

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2011-12 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Component Recognition
CCN:	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	AC-DC Power Supply
Model:	HN5P4-1000P. and HPCSA-1000P. (where "." minimum 5 characters, maximum 50 characters, any alphanumeric character, hyphen or blank, which denotes control number)
Rating:	AC INPUT: 100-240 Vac, 9.6-4.0 A, 50/60 Hz DC OUTPUT: CH1: 3.3 Vdc, 10 A (maximum 25 A, peak 30 A) CH2: 5 Vdc, 10 A (maximum 25 A, peak 30 A) CH3: 12 Vdc, 15 A (maximum 18 A, peak 25 A) CH4: 12 Vdc, 15 A (maximum 18 A, peak 25 A) CH5: 12 Vdc, 15 A (maximum 18 A, peak 25 A) CH6: 12 Vdc, 15 A (maximum 18 A, peak 25 A) CH7: -12 Vdc, 0.3 A (maximum 1.2 A, peak 1.2 A) CH8: 5 Vdc, 3 A (maximum 3 A, peak 4 A) Peak: maximum 5 seconds Interval: 45 seconds Total Wattage: 822 W maximum (CH1 + CH2: 207.5 W maximum, CH3 + CH4 + CH5 + CH6: 792 W maximum, CH7: 14.4 W maximum, CH8: 15 W maximum) Total Peak Wattage: 1000 W maximum (CH1 + CH2: 249 W maximum, CH3 + CH4 + CH5 + CH6: 1000 W maximum, CH7: 14.4 W maximum, CH8: 20 W maximum)
Applicant Name and Address:	NIPRON CO LTD 2-57 OHAMA-CHO AMAGASAKI-SHI HYOGO-KEN 660-0095 JAPAN

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

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Page 2 of 26

Report Reference #

E161936-A91-UL

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: Tadao Nakayama

Reviewed by: Elicia M. Sosa

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Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
 - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
 - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

This equipment is component type power supply for IT equipment.

Model Differences

Model HN4-1000. is identical to Model HPCSA-1000P. except for model designation, Battery Pack, and Connector (CN11). (where "." minimum 5 characters, maximum 50 characters, any alphanumeric character, hyphen or blank).

Suffixes denote control number which does not affect safety.

Model HN4-1000. has Battery Pack and Connector (CN11) to connect Battery Pack.

Model HPCSA-1000. does not have Battery Pack and Connector (CN11).

The tests conducted on Model HN4-1000. as the representative model.

Model HN4-1000. is supplied from Battery Pack to prevent momentary stop when disconnect from mains supply.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : for building-in (Appliance Inlet)
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10% / -15%
- Tested for IT power systems : Yes (only for Norway)
- IT testing, phase-phase voltage (V) : 230 Vac
- Class of equipment : Class I (earthed)
- Considered current rating of protective device as part of the building installation (A) : 20 A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 3000 m

- Altitude of test laboratory (m) : less than 2000 m
- Mass of equipment (kg) : 6.5 kg for Model HN5P4-1000P. (with Battery Pack) and 2.4 kg for Model HPCSA-1000P.
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 40 °C for 100% load / 60°C for 60% load
- The means of connection to the mains supply is: Detachable Power Supply Cord
- The product is intended for use on the following power systems: TN / IT (only for Norway),
- The equipment disconnect device is considered to be: Appliance Inlet
- The following were investigated as part of the protective earthing/bonding: Printed Wiring Board Trace See Enclosure Id. 5-01 for details.

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following Production-Line tests are conducted for this product: Electric Strength, Earthing Continuity
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-SELV: 336 Vrms, 625 Vpk
- The following secondary output circuits are SELV: All outputs
- The following secondary output circuits are at non-hazardous energy levels: All outputs
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- The maximum investigated branch circuit rating is: 20 A
- The investigated Pollution Degree is: 2
- Proper bonding to the end-product main protective earthing termination is: Not required
- An investigation of the protective bonding terminals has: Been conducted
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJ2 insulation system with the indicated rating greater than Class A (105°C): T201 (Class B) and T12 (Class B)
- The following end-product enclosures are required: Fire, Electrical
- The Heating Test shall be evaluated in the end-product.

Additional Information

The IEC 60950-1: 2005 CB Scheme Test Certificates (Ref. Certif. Nos. NO79056 and NO79057 dated 2014-01-16 and Ref. Certif. Nos. NO79056/M1 and NO79057/M1 dated 2014-02-07) and Test Report (Ref. No. 24358 dated 2014-01-10 and Ref. No. 253236 dated 2014-02-06) were prepared by NEMKO AS, Gaustadalleen 30, NO-0373 Oslo, Norway.

This Test Report was based on the above CB Test Certificate and Test Report and was submitted by the CB Scheme. The test results and clause verdicts of the above noted Test Report were reviewed and found to comply with the applicable U.S. and Canadian (Bi-National) Standard UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) and CSA C22.2 No. 60950-1-07, 2nd Edition, 2011-12 (Information Technology Equipment - Safety - Part 1: General Requirements). As a result the some clause verdicts and test results for this Test Report were noted as N/A and were referred to the NEMKO AS Test Reports for details. All test data has been retained in UL's files.

Load conditions were as follows (CH1, CH2, CH3, CH4, CH5, CH6, CH7, CH8)

Condition A (100% of rated resistive load)

3.3V/10A, 5V/10A, 12V/15A, 12V/15A, 12V/15A, 12V/15A, -12V/0.3A, 5V/3A

Condition B (90% of rated resistive load)

3.3V/9A, 5V/9A, 12V/13.5A, 12V/13.5A, 12V/13.5A, 12V/13.5A, -12V/0.27A, 5V/2.7A

Condition C (100% of rated resistive load (Maximum current CH1 and CH2))

3.3V/25A, 5V/25A, 12V/12.5A, 12V/12.5A, 12V/12.5A, 12V/12.06A, -12V/0.4A, 5V/3A

Condition D (100% of rated resistive load (Maximum current CH3, CH4, CH5 and CH6))

3.3V/0A, 5V/2.04A, 12V/18A, 12V/16.5A, 12V/16.5A, 12V/15A, -12V/0.4A, 5V/3A

Condition E (100% of rated resistive load (Peak current CH1 and CH2))

Repeats 5 seconds peak output current and 45 seconds rated output current.

3.3V/30A, 5V/30A, 12V/15A, 12V/15A, 12V/15A, 12V/15A, -12V/12A, 5V/4A

Condition F (100% of rated resistive load (Peak current CH3, CH4, CH5 and CH6))

Repeats 5 seconds peak output current and 45 seconds rated output current.

3.3V/0A, 5V/0A, 12V/22A, 12V/22A, 12V/22A, 12V/15.7A, -12V/0A, 5V/4A

Condition G (60% load of resistive load)

3.3V/6A, 5V/6A, 12V/9A, 12V/9A, 12V/9A, 12V/9A, -12V/0.18A, 5V/1.8A

Condition H (73% of rated resistive load (600W)) supplied from Battery Pack Unit.

3.3V/7.3A, 5V/7.3A, 12V/10.95A, 12V/10.95A, 12V/10.95A, 12V/10.95A, -12V/0.219A, 5V/2.19A

Installation Condition:

Condition A: Point A (Signal Connector) is upper side

Condition B: Point B (AC Inlet) is upper side

Condition C: Point C (Power Switch) is upper side

Condition D: Point D (Fan) is upper side

This equipment is provided a variable Fan that changes the rotating speed from low to high at ambient temperature more than approximately 28°C.

Heating Test for low speed condition was conducted in chamber at 27.5°C.

(Operating Condition E with installation Condition D, which is the worst condition at high speed condition.)

All tests were conducted with Fan, Type T80T12MGA7-52, because air flow lower than alternate Fan, Type D08A-12PS1 04A in AC-DC Power Supply.

Appliance Inlet side of Enclosure for Main Unit is evaluated to be outside surface of the end product. The other parts of Enclosure must be checked in the end product.

Three battery packs incorporated in Battery Pack Unit.

A battery pack is composed seven secondary Ni-MH battery cells. These battery cells are certified in accordance with IEC 62133 by Intertek.

Transformers T101, T201, T11 and T12 are produced by the following manufacturer according to the same specifications. The difference of manufacturer does not affect safety.

<T101, T11>

1) Nipron Co., Ltd.

2) East Corp.

- 3) Axis Corp.
- 4) Nippon Ceramic Co., Ltd.
- 5) Prisource Electronics Co., Ltd.
- 6) Toho Zinc Co., Ltd.
- 7) Todai Electric Ltd.
- 8) Smartcoil Electronical Industrial Co., Ltd.

<T201, T12>

- 1) Axis Corp.
- 2) Nippon Ceramic Co., Ltd.
- 3) Prisource Electronics Co., Ltd.
- 4) Todai Electric Ltd.
- 5) Smartcoil Electronical Industrial Co., Ltd.

Inductors LF101, LF103 and LF102 are produced by the following manufacturer with identical specifications. The difference of manufacturer does not affect safety.


<LF101, LF103>

- 1) Nipron Co., Ltd.
- 2) Ueno Corporation

<LF102>

- 1) Nipron Co., Ltd.
- 2) Toho Zinc Co., Ltd.

Markings and instructions

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
Symbols - On/Off switch	All other controls to be marked with symbol for "ON" (60417-2-IEC-5007) and  symbol for "OFF" (60417-2-IEC-5008)

Special Instructions to UL Representative						
<p>Inspect the transformer(s) listed below per AA1.1 - C.</p> <p>When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer.</p> <p>Verify the specification sheet indicates 100% routine test specified in below be conducted at the Component manufacturer.</p>						
Production-Line Testing Requirements						
<u>Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.</u>						
Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
HNSP4-1000P. and HPCSA-1000P.	Transformer (T101)	N/A	Primary to Secondary	3000	4243	1
HNSP4-1000P. and HPCSA-1000P.	Transformer (T201)	N/A	Primary to Secondary	3000	4243	1
HNSP4-1000P.	Transformer (T11)	N/A	Primary to Secondary	3000	4243	1
N/A	Transformer (T12)	N/A	Primary to Secondary	3000	4243	1
<u>Earthing Continuity Test Exemptions - This test is not required for the following models:</u>						
N/A						
<u>Electric Strength Test Exemptions - This test is not required for the following models:</u>						
N/A						
<u>Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:</u>						
N/A						
<u>Sample and Test Specifics for Follow-Up Tests at UL</u>						
Model	Component	Material	Test	Sample(s)	Test Specifics	
N/A						