

UL TEST REPORT AND PROCEDURE

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| 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: | Power Supply Unit |
| Model: | UZP-600-x24y, UZP-600-x48y, mUZP-600-x24y, mUZP-600-x48y (where x maybe alphanumeric character or blank which denotes control number; where y maybe maximum 20 characters, any alphanumeric character, slash, hyphen or blank which denotes control number.) |
| Rating: | <p>Models UZP-600-x24y, mUZP-600-x24y: Input: 100-240 Vac, 50-60 Hz, 8.9 A Outputs: (CH1) 24 Vdc, 25 A (without air-cooling) / 33.4 A (with air-cooling) (CH2) 12 Vdc, 0.42 A (CH3) 12 Vdc, 0.25 A (Optional)</p> <p>Models UZP-600-x48y, mUZP-600-x48y: Input: 100-240 Vac, 50-60 Hz, 8.9 A Outputs: (CH1) 48 Vdc, 12.5 A (without air-cooling) / 16.7 A (with air-cooling) (CH2) 12 Vdc, 0.42 A (CH3) 12 Vdc, 0.25 A (Optional)</p> |
| 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.

Prepared By: Masayo Ueda / Project Handler

Reviewed By: Tadao Nakayama / 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

Model UZP-600-x48y is the basic model described in this report.

Model UZP-600-x24y is identical to Model UZP-600-x48y except for output rating (CH1) and Transformers (T1, T2).

Models mUZP-600-x24y and mUZP-600-x48y are identical to Models UZP-600-x24y and UZP-600-x48y except for use of the power supply.

The suffixes "x" and "y" denote manufacturer's production control number and does not affect to safety requirements.

Unless otherwise specified, Model UZP-600-A48-JV0 was tested as a representative of entire series.

Test Item Particulars

| | |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Classification of use by | Skilled person |
| Supply Connection | AC Mains |
| Supply % Tolerance | Other + 10 % / - 15 % |
| Supply Connection – Type | pluggable equipment type A - mating connector |
| 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) | 50°C (90 to 100% load); 70°C (58.3% load or 68.75% load with air-cooling) |

| | |
|---------------------------------|-------------------------|
| IP protection class | IPX0 |
| Power Systems | TN IT - 230 V L-L |
| Altitude during operation (m) | 5000 m |
| Altitude of test laboratory (m) | approximately 10 - 20 m |
| Mass of equipment (kg) | approximately 1.3 kg |

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of : 50°C (90 to 100% load); 70°C (58.3% load or 68.75% load with air-cooling) (See Enclosure Id. 07-01.)
- The product is intended for use on the following power systems : TN, IT (for Norway)
- Considered current rating of protective device as part of the building installation (A) : 20
- 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, AS/NZS 62368.1:2018

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
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary – Earthed Dead Metal: 379 Vrms/556 Vpk, Primary-Secondary: 380 Vrms/556 Vpk
- The following output circuits are at ES1 energy levels : All secondary outputs
- The following output circuits are at PS1 energy levels : 12 Vdc outputs (CH2, CH3)
- The following output circuits are at PS3 energy levels : 24 Vdc or 48 Vdc output
- 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 : not been conducted
- The following input terminals/connectors must be connected to the end-product supply neutral : CN1 (3 Pin) or TB1 (No.2 Terminal)
- 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, and T2 (Class F), T500 (Class B)
- The power supply was evaluated to be used at altitudes up to : "5,000 m"
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- Peak current of Output(s) is not evaluated in this report.

Additional Information

Test Conditions:

- Output (CH1) load: 600W / placed on bench horizontally without air-cooling
- Output (CH1) load: 800W / placed in chassis with air-cooling
- Output (CH1) load: 350W / placed on bench horizontally without air-cooling
- Output (CH1) load: 550W / placed in chassis with air-cooling

The chassis with air-cooling were provided with 9 external forced air-cooling fans each rated 2.0m/s. Air was applied to opposite side of Input Connector (CN1) and Output Connector (CN21). Power Supply Unit was located 30 cm apart from the fans. See Enclosure Id. 07-02 for details.

(for CB only)

In this Test Report, CENELEC mark license indicating compliance to EN standard was used to verify component compliance to IEC standard because the standards are technically equivalent.

UL standards in table 4.1.2 have requirements that meet or exceed the 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, AS/NZS 62368.1:2018

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 |
| Fuses – replaceable by skilled person | "250V 20A" marked adjacent to each fuse (F1, F2). |

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 |
| UZF-600-x24y, mUZF-600-x24y | Transformers (T1, T2), Type MT1754 | -- | Primary to Secondary | 4000 | -- | 60 |
| UZF-600-x48y, mUZF-600-x48y | Transformers (T1, T2), Type MT1769 | -- | Primary to Secondary | 4000 | -- | 60 |
| UZF-600-x24y, UZF-600-x48y, mUZF-600-x24y, mUZF-600-x48y | Transformer (T500), Type MT1638 | -- | Primary to Secondary | 3000 | -- | 60 |
| BD1.2 | | | | | | |
| Earthing Continuity Test Exemptions – This test is not required for the following models: | | | | | | |
| UZF-600-x24y, UZF-600-x48y, mUZF-600-x24y, mUZF-600-x48y | | | | | | |
| BD1.3 | | | | | | |
| Electric Strength Test Exemptions – This test is not required for the following models: | | | | | | |
| UZF-600-x24y, UZF-600-x48y, mUZF-600-x24y, mUZF-600-x48y | | | | | | |
| 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 |
| N/A | -- | -- | -- | -- | -- |