

UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 2nd Ed, 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1-14, 2nd Ed-(Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Component Recognition
CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	DC Power Supply
Model:	HPCSA-1500Px (where x maybe maximum 20 characters, any alphanumeric character, slash, hyphen or blank, which denotes control number)
Rating:	100 V-240 V, 13.3 A-5.5 A, 50/60 Hz DC OUTPUT: CH1: 3.3 Vdc, 25 A (30 Apeak) CH2: 5 Vdc, 25 A (30 Apeak) CH3 to CH9: 12 Vdc, 24 A (32 Apeak) CH10: -12 Vdc, 1 A (1.2 Apeak) CH11: 5VSB, 3 A (4 Apeak) Total Wattage: 1200 W maximum (CH1+CH2: 207.5 W maximum, CH3+CH4+CH5+CH6+CH7+CH8+CH9+CH10: 1200 W maximum, CH11: 15 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.

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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Handler

Reviewed By: Takaya Ishisue / Reviewer



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

The product is a building-in type switching power supply.

Model Differences

The suffix, "x" denotes manufacturer's production control number and does not affect to safety requirements.

Test Item Particulars

Classification of use by	Ordinary person Children likely to be present
Supply Connection	AC Mains
Supply % Tolerance	Other + 10 % / - 15 %
Supply Connection – Type	pluggable equipment type A - appliance coupler
Considered current rating of protective device as part of building or equipment installation	20 A; building;
Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Class I
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	See Enclosure Id 07-01
IP protection class	IPX0
Power Systems	TN IT - 230 V L-L
Altitude during operation (m)	3000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	approximately 2.7 kg

Technical Considerations

- The equipment disconnect device is considered to be : Appliance inlet
- The product was investigated to the following additional standards : EN 62368-1:2014 + A11:2017, UL 62368-1 2ND Ed, Issued December 1, 2014, CSA CAN/CSA-C22.2 NO. 62368-1 2nd Ed, Issued December 1, 2014
- The product was evaluated to be used in tropical climates.

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 product-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 – Earthed Dead Metal: 286 Vrms/ 598 Vpk, Primary-Secondary: 280 Vrms/ 612 Vpk
- The following output circuits are at ES1 energy levels : All outputs
- The following output circuits are at PS3 energy levels : All outputs
- 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 : Electrical, Fire
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C) : T1, T2, T1 on 6212P5 (Class B)
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- Peak current of Output is not evaluated in this report.
- The Heating Test shall be evaluated in the end-product.
- Classification of PIS has not been conducted. Therefore, all electrical components and conductors including printed wirings were assumed to be arcing/resistive PIS.
- This component has been evaluated in 'control of fire spread' method assuming appropriate fire enclosure is provided in end product. Unless the fire enclosure is made of non-combustible or V-0 material, the separation from the PIS shall be considered.
- X-Capacitors (C101, C102, C103, C105, C106) may have variation in capacitance up to 1 uF maximum. Therefore, consideration shall be given in controlling the capacitance value in end-product application with respect to capacitance discharge issue.
- Y-Capacitors (C1, C2) may have variation in capacitance up to 470 pF maximum. Y-Capacitors (C3, C4) may have variation in capacitance up to 2200 pF maximum. Y-Capacitors (C5, C214) may have variation in capacitance up to 4700 pF maximum. Therefore, consideration shall be given in controlling the capacitance value in end product application with respect to touch current issue.
- Front Cover (Appliance Inlet side) evaluated as Electrical and Fire Enclosure.

Additional Information

The Switching Power Supply has two type of Fan, type T80T12MGA7 and D08A-12PS104A. But the air flow of type D08A-12PS104A is much more than that of type T80T12MGA7 (T80T12MGA7: 0.97m³/min, D08A-12PS104A: 1.40m³/min). So All tests were conducted with fan, type T80T12MGA7 in this evaluation.

Also, Fan rotation would be change depended on internal temperature of EUT detected by thermistor (TH201), but the fan rotation speed of samples are fixed to 2,800rpm (maximum rotation speed) because the rotation speed would be considered 2,800rpm in all condition by applicant information.

Thermistor (TH102) was inactive during the test.

Tests were conducted with following output load conditions (CH1 to CH11).

Condition A (100% Load, 1200W):

CH1: 3.3 Vdc/ 25 A, CH2: 5 Vdc/ 25 A, CH3 to CH8: 12 Vdc/ 12 A, CH9: 12 Vdc/ 9.3 A, CH10: -12 Vdc/ 1 A, CH11: 5VSB/ 1 A

Condition B (90% Load, 1080W):

CH1: 3.3 Vdc/ 22.5 A, CH2: 5 Vdc/ 22.5 A, CH3 to CH8: 12 Vdc/ 10.8 A, CH9: 12 Vdc/ 8.4 A, CH10: -12 Vdc/ 0.9 A, CH11: 5VSB/ 0.9 A

Condition C (70% Load, 840W):

CH1: 3.3 Vdc/ 17.5 A, CH2: 5 Vdc/ 17.5 A, CH3 to CH8: 12 Vdc/ 8.4 A, CH9: 12 Vdc/ 6.5 A, CH10: -12 Vdc/ 0.7 A, CH11: 5VSB/ 0.7 A

Regarding the Derating of temperature of Tma and Input Voltage, see Enclosure Id: 07-01 for details.
Regarding the sample position, see Enclosure Id: 07-02 for details.

(for CB Application)

- UL Standard has requirements that meet or exceed relevant IEC requirements.

Additional Standards

The product fulfills the requirements of: EN 62368-1:2014 + A11:2017, UL 62368-1 2nd Edition, Issued December 1, 2014, CSA CAN/CSA-C22.2 No. 62368-1 2nd Edition, Issued December 1, 2014

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listees or Recognized companys name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)"
Fuses – replaceable by skilled person	Fuses (F1, F2), Ratings (25AH250V) located on adjacent to fuse.

Special Instructions to UL Representative

For transformer test - 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 Production-Line Testing Requirements be conducted at the component manufacturer.

BD1.0						
TABLE: Production-Line Testing Requirements						
BD1.1						
Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.						
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
HPCSA-1500Px	Transformer (T1, T2), Type MT6138X, Transformer (T1) on 6212P5, MT6140X	--	Primary to Secondary	4000pk	4000	1
BD1.2						
Earthing Continuity Test Exemptions – This test is not required for the following models:						
N/A						
BD1.3						
Electric Strength Test Exemptions – This test is not required for the following models:						
N/A						
BD1.4						
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						

BE1.0					
Sample and Test Specifics for Follow-Up Tests at UL					
Model	Component	Material	Test	Sample (s)	Test Specifics
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