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-DC Converter
Model:	MGFwxyz ("w" = S or W, "x" = 40 or 80, "y" = 05 (when "x" = 40 only), 24 or 48, "z" = 3R3 or 05 (when "w" = S only), 12 or 15 (when "w" = S or W)) Maybe provided with suffix "-$#####". ("$" is G, R or blank, "#####" is any number 0 to 9 or any letter A to Z except G and R or blank.)
Rating:	4.5 - 9 Vdc/ 7.09 A (Model MGFS40053R3), 7.87 A (MGFS400512, MGFS400515), 7.96 A (MGFS400505, MGFW400515), 8.47 A (MGFW400512) 9 - 36 Vdc/ 4.38 A (MGFS40243R3), 5.13 A (MGFS402405), 5.20 A (MGFS402415), 5.24 A (MGFS402412), 5.60 A (MGFW402412), 5.64 A (MGFW402415), 7.5 A (MGFS80243R3), 10.0 A (MGFS802412), 10.1 A (MGFS802405, MGFS802415, MGFW802412, MGFW802415) 18 - 76 Vdc/ 2.17 A (MGFS40483R3), 2.57 A (MGFS404805, MGFS404815), 2.62 A (MGFS404812), 2.77 A (MGFW404812), 2.79 A (MGFW404815), 3.8 A (MGFS80483R3), 5.0 A (MGFS804812, MGFS804815, MGFW804815), 5.1 A (MGFS804805, MGFW804812)
Applicant Name and Address:	COSEL CO LTD 1-6-43 KAMIAKAE-MACHI TOYAMA-SHI TOYAMA 930-0816 JAPAN 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:	Hirokatsu Kubota / Project Handler	Reviewed By:	Ikuro Kinno / 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 products covered in this report are components DC-DC Converter for building-in, providing functional insulation.

See Model Differences for details.

Output Ratings;

<MGF40 series>

MGFS40053R3: 2.97 - 3.63 Vdc, maximum 8 A, maximum 26.4 W
MGFS400505: 4.5 - 5.5 Vdc, maximum 6 A, maximum 30 W
MGFS400512: 10.8 - 13.2 Vdc, maximum 2.5 A, maximum 30 W
MGFS400515: 13.5 - 16.5 Vdc, maximum 2 A, maximum 30 W
MGFW400512: +12 Vdc/ 1.3 A, -12 Vdc/ 1.3 A, maximum 31.2 W
MGFW400515: +15 Vdc/ 1 A, -15 Vdc/ 1 A, maximum 30 W
MGFS40243R3: 2.97 - 3.63 Vdc, maximum 10 A, maximum 33 W
MGFS402405: 4.5 - 5.5 Vdc, maximum 8 A, maximum 40 W
MGFS402412: 10.8 - 13.2 Vdc, maximum 3.4 A, maximum 40.8 W
MGFS402415: 13.5 - 16.5 Vdc, maximum 2.7 A, maximum 40.5 W
MGFW402412: +12 Vdc/ 1.7 A, -12 Vdc/ 1.7 A, maximum 40.8 W
MGFW402415: +15 Vdc/ 1.4 A, -15 Vdc/ 1.4 A, maximum 42 W
MGFS40483R3: 2.97 - 3.63 Vdc, maximum 10 A, maximum 33 W
MGFS404805: 4.5 - 5.5 Vdc, maximum 8 A, maximum 40 W
MGFS404812: 10.8 - 13.2 Vdc, maximum 3.4 A, maximum 40.8 W
MGFS404815: 13.5 - 16.5 Vdc, maximum 2.7 A, maximum 40.5 W
MGFW404812: +12 Vdc/ 1.7 A, -12 Vdc/ 1.7 A, maximum 40.8 W
MGFW404815: +15 Vdc/ 1.4 A, -15 Vdc/ 1.4 A, maximum 42 W

<MGF80 series>

MGFS80243R3: 2.97 - 3.63 Vdc, maximum 18 A, maximum 59.4 W
MGFS802405: 4.5 - 5.5 Vdc, maximum 16 A, maximum 80 W
MGFS802412: 10.8 - 13.2 Vdc, maximum 6.7 A, maximum 80.4 W
MGFS802415: 13.5 - 16.5 Vdc, maximum 5.4 A, maximum 81 W
MGFW802412: +12 Vdc/ 3.4 A, -12 Vdc/ 3.4 A, maximum 81.6 W
MGFW802415: +15 Vdc/ 2.7 A, -15 Vdc/ 2.7 A, maximum 81 W
MGFS80483R3: 2.97 - 3.63 Vdc, maximum 18 A, maximum 59.4 W
MGFS804805: 4.5 - 5.5 Vdc, maximum 16 A, maximum 80 W
MGFS804812: 10.8 - 13.2 Vdc, maximum 6.7 A, maximum 80.4 W
MGFS804815: 13.5 - 16.5 Vdc, maximum 5.4 A, maximum 81 W
MGFW804812: +12 Vdc/ 3.4 A, -12 Vdc/ 3.4 A, maximum 81.6 W
MGFW804815: +15 Vdc/ 2.7 A, -15 Vdc/ 2.7 A, maximum 81 W

Adjustment of output voltage range was made via external control circuit.

Condition of output derating: Depends on model, input voltage and 100% of rated output is allowed within the specified temperature at the measurement points specified as “Point A”. See Enclosure Id. 7-01 for details.

Model Differences

Each models are identical except as follows:
- The input/output rating.
- Major components described in "Table 4.1.2"
- Minor components.

Nomenclature:
MGF w x y z -$#####
I II III IV V VI
I. Series name
MGF
II. Output specification
S: Single output
W: Dual output
III. Output wattege
40: 40 W
80: 80 W
IV. Input voltage
05: 4.5 - 13 Vdc
24: 9 - 36 Vdc
48: 18 - 76 Vdc
V. Output voltage
3R3: 3.3 Vdc (when "w" = S only)
05: 5 Vdc (when "w" = S only)
12: 12 Vdc (when "w" = S), +12/ -12 Vdc (when "w" = W)
15: 15 Vdc (when "w" = S), +15/ -15 Vdc (when "w" = W)
VI. Optional suffix
"$" is G, R or blank.
G: Capacitor (C901) between Input and Output is removed.
R: Reverses the logic of remote control function. (Positive)
"#####" signify marketing purpose or minor modification and does not affect safety.

Test Item Particulars	
Classification of use by	Ordinary person, Skilled person
Supply Connection	External Circuit - not Mains connected ES1 or ES2
Supply % Tolerance	None
Supply Connection – Type	for building in
Considered current rating of protective device as part of building or equipment installation	N/A
Equipment mobility	for building-in
Over voltage category (OVC)	other: not directly connected to the mains
Class of equipment	Not classified
Access location	N/A

Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient	85 °C
IP protection class	IPX0
Power Systems	N/A
Altitude during operation (m)	5000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.03 or less kg

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 85 °C (See Enclosure Id. 7-01)

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 output circuits are at ES2 energy levels : Output of all models
- The following output circuits are at PS2 energy levels : Output of all models
- The following end-product enclosures are required : Electrical, Fire
- 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 (all electrical components) shall be considered.
- Insulation between Input Terminal and Output Terminal of the DC-DC Converter complies with Functional Insulation.
- The product is intended for use on the following power systems: The equipment is for building-in, and intended to be supplied by secondary dc power source which is isolated from mains by double or reinforced insulation, highest transient voltage in secondary circuit is up to 1500 V and ES2 electrical energy source.
- This DC-DC Converter has no internal fuse, therefore Input circuit must provide external fuse in +Vin line. Test was performed at input circuit provided external fuse. (Littelfuse, Inc., Type 324, Model MGFw4005z and MGFw8024z: Rated 250V, 15A, Model MGFw4024z and MGFw8048z: Rated 250V, 10A, Model MGFw4048z: Rated 250V, 5A,) (These fuses are not certified by IEC.)
- The following secondary output circuits are Limited Power Source: Output of all models except for Model MGFS40053R3, MGFS40243R3, MGFS402405, MGFS40483R3, MGFS404805, MGFS80243R3, MGFS802405, MGFS80483R3, MGFS804805.

Additional Information

N/A

Additional Standards

The product fulfills the requirements of: N/A

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
Special Instructions to UL Representative N/A	