

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (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:	Power Supply
Model:	PC2U-530Pxxxx (' x '=Any number 0 to 9, any letter A to Z or ' - ', not affected to safety.)
Rating:	Input: 100-240V, 5.5A-2.2A, 50/60Hz Output: CH1: 3.3V, 20A, CH2: 5V, 22A, CH3: 12V, 22A, CH4: -12V, 0.5A, CH5: 5VSB, 2A CH1 and CH2: total maximum 160W CH3: maximum 264W CH1, CH2 and CH3: total maximum 385W CH4: maximum 6W CH5: maximum 10W CH1, CH2, CH3, CH4 and CH5: total maximum 401W Output peak: CH1: 3.3V, 30A, CH2: 5V, 33A, CH3: 12V, 30A, CH4: -12V, 0.5A, CH5: 5VSB, 2.5A CH1 and CH2: total maximum 200W CH3: maximum 360W CH1, CH2 and CH3: total maximum 512W CH4: maximum 6W CH5: maximum 12.5W CH1, CH2, CH3, CH4 and CH5: total maximum 530.5W
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.

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.

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Reviewed by: Satoru Ohnishi

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Report Reference #

E161936-A25-UL

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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 product is component switching mode power supply for building into an end application.

Model Differences

N/A

Technical Considerations

- Equipment mobility : for building-in (component type)
- Connection to the mains : No direct connection
- Operating condition : continuous
- Access location : N/A
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -15%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Class I (earthed)
- Considered current rating of protective device as part of the building installation (A) : 20
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : Up to 2000
- Altitude of test laboratory (m) : Approx. 10 to 20
- Mass of equipment (kg) : 1.68
- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 45°C (100% load), 60°C (70% load)
- The means of connection to the mains supply is: Pluggable A. Detachable power cord
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Appliance inlet (Compliance shall be checked in end product.)

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: T1 1.3kVpk, 703Vrms; T2 688Vpk, 370Vrms; T3 420Vpk, 192Vrms; T4 428Vpk, 295Vrms
- The following secondary output circuits are SELV: All outputs
- The following output terminals were referenced to earth during performance testing: CN14 COM
- 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: Required
- An investigation of the protective bonding terminals has: Been conducted
- The following end-product enclosures are required: Fire, Electrical
- The peak output current is limited within continuous five seconds. In the case of use repeatedly, the time ratio is assumed to be 10% or less.

Additional Information

The rated voltage tolerance (+10%, -15%) was specified by the customer request.

Test conditions are as follows.

Condition A: Continuous operation

CH1: 3.3V, 20A CH2: 5V, 18.8A CH3: 12V, 18.75A CH4: -12V, 0.5A CH5: 5VSB, 2A, Total 401W

Condition B (Intermittent operation, 5 seconds operation under load below and 45 seconds load under condition A)

CH1: 3.3V, 30A CH2: 5V, 20.2A CH3: 12V, 26A CH4: -12V, 0.5A CH5: 5VSB, 2.5A, Total 530.5W

Condition C (No load condition)

CH1: 3.3V, 0A CH2: 5V, 0A CH3: 12V, 0A CH4: -12V, 0A CH5: 5VSB, 0A

Condition D (Continuous operation at 85V input, 90% load of condition A)

CH1: 3.3V, 18A CH2: 5V, 16.92A CH3: 12V, 16.88A CH4: -12V, 0.45A CH5: 5VSB, 1.8A

Condition E (Intermittent operation, 5 seconds operation under load below and 45 seconds under condition D at 85V input, 90% load of condition B)

CH1: 3.3V, 27A CH2: 5V, 18.18A CH3: 12V, 23.4A CH4: -12V, 0.45A CH5: 5VSB, 2.25A

Condition F (Rated peak load. Intermittent operation, 5 seconds operation under load below and 45 seconds under condition A. Sum of CH1 and CH2 is maximum load.)

CH1: 3.3V, 10.7A CH2: 5V, 33A CH3: 12V, 26A CH4: -12V, 0.5A CH5: 5VSB, 2.5A

Condition G (Rated peak load. Intermittent operation, 5 seconds operation under load below and 45 seconds under condition A. CH3 is maximum load)

CH1: 3.3V, 0A CH2: 5V, 30.4A CH3: 12V, 30A CH4: -12V, 0.5A CH5: 5VSB, 2.5A

Tma in table 4.5 is decided by Fan speed. (Ref. Enclosure ID 7-07)

Markings and instructions

Clause Title	Marking or Instruction Details
1.7.1 Power rating - Ratings	Ratings (voltage, frequency/dc, current)
1.7.1 Power	Listee's or Recognized company's name, Trade Name, Trademark or File

rating - Company identification	Number
1.7.1 Power rating - Model	Model Number
1.7.6 Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
1.7.8.3 Symbols - On/Off switch	All other controls to be marked with

Special Instructions to UL Representative

Inspect the transformer listed in BD1.1 per AA1.1 - C.
When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer.
Verify the specification sheet indicates 100% routine test specified in BD1.1 be conducted at the Component manufacturer.

Production-Line Testing Requirements

Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
PC2U-530P	Transformer (T1), Transformer (T2), Transformer (T3)	N/A	PRI to SEC	300 0	4243	1

Earthing Continuity Test Exemptions - This test is not required for the following models:

N/A

Electric Strength Test Exemptions - This test is not required for the following models:

N/A

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:

N/A

Sample and Test Specifics for Follow-Up Tests at UL

Model	Component	Material	Test	Sample(s)	Test Specifics
N/A	--	--	--	--	--