CERTIFICATE OF COMPLIANCE

Certificate Number	20190910-E131881
Report Reference	E131881-A1558-UL
Issue Date	2019-SEPTEMBER-10

Issued to: DELTA ELECTRONICS INC
3 TUNGYUAN RD
CHUNGLI INDUSTRIAL ZONE
TAOYUAN CITY
32063 TAIWAN

This certificate confirms that representative samples of

COMPONENT - POWER SUPPLIES, INFORMATION TECHNOLOGY EQUIPMENT INCLUDING ELECTRICAL BUSINESS EQUIPMENT;

COMPONENT - POWER SUPPLIES FOR USE WITH AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT

See addendum page

Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.

Standard(s) for Safety: UL 60950-1 and CAN/CSA C22.2 No. 60950-1-07, Information Technology Equipment - Safety - Part 1: General Requirements.

Additional Information: See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

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Look for the UL Recognized Component Mark on the product.

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

SWITCHING POWER SUPPLY
(1) PJ-12V100WBXYZ, PJ-12V100WLXYZ, PJ-12V100WCXYZ
(2) PJ-24V100WBXYZ, PJ-24V100WLXYZ, PJ-24V100WCXYZ
(3) PJB-24V100WBXYZ, PJB-24V100WLXYZ, PJB-24V100WCXYZ

(X,Y,Z=0-9, A-Z or Blank)

Bruce Mahrenholz, Director North American Certification Program

UL LLC

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2019-05-09 (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)
Complementary CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Product:	SWITCHING POWER SUPPLY
Model:	(1) PJ-12V100WBXYZ, PJ-12V100WLXYZ, PJ-12V100WCXYZ (2) PJ-24V100WBXYZ, PJ-24V100WLXYZ, PJ-24V100WCXYZ (3) PJB-24V100WBXYZ, PJB-24V100WLXYZ, PJB-24V100WCXYZ (X,Y,Z=0-9, A-Z or Blank)
Rating:	(1) PJ-12V100WBXYZ, PJ-12V100WLXYZ, PJ-12V100WCXYZ (X,Y,Z=0-9, A-Z or Blank) Input: 100-240V~, 1.3A, 50-60Hz Output: 12Vdc, 8.5A (2) PJ-24V100WBXYZ, PJ-24V100WLXYZ, PJ-24V100WCXYZ (X,Y,Z=0-9, A-Z or Blank) Input: 100-240V~, 1.3A, 50-60Hz Output: 24Vdc, 4.3A (3) PJB-24V100WBXYZ, PJB-24V100WLXYZ, PJB-24V100WCXYZ (X,Y,Z=0-9, A-Z or Blank) Input: 100-240V~, 1.3A, 50-60Hz Output: 24Vdc, 4.3A (8.6Amax@Peak Power)
Applicant Name and Address:	DELTA ELECTRONICS INC 3 TUNGYUAN RD CHUNGLI INDUSTRIAL ZONE TAOYUAN CITY 32063 TAIWAN

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: David Chen Reviewed by: Stalling Chen

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

For Models PJ-12V100WBXYZ, PJ-24V100WBXYZ and PJB-24V100WCXYZ: Electronic components mounted on PWB.

For Models PJ-12V100WLXYZ, PJ-24V100WLXYZ and PJB-24V100WLXYZ: Electronic components mounted on PWB and installed with metal chassis.

For Models PJ-12V100WCXYZ, PJ-24V100WCXYZ and PJB-24V100WCXYZ: Electronic components mounted on PWB and installed with metal cover and chassis.

Model Differences

All models are identical except the Enclosure ID 7-01.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : Determined in the end product
- Operating condition : continuous
- Access location : Determined in end product
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- 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 A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 5000 m
- Altitude of test laboratory (m) : < 2000 m
- Mass of equipment (kg) : Max. 0.43kg (for Models PJ-12V100WCXYZ, PJ-24V100WCXYZ and PJB-24V100WCXYZ)
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma)

permitted by the manufacturer's specification of: See Enclosure ID 7-02 for details.

- The means of connection to the mains supply is: determined in the end product
- The product is intended for use on the following power systems: TN
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (which includes all European national differences, including those specified in this test report)., , The equipment is operated up to 5000 m (16404 feet) above sea level as declared by manufacturer. Clearance have been evaluated according to IEC 60664-1: table A.2 with a multiplication factor of 1.48 throughout this report., , -UL 62368-1, 2nd Edition, 2014-12-01 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements);, -CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements),
- The following were investigated as part of the protective earthing/bonding: Printed wiring board trace (See Enclosure ID 7-03 for details)
- Unless otherwise specified, the tests are performed on model PJ-12V100WCXYZ, PJ-24V100WCXYZ, PJB-24V100WCXYZ at around 25 degree C ambient temperature on an open bench at natural convection cooling in component side upward position.
- (1) For models PJ-12V100WBXYZ, PJ-12V100WLXYZ, PJ-12V100WCXYZ, PJ-24V100WBXYZ, PJ-24V100WLXYZ, PJ-24V100WCXYZ: Unless otherwise specified, all tests were performed on equipment with the representative fuse (F1) manufactured by Conquer Electronics Co., Ltd., Type UDA, rated 250Vac, T3.15AH. (2) For models PJB-24V100WBXYZ, PJB-24V100WLXYZ, PJB-24V100WCXYZ: Unless otherwise specified, all tests were performed on equipment with the representative fuse (F1) manufactured by Conquer Electronics Co., Ltd., Type UDA-P, rated 250Vac, T5AH.

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-Earthed Dead Metal: 240Vrms, 412Vpk,, Primary-SELV: 240Vrms, 416Vpk.
- The following secondary output circuits are SELV: DC Output
- The following secondary output circuits are at non-hazardous energy levels: DC Output
- The following secondary output circuits are Limited Current Circuits: DC Output
- The following output terminals were referenced to earth during performance testing: Secondary GND
- 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: Not been conducted
- 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 (Class B)
- The following end-product enclosures are required: Mechanical, Electrical, Fire
- The equipment is suitable for direct connection to: AC mains supply
- FG pin of the input connector CN1 was not evaluated as a protective bonding terminal. PWB trace between FG of CN1 and the mounting hole for screw secureness did not conduct 200A Limited Short

Circuit test. Chassis need to be protectively connected to the earth directly.

Additional Information

Additional Standards

The product fulfills the requirements of: -UL 62368-1, 2nd Edition, 2014-12-01 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements); -CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)

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.
Bonding marking	The symbol (60417-1-IEC-5017) is provided besides bonding terminal.
UL 62368-1, 2nd ed., F.3.3.3 – AC symbol	The symbol of IEC 60417-5032 shall be used for a.c. input

Special Instructions to UL Representative

- Inspect the transformer listed in Production-Line Testing Requirements (Electric Strength Test Special Constructions) 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 Production-Line Testing Requirements (Electric Strength Test Special Constructions) be conducted at the component manufacturer.

Production-Line Earthing (Grounding) Continuity Test:
All Models in this report have to be 100% passing the Earthing Continuity Test when in the routine production line. Details procedure for this test please refer to GII AC2.2.