br>I/P-FG: 500VDC>100MΩ<br>O/P-FG:500VDC>100MΩ          | I/P-O/P: 600 VDC<br>I/P-FG: 600 VDC<br>O/P-FG: 600 VDC<br>Ta:25°C                | I/P-O/P: 9999MΩ<br>I/P-FG: 9999MΩ<br>O/P-FG: 9999M Ω<br>NO DAMAGE      |
| 3  | GROUNDING CONTINUITY | EN 60950-1<br>FG(PE) TO CHASSIS<br>OR TRACE < 100 mΩ                         | 40A / 2min<br>Ta:25°C  | 18mΩ   |

### E.M.C TEST

| NO | TEST ITEM  | SPECIFICATION   | TEST CONDITION                                      | RESULT                        |
|----|------------|---|---|-------------------------------|
| 1  | HARMONIC   | BS EN/EN61000-3-2<br>CLASS A                              | I/P:230VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C         | PASS                          |
| 2  | CONDUCTION | BS EN/EN 55032 (CISPR32),<br>BS EN / EN55014-1<br>CLASS B | I/P: 230 VAC (50HZ)<br>O/P:FULL/50% LOAD<br>Ta:25°C | PASS<br>Test by certified Lab |



|   |   |   |  |                               |
|---|---|---|--|-------------------------------|
| 3 | RADIATION   | BS EN/EN 55032 (CISPR32),<br>BS EN / EN55014-1<br>CLASS B | I/P:230VAC/50HZ<br>O/P:FULL /50% LOAD<br>Ta:25°C | PASS<br>Test by certified Lab |
| 4 | E.S.D   | BS EN/EN61000-4-2<br>AIR : 8KV / Contact : 4KV            | I/P:230VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C      | CRITERIA A                    |
| 5 | E.F.T   | BS EN/EN61000-4-4<br>INPUT: 1KV                           | I/P:230VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C      | CRITERIA A                    |
| 6 | SURGE   | BS EN/EN 61000-4-5<br>L-N :1KV<br>L,N-PE:2KV              | I/P:230VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C      | CRITERIA A                    |
| 7 | Test by certified Lab & Test Report Prepare<br>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 : NPB-750-48<br>1. ROOM AMBIENT BURN-IN : 2 HRS<br>I/P : 230VAC O/P : FULL LOAD Ta= 24.8 °C<br>2. HIGH AMBIENT BURN-IN : 2 HRS<br>I/P : 230VAC O/P : FULL LOAD Ta= 51.1 °C |                |        |



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|   |                                 |                      |   | NO        | Position | ROOM AMBIENT Ta= 24.8 °C | HIGH AMBIENT Ta=51.1°C |
|---|---------------------------------|----------------------|---|-----------|----------|--------------------------|------------------------|
|   |                                 |                      |   | 1         | ZNR1     | 33.2°C                   | 55.3°C                 |
|   |                                 |                      |   | 2         | LF1      | 37.9°C                   | 58.8°C                 |
|   |                                 |                      |   | 3         | C2       | 40.2°C                   | 59.5°C                 |
|   |                                 |                      |   | 4         | LF3      | 39.0°C                   | 58.4°C                 |
|   |                                 |                      |   | 5         | BD1      | 56.3°C                   | 73.4°C                 |
|   |                                 |                      |   | 6         | TSW1     | 41.0°C                   | 60.4°C                 |
|   |                                 |                      |   | 7         | C8       | 45.3°C                   | 62.3°C                 |
|   |                                 |                      |   | 8         | Q2       | 54.8°C                   | 72.7°C                 |
|   |                                 |                      |   | 9         | RTH1     | 44.8°C                   | 62.4°C                 |
|   |                                 |                      |   | 10        | R18      | 45.6°C                   | 63.5°C                 |
|   |                                 |                      |   | 11        | RY1      | 42.8°C                   | 60.9°C                 |
|   |                                 |                      |   | 12        | C41      | 39.7°C                   | 57.9°C                 |
|   |                                 |                      |   | 13        | C24      | 43.0°C                   | 61.1°C                 |
|   |                                 |                      |   | 14        | C6       | 41.0°C                   | 59.6°C                 |
|   |                                 |                      |   | 15        | RTH5     | 37.9°C                   | 57.9°C                 |
|   |                                 |                      |   | 16        | Q5       | 53.8°C                   | 75.5°C                 |
|   |                                 |                      |   | 17        | U3       | 44.9°C                   | 64.3°C                 |
|   |                                 |                      |   | 18        | U600     | 61.4°C                   | 80.9°C                 |
|   |                                 |                      |   | 19        | U701     | 33.8°C                   | 55.9°C                 |
|   |                                 |                      |   | 20        | L3       | 55.9°C                   | 72.5°C                 |
|   |                                 |                      |   | 21        | J103     | 42.8°C                   | 62.4°C                 |
|   |                                 |                      |   | 22        | D19      | 61.0°C                   | 77.0°C                 |
|   |                                 |                      |   | 23        | U2       | 45.8°C                   | 63.5°C                 |
|   |                                 |                      |   | 24        | D9       | 52.1°C                   | 68.8°C                 |
|   |                                 |                      |   | 25        | Q500     | 42.4°C                   | 62.4°C                 |
|   |                                 |                      |   | 26        | R228     | 47.2°C                   | 64.8°C                 |
|   |                                 |                      |   | 27        | RG5      | 46.5°C                   | 65.9°C                 |
|   |                                 |                      |   | 28        | T600     | 42.7°C                   | 62.7°C                 |
|   |                                 |                      |   | 30        | T1       | 55.8°C                   | 71.3°C                 |
|   |                                 |                      |   | 31        | Q210     | 43.6°C                   | 62.4°C                 |
|   |                                 |                      |   | 32        | C114     | 36.5°C                   | 56.5°C                 |
|   |                                 |                      |   | 33        | Q215     | 51.5°C                   | 68.6°C                 |
|   |                                 |                      |   | 34        | C115     | 42.1°C                   | 61.1°C                 |
|   |                                 |                      |   | 35        | Q355     | 36.7°C                   | 57.6°C                 |
|   |                                 |                      |   | 36        | LF100    | 34.4°C                   | 56.9°C                 |
|   |                                 |                      |   | 37        | Q331     | 28.4°C                   | 52.4°C                 |
|   |                                 |                      |   | 38        | L1       | 46.1°C                   | 63.6°C                 |
|   |                                 |                      |   | 39        | U503     | 35.1°C                   | 56.6°C                 |
|   |                                 |                      |   | 40        | U150     | 34.3°C                   | 55.4°C                 |
|   |                                 |                      |   | 41        | RG6      | 35.6°C                   | 57.0°C                 |
| 2 | LOW TEMPERATURE<br>TURN ON TEST | TURN ON AFTER 2 HOUR | I/P : 230VAC/100VAC<br>O/P : 100 %LOAD<br>Ta= -35°C | TEST : OK |          |                          |                        |





750W High Reliable Ultra Wide Output Range  
Intelligent Battery Charger

**NPB-750 series**

|    |   |   |   |                     |
|----|---|---|---|---------------------|
| 3  | HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE<br>TURN ON TEST | AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 50 °C<br>NO DAMAGE   | I/P : 272 VAC<br>O/P : FULL LOAD<br>Ta= 50.1 °C<br>HUMIDITY= 95 %R.H  | TEST : OK           |
| 4  | TEMPERATURE<br>COEFFICIENT  | ± 0.05%/ (0°C~50°C)   | I/P : 230 VAC<br>O/P : FULL LOAD  | 0.0061 %/°C(0~50°C) |
| 5  | STORAGE TEMPERATURE<br>TEST                                       | -40~85°C  | 1. Thermal shock Temperature : -45°C~ +90°C<br>2. Temperature change rate : 25°C / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 10CYCLE<br>5. Input/Output condition : STATIC   |                     |
| 6  | THERMAL SHOCK TEST  | -30~50°C  | 1. Thermal shock Temperature : -35°C~ +55°C<br>2. Temperature change rate : 25°C / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 16 CYCLE<br>5. Input/Output condition :<br>15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST<br>1cycle:230V/ FULL LOAD Burn In Test |                     |
| 7  | VIBRATION TEST  | 10 ~ 500Hz, 2G 10min./1cycle,<br>60min. each along X, Y, Z axes   | 1 Carton & 1 Set<br>(1) Waveform : Sine Wave<br>(2) Frequency : 10~500Hz<br>(3) Sweep Time : 10min/sweep cycle<br>(4) Acceleration : 3G<br>(5) Test Time : 180min in each axis (X.Y.Z)<br>(6) Ta : 25°C   |                     |
| 8  | CAPACITOR<br>LIFE CYCLE   | SUPPOSE C115 IS THE MOST CRITICAL COMPONENT<br>(1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME<br>(2) I/P : 230VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME<br>(3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME<br>(4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME | (1) 1101737.9HRS<br>(2) 323039.2HRS<br>(3) 399170.8HRS<br>(4) 483958.7HRS   |                     |
| 9  | MTBF  | Conducted by Parts Stress Analysis Prediction<br>227.6K hrs min. Telcordia SR-332 (Bellcore) ; 67.7K hrs min. MIL-HDBK-217F (25°C)  |   |                     |
| 10 | Ongoing Reliability Test  | I/P : 230VAC O/P : FULL LOAD TA=50°C<br>Demonstration Mean Time Between Failure : 30,000 hours  |   |                     |

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

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