Certificate of Compliance

Certificate: 80050148 **Master Contract:** 163595

Project: 80050148 **Date Issued:** 2020-07-28

Issued to: ABB Power Electronics, Inc
601 Shiloh Rd
Plano, TX 75074
USA

Attention: Danson Chen

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only

Issued by: *Tracy Geng*
Tracy Geng

PRODUCTS

CLASS 5311 67 - POWER SUPPLIES - Component Type (CSA/C22.2 No. 62368-1)
CLASS 5311 97 - POWER SUPPLIES - Component Type (ANSI/UL 62368-1) - Cert to U.S. Stds
Component power supply for use with Information Technology and Electrical Business Equipment where the suitability of the combination is to be determined.

Switching Power Supply, Model CC1600SC54HV
Input rated, ±190 Vdc, 7 A Max.; output rated 54.5 Vdc, 29.34 A, 1600W Max.

Notes:

1. The above models are Pollution Degree 2.
2. Mode of operation: Continuous.
3. Maximum Rated Ambient Temperature: 55˚C.
4. Class of equipment: Building-in equipment, not classified.
5. Connection to the supply: investigated in the end system/equipment
6. Altitude: Up to 5000m.

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APPLICABLE REQUIREMENTS

CSA-C22.2 No. 62368-1-19	-	Audio/Video Information and Communication Technology Equipment - Part 1: Safety Requirements
ANSI/UL 62368-1(Third Edition)	-	Audio/Video Information and Communication Technology Equipment - Part 1: Safety Requirements

CONDITIONS OF ACCEPTABILITY

1. The above unit is certified for use with other IT product only, where the suitability of each combination is to be determined by CSA.
2. The equipment shall be installed in compliance with the enclosure, mounting, spacing and heating requirements of the end-use application.
3. The equipment was located in restricted access area and only could be touched by instructed or skilled person.
4. Power supply cord is not evaluated in this power supply, suitable cord shall be supplied by manufacturer of end system.
5. The equipment enclosure must be earthed when installed to the enclosure of the end system during operation.
6. The secondary SELV outputs of this power supply are energy hazardous.

Supplement to Certificate of Compliance

Certificate: 80050148 **Master Contract:** 163595

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
80050148	2020-07-28	Original Certification.

Descriptive Report and Test Results

MASTER CONTRACT: 163595
REPORT: 80050148
PROJECT: 80050148

Edition 1: July 28, 2020; Project 80050148 - Shanghai
Prepared By: Tracy Geng
Authorized By: Tracy Geng

Contents: Certificate of Compliance - Pages 1 to 2
Supplement to Certificate of Compliance - Page 1
Description and Tests - Pages 1 to 13
Att1 Photograph & Marking Label – Pages 1 to 13

Following files is kept at CSA Main file only:
Att2 Mechanical drawing, Schematic Diagrams and PCB Layout – Pages 1 to 19
Att3 Transformer Specification – Pages 1 to 16
Att4 IEC 62368-1 CBTR 50326732 001 with CSA/US Deviations and CB Test Certificate_JPTUV-109848 – Pages 1 to 111

PRODUCTS

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Notes:

1. The above models are Pollution Degree 2.
2. Mode of operation: Continuous.
3. Maximum Rated Ambient Temperature: 55˚C.
4. Class of equipment: Building-in equipment, not classified.
5. Connection to the supply: investigated in the end system/equipment
6. Altitude: Up to 5000m.

No. 10, Ke Yan Road, Guangzhou Science Park, Luo Gang District, Guangzhou, 510663, China
Telephone: (86)20.87320648 Fax: (86)20.87320306 www.csagroup.org

APPLICABLE REQUIREMENTS

CSA-C22.2 No. 62368-1-19	-	Audio/Video Information and Communication Technology Equipment - Part 1: Safety Requirements
ANSI/UL 62368-1(Third Edition)	-	Audio/Video Information and Communication Technology Equipment - Part 1: Safety Requirements

CONDITIONS OF ACCEPTABILITY

1. The above unit is certified for use with other IT product only, where the suitability of each combination is to be determined by CSA.
2. The equipment shall be installed in compliance with the enclosure, mounting, spacing and heating requirements of the end-use application.
3. The equipment was located in restricted access area and only could be touched by instructed or skilled person.
4. Power supply cord is not evaluated in this power supply, suitable cord shall be supplied by manufacturer of end system.
5. The equipment enclosure must be earthed when installed to the enclosure of the end system during operation.
6. The secondary SELV outputs of this power supply are energy hazardous.

MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

PART 1: Minimum Markings:

Marking Method: (For Minimum Markings)

[X] CSA/UL Approved adhesive nameplate (suitable for surface to which it is applied).

Required Information: (For Minimum Markings)

[X] The submittor's name and/or Trade Mark or Contract Number "163595";
[X] Model or identifying designation;
[X] Complete electrical rating;
[X] Date of manufacture, serial number or date code traceable to month and year of manufacture;
[X] The product may bear one of the following CSA markings: CSA, or CSAus, or cCSAus.
[X] The CSA Monogram and an appropriate indicator as applicable:
[X] For Use in Canada: CSA Monogram and the optional indicator "CSA 62368-1".

[X] For Use in the U.S.: CSA Monogram, "US" indicator and the optional indicator "ANSI/UL 62368-1".
[X] For Use in Canada and the U.S.: CSA Monogram or "cUS" indicator and the optional indicators "CSA 62368-1" and "ANSI/UL 62368-1".
Note: Bilingual Markings for products with CSA Mark or CSA Mark and the cCSAus/C indicator.

Jurisdictions in Canada may require these markings to be also in French. It is the responsibility of the Customer to provide bilingual marking, where applicable, in accordance with the requirements of the Provincial Regulatory Authorities. It is the responsibility of the Customer to determine this requirement and have bilingual wording added to the "Markings".

PART 2: Additional Markings and Documentation:

Fuse Identification: F20A, AC/DC 500 V (F1, F2).
The Hot surface CAUTION provided.

ALTERATIONS

a) Markings as above appear on each unit.

FACTORY TESTS

The following tests are conducted following production
Factory tests are conducted on 100% of production.

1. Production-Line Dielectric Voltage-Withstand Test:

(a) The factory test may be done at existing room temperature.
(b) The duration of the electric strength test shall be between 1s to 4s.
(c) The test voltage may be reduced by 10 %.

Warning: The factory test(s) specified may present a hazard of injury to personnel and/or property, and should only be performed by persons knowledgeable of such hazards and under conditions designed to minimize the possibility of injury.

For REINFORCED INSULATION: The equipment at the conclusion of manufacture, before shipment, shall withstand without breakdown, the application of DC 5000V.

For BASIC or SUPPLEMENTARY INSULATION: The equipment at the conclusion of manufacture, before shipment, shall withstand without breakdown, the application of DC 2500V.

2. Production-Line Earthing-Continuity Test:

Each unit that has a power supply cord with earthing conductor shall be tested, as a routine production-line test, to determine that earthing continuity is provided between the earthing blade or pin of the attachment plug and the accessible dead metal parts of the unit that are likely to become energized.

Any indicating device (an ohmmeter, a battery and buzzer combination or the like) can be used to determine compliance. Only a single test need be made if the accessible metal selected is conductively connected to all other accessible metal.

SPECIAL INSTRUCTIONS FOR FIELD SERVICES

1. Component descriptions marked with either the "(INT)" or "(INT*)" identifiers may be substituted with other components providing the requirements specified under the notes in the "Description" are complied with.

COMPONENT SPECIAL PICKUP

1. Component descriptions marked with the identifier "(CT)" are subject to annual pickup and Conformity Testing.

DESCRIPTION

Notes:

1. Component Substitution
   a) Critical components (those identified by mfr name, cat no), which are NOT identified with either "INT" or "INT*" are not eligible for substitution without evaluation and report updating
   b) The term "INT" means a "Certified" and/or "Listed" (or a "Recognized" and/or "Accepted") component may be replaced by one "Certified" and/or "Listed" by another certification organization accredited by the appropriate accreditation body or scheme requirements to the correct standard, for the same application; providing the applicable country identifiers are included and requirements in item "d" below are complied with.
   c) The Term "(INT*)" means a "Recognized" and/or "Accepted" component may be replaced by a component that is CSA Certified. The applicable country identifiers shall be included, the requirements in item "d" below as well as any "conditions of suitability" for the component (as recorded in this descriptive report) shall be complied with;
   d) Components which have been substituted, must be of an equivalent rating, configuration (size, orientation, mounting) and the applicable minimum creepage and clearance distances are to be maintained from live parts to bonded metal parts and secondary parts.
   e) Substitution of a "Certified" and/or "Listed" component with a component that is "Recognized" or "Accepted" is not permitted without evaluation and report updating.
   f) Substitution of a "Recognized" and/or "Accepted" component by one that is not CSA Certified is not permitted without a proper evaluation as well as a report update because the Conditions of Acceptance of the original component may be different than the Conditions of Acceptance of the substitute component.

General:

The equipment under test (EUT) is a building-in type switching power supply for the use in equipment that is in the scope of IEC/EN 62368-1.
The product is a component intended for incorporation in audio/video, information and communication technology equipment, the overall compliance shall be investigated in the complete audio/video, information and communication technology equipment.
Reinforced/Double Insulation is provided between primary circuit and secondary circuit.

a) Type of Equipment: Component type.
b) Class of equipment: Not classified

c) Connection to the supply: Investigated in the end system/equipment
d) Type of Power System: Not Mains Connected
e) Mobility: For building-in.
f) Weight of Equipment: 9.6 kg.
g) Pollution Degree 2: Not sealed, not subject to dust, dirt, condensation.
h) Maximum Rated Ambient Temperature: 55˚C.
i) Installation: May be installed at the factory or in the field by submittor's trained personnel in accordance with the installation instructions provided with the equipment.
j) The unit is evaluated to operate up to 5,000 m above sea level.
k) Optional conformal coating, R/C (QMJU2), rated min. V-1, manufactured by Humiseal, part number 1A33 and UV40, minimum 0.0254mm, and 0.0508mm respectively, may be provided on the printed circuit board to add additional product robustness with functional insulation. The coating has not been evaluated to reduce pollution Degree from a safety spacing perspectives.

l) Approval codes:

C	=	CSA Certified and suitable for the application.
CA	=	CSA Component Acceptance and suitable for the application.
C*, Labeled*	=	CSA Certified with the CSA Monogram on the component and suitable for the application.
CUS	=	CSA Certified and evaluated to Canadian & US requirements.
UL	=	UL Listed and suitable for the application.
UR	=	UL Recognized and suitable for the application.
CUL, CUR	=	UL Approved and evaluated to Canadian requirements.
FI	=	Finland Certified and suitable for the application.
V	=	VDE Certified and suitable for the application.

m) This unit contains no operator access areas and the operator manual does not instruct the operator to gain access within the enclosure, or imply that access is required.

ENCLOSURE DETAILS

Part (e.g. Front Cover)	Material Details (Manufacturer, Type, Color, Thickness and Flame Rating) etc.	Size/Openings/Securement
Enclosure	Sheet metal, min thickness 0.8mm.	Consists of top and bottom covers, secured together by screws. Overall dimension measure 432 mm by 226 mm by 40 mm. Provided with the following ventilation openings: No openings are provided.

List of critical components:

TEST HISTORY

Project 80050148 Ed.1

This report is based on acceptance of CB Report, No. 50344193 001, issued by TUV Rheinland, CB Certificate No. JPTUV-110819. There is no additional test deemed to be necessary.
Detailed test results are on file at CSA.

Tests performed in CB report:

Clause	Requirement	Test (T) / Waive (W) / Not App. (N/A)	Comments
4.1.2	List of critical components	T	
4.1.15, Annex F.3.9, F.3.10	Durability, legibility and permanence of markings	T	
5.2	Classification of electrical energy sources	T	
5.4.1.4, 6.3.2, 9.0, B.2.6,	Temperature measurements	T	
5.4.1.8	Determination of working voltage	T	
5.4.1.10.3	Ball pressure test of thermoplastics	W	The phenolic materials used as bobbin in transformers are acceptable without test.
5.4.2, 5.4.3	Minimum Clearances/Creepage distances	T	
5.4.4.2	Minimum distance through insulation	T	
5.4.4.9	Solid insulation at frequencies >30 kHz	T	
5.4.8	Humidity conditioning	T	93%, 40°C, 120h
5.4.9	Electric strength tests	T	
5.5.2.2	Stored discharge on capacitors	T	
5.6.6	Resistance of protective conductors and terminations	W	The test data only for reference. Built-in product, shall be evaluated in ending products
5.7.4	Unearthed accessible parts	T	
5.7.5	Earthed accessible conductive part	T	
6.2.2	Power source circuit classifications	T	PS3
6.2.3.1	Determination of Potential Ignition Sources (Arcing PIS)	W	EUT is considered an Arcing PIS.
6.2.3.2	Determination of Potential Ignition Sources (Resistive PIS)	W	EUT is considered a Resistive PIS.
B.2.5	Input test	T	
B.3	Abnormal operating condition tests	T	
B.4	Fault condition tests	T	
Annex G.5.3	Transformer construction	T	

Clause	Requirement	Test (T) / Waive (W) / Not App. (N/A)	Comments
Annex J	Insulated winding wires	N/A	Approved the triple insulated wire is used as reinforced safeguard in the isolating transformers that is in compliance with Annex J.
Annexes T.2, T.3, T.4, T.5	Steady force test	T	
Annexes T.6, T.9	Impact tests	N/A	Built-in product, shall be evaluated in ending products
Annex Y.3	Resistance to corrosion	T	
Annex Y.4	Gaskets	W	Metal enclosure and Approved O-ring used. Tested in CBTC JPTUV-107441-M1, CBTR 50261815.
Annex Y.5	Protection of equipment within an outdoor enclosure	T	IP65
Annex Y.6	Mechanical strength of enclosures	T	

With North America National Difference.

Clause	Requirement	Compliant (C) / Not App. (N/A)	Comments
Annex DVA	Canadian and U.S. regulatory-based requirements	C	
Annex DVE	UL and CSA component requirements (mandatory)	C	
Annex DVF	UL and CSA component requirements (alternative to IEC standards)	C	
Annex DVG	UL and CSA component requirements (alternative)	C	

Construction Review:
Construction review performed with satisfactory results.

---End of Report---