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NANPING SCIENTIFIC TEC INDUSTRY PARK
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Date: 2017/02/10
Subscriber: 100406148
PartySite: 108290
File No: E343741
Project No: 4787837162
PD No: 17M05853
Type: R
PO Number:

Subject: **Procedure And/Or Report Material**

The following material resulting from the investigation under the above numbers is enclosed.

Issue

<u>Date</u>	<u>Vol</u>	<u>Sec</u>	<u>Pages</u>	<u>Revised Date</u>
2014/08/07	1	16	Cert of Compliance	
2014/08/07	1	16	Revised Description Page(s) 1,6,10	2017/02/10
2014/08/07	1	16	New Test Record 4	2017/02/10

Inspections at your plant will be conducted under the supervision of Jian Li, 1701,17/F, West Tower,66 Hua cheng da dao, Zhu jiang Xin Cheng,Guangzhou, 510623, China PHONE: +86-20-38872860; FAX: 86-20-3887-2863, EMAIL: ulic316@ccicgd.com <mailto:ulic316@ccicgd.com>

Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

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BRE File

UL INSPECTION CENTER 316

DESCRIPTION

PRODUCT COVERED:

USR, CNR - Component LED Driver, Series EVMPPPA-XXXXX-VV-YYY-ZZZ, EWMPPPA-XXXXX-110-YYY-ZZZ, EVBPPPA-XXXXX-VV-YYY-ZZZ and EWBPPPA-XXXXX-110-YYY-ZZZ.

Where "PPP" - Denotes output power (Pout) rating code. If $40W < P_{out} \leq 50W$, "PPP"=050; if $50W < P_{out} \leq 60W$, "PPP"=060; if $60W < P_{out} \leq 70W$, "PPP"=070; if $70W < P_{out} \leq 80W$, "PPP"=080; if $80W < P_{out} \leq 90W$, "PPP"=090; if $90W < P_{out} \leq 100W$, "PPP"=100; if $100W < P_{out} \leq 110W$, "PPP"=110; if $110W < P_{out} \leq 120W$, "PPP"=120; if $120W < P_{out} \leq 130W$, "PPP"=130.

"A" - Denotes input voltage code. If input rated 120Vac, "A"=U; if input rated 120-277Vac, "A"=W; if input rated 277Vac, "A"=V; if input rated 230Vac, "A"=E.

"XXXXX" - Denotes regulated output current or could be blank. Regulated output current is not greater than max output regulated current within the output voltage range. The last X can be "S" or "D", which is for market purpose only and non-safety related.

"VV" - Denotes maximum output voltage. It may be "24", "26", "28", "42", "45", "48", "52", "58", "61", "80", "84" or "100".

"YYY" - Denotes customer code for market purpose only, where "Y" represents 0-9, A-Z or blank.

"ZZZ" - Denotes customer code for market purpose only, where "Z" represents 0-9, A-Z or blank.

Notes: Models EVMPPPA-XXXXX-24-YYY-ZZZ and EVBPPPA-XXXXX-24-YYY-ZZZ have been evaluated as Low voltage Limited energy (LVLE) output.

Notes: Models EVMPPPA-XXXXX-26-YYY-ZZZ, EVMPPPA-XXXXX-28-YYY-ZZZ, EVMPPPA-XXXXX-42-YYY-ZZZ, EVMPPPA-XXXXX-45-YYY-ZZZ, EVMPPPA-XXXXX-48-YYY-ZZZ, EVMPPPA-XXXXX-52-YYY-ZZZ, EVMPPPA-XXXXX-58-YYY-ZZZ, EVBPPPA-XXXXX-26-YYY-ZZZ, EVBPPPA-XXXXX-28-YYY-ZZZ, EVBPPPA-XXXXX-40-YYY-ZZZ, EVBPPPA-XXXXX-42-YYY-ZZZ, EVBPPPA-XXXXX-58-YYY-ZZZ have been evaluated as Low voltage Limited energy (LVLE) output when "PPP"=050; "PPP"=060; "PPP"=070; "PPP"=080; "PPP"=090; "PPP"=100.

Notes: For Series EVMPPPA-XXXXX-VV-YYY-ZZZ, maybe followed by suffix "S", which denotes output lead wires exit from the side of the housing. See ILL. 1 for detailed dimensions.

Conditions of Acceptability:

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by UL LLC.

1. Rated output loading for these products was achieved using electronic loads.

2. The products have been tested in a still oven required the case temperature (Tc) achieve 90°C with rated load. Tc location as shown in ILL. 22 for series EVMPPPA-XXXXX-VV-YYY-ZZZ and EWMPPPA-XXXXX-110-YYY-ZZZ, Tc location as shown in ILL. 23 for series EVBPPPA-XXXXX-VV-YYY-ZZZ and EWBPPPA-XXXXX-110-YYY-ZZZ. And the oven ambient listed in the table accordingly for information. Acceptable operation at a higher temperature should be determined in end products.

Model No.	Oven ambient (Ta) / °C		Case temperature (Tc) / °C	
	Test	Corrected Value	Test	Corrected to Tc
EVMPPPA-XXXXX-24-YYY-ZZZ	40	45.9	84.1	90
EVMPPPA-XXXXX-28-YYY-ZZZ	40	46.5	83.5	90
EVMPPPA-XXXXX-58-YYY-ZZZ	40	40.7	89.3	90
EVMPPPA-XXXXX-100-YYY-ZZZ	40	41.3	88.7	90
EVMPPPA-XXXXX-61-YYY-ZZZ	40	49.3	80.7	90
EWMPPPA-XXXXX-110-YYY-ZZZ	40	49.4	80.6	90
EVBPPPA-XXXXX-24-YYY-ZZZ	40	45.4	84.6	90
EVBPPPA-XXXXX-28-YYY-ZZZ	40	46.1	83.9	90
EVBPPPA-XXXXX-58-YYY-ZZZ	40	46.6	83.4	90
EVBPPPA-XXXXX-100-YYY-ZZZ	40	44.6	85.4	90
EVBPPPA-XXXXX-61-YYY-ZZZ	40	46.4	83.6	90
EWBPPPA-XXXXX-110-YYY-ZZZ	40	46.9	83.1	90

3. These products utilize a UL Recognized OBJ2 Class F (155) electrical insulation system.

4. These products are intended for building in. **The enclosure for these products have optional openings for output connection.** Acceptability of the LED driver- with respect to mounting, spacing, casualty, temperature and segregation- is to be determined as part of the end device evaluation.

5. These products are provided with 18 AWG, stranded, leads, rated 105°C, 300 V minimum for input and output connections. Acceptability of the leads relative to strain relief and secureness, is to be determined as part of the end device evaluation.

Model EVMPPPA-XXXXX-24-YYY-ZZZ - FIGS. 1 - 6

(ALSO REPRESENT TO MODELS EVMPPPA-XXXXX-26-YYY-ZZZ, EVMPPPA-XXXXX-28-YYY-ZZZ, EVMPPPA-XXXXX-42-YYY-ZZZ, EVMPPPA-XXXXX-45-YYY-ZZZ, EVMPPPA-XXXXX-48-YYY-ZZZ, EVMPPPA-XXXXX-52-YYY-ZZZ, EVMPPPA-XXXXX-58-YYY-ZZZ)

General - The general design, shape and arrangement shall be as illustrated except where variations are specifically described.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F) IG (I) LL
*1	Housing (For model with suffix "-S")	-	-	-	Made by Aluminum, 0.6 mm thick min. Two-part construction, secured together by snap-fit. See ILL. 1 for detailed dimension.	ILL.1
*1.1	Alternate Housing (For model without suffix "-S")	-	-	-	Same as above except for output wires routed through Housing cover. See ILL. 2 for detailed dimensions.	ILL.2
*						
2	Bushing	QMFZ2	-	-	Silicone Rubber, rated min. HB, 105°C. Snap fit to the Housing for Input/ Output leads protection.	-
3	Input/ Output Lead Wire	AVLV2, CN	Various	Various	18 AWG, rated 300 V , 105°C min.	-
4	Dimmer leads	AVLV2, CN	Various	Various	Located at secondary circuit. 22 AWG, rated 300 V , 105°C min.	-
5	Insulation Sheet	QMFZ2	DUPONT TEIJIN FILMS U S L P (E93687)	Mylar A	Two layers provided. Each, Polyethylene Terephthalate (PET) film, rated VIM-2, 105°C, min. 0.25 mm thick. See ILL. 3 for dimension details. Fully wrapped around the LED Driver.	ILL.3
6	Potting compound	QMFZ2	DONGGUAN ZHAOSHUN SILICONE NEW MATERIAL TECHNOLOGY CO LTD (E329120)	ZS-GF series	Rated V-0, 150°C, gray in color. Fully covered all the components inside housing.	-
7	Printed Wiring Board	ZPMV2	Various	Various	Rated min. V-1, 130°C. Suitable for support of live parts. See ILL. 4 for trace layouts.	ILL.4
8	Fuse (F1)	JDYX2, CN	CONQUER ELECTRONICS CO LTD (E82636)	MST	Rated 300 V, 1.6 A, connected in series with ungrounded supply.	-
-	Alternate Fuse (F1)	JDYX, CN	Various	Various	Rated 300 V, 1.6 A, connected in series with ungrounded supply.	-
9	Varistor (MV1)	VZCA2, CN	Various	Various	Rated Maximum Continuous Operation Voltage min. 320 V ac, 1000 Vpk protection voltage. Type 5, min. 85°C.	-

CERTIFICATE OF COMPLIANCE

Certificate Number 20170210-E343741
Report Reference E343741-20140807
Issue Date 2017-FEBRUARY-10

Issued to: ENERGY RECOVERY PRODUCTS (ZHUHAI) CO LTD
NANPING SCIENTIFIC TEC INDUSTRY PARK
NO 8 PINGDONG RD 2
ZHUHAI
GUANGDONG 519060 CHINA


**This is to certify that
representative samples of** COMPONENT - DRIVERS FOR LIGHT-EMITTING-DIODE
ARRAYS, MODULES AND CONTROLLERS
See Addendum

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.

Standard(s) for Safety: See Addendum

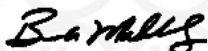
Additional Information: See the UL Online Certifications Directory at
www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's
Certification and Follow-Up Service.

The UL Recognized Component Mark generally consists of the manufacturer's identification and catalog
number, model number or other product designation as specified under "Marking" for the particular
Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products
that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark:
, may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is
required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual
recognitions.

Recognized components are incomplete in certain constructional features or restricted in performance
capabilities and are intended for use as components of complete equipment submitted for investigation rather
than for direct separate installation in the field. The final acceptance of the component is dependent upon its
installation and use in complete equipment submitted to UL LLC.

Look for the UL Certification Mark on the product.



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



CERTIFICATE OF COMPLIANCE

Certificate Number 20170210-E343741
Report Reference E343741-20140807
Issue Date 2017-FEBRUARY-10

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

EVMPPPA-XXXXX-VV-YYY-ZZZ, EWMPPPA-XXXXX-110-YYY-ZZZ, EVBPPPA-XXXXX-VV-YYY-ZZZ and EWBPPPA-XXXXX-110-YYY-ZZZ.

Where "PPP" – Denotes output power (Pout) rating code. If $40W < P_{out} \leq 50W$, "PPP"=050; if $50W < P_{out} \leq 60W$, "PPP"=060; if $60W < P_{out} \leq 70W$, "PPP"=070; if $70W < P_{out} \leq 80W$, "PPP"=080; if $80W < P_{out} \leq 90W$, "PPP"=090; if $90W < P_{out} \leq 100W$, "PPP"=100; if $100W < P_{out} \leq 110W$, "PPP"=110; if $110W < P_{out} \leq 120W$, "PPP"=120; if $120W < P_{out} \leq 130W$, "PPP"=130.

"A" - Denotes input voltage code. If input rated 120Vac, "A"=U; if input rated 120-277Vac, "A"=W; if input rated 277Vac, "A"=V; if input rated 230Vac, "A"=E.

"XXXXX" - Denotes regulated output current or could be blank. Regulated output current is not greater than max output regulated current within the output voltage range. The last X can be "S" or "D", which is for market purpose only and non-safety related.

"VV" - Denotes maximum output voltage. It may be "24", "26", "28", "42", "45", "48", "52", "58", "61", "80", "84" or "100".

"YYY" - Denotes customer code for market purpose only, where "Y" represents 0-9, A-Z or blank.

"ZZZ" - Denotes customer code for market purpose only, where "Z" represents 0-9, A-Z or blank.


Notes: Models EVMPPPA-XXXXX-24-YYY-ZZZ and EVBPPPA-XXXXX-24-YYY-ZZZ have been evaluated as Low voltage Limited energy (LVLE) output.

Notes: Models EVMPPPA-XXXXX-26-YYY-ZZZ, EVMPPPA-XXXXX-28-YYY-ZZZ, EVMPPPA-XXXXX-42-YYY-ZZZ, EVMPPPA-XXXXX-45-YYY-ZZZ, EVMPPPA-XXXXX-48-YYY-ZZZ, EVMPPPA-XXXXX-52-YYY-ZZZ, EVMPPPA-XXXXX-58-YYY-ZZZ, EVBPPPA-XXXXX-26-YYY-ZZZ, EVBPPPA-XXXXX-28-YYY-ZZZ, EVBPPPA-XXXXX-40-YYY-ZZZ, EVBPPPA-XXXXX-42-YYY-ZZZ, EVBPPPA-XXXXX-58-YYY-ZZZ have been evaluated as Low voltage Limited energy (LVLE) output when "PPP"=050; "PPP"=060; "PPP"=070; "PPP"=080; "PPP"=090; "PPP"=100.

Notes: For Series EVMPPPA-XXXXX-VV-YYY-ZZZ, maybe followed by suffix "S", which denotes output lead wires exit from the side of the housing. See ILL. 1 for detailed dimensions.

Standard(s) for Safety:

UL 8750, Light Emitting Diode (LED) Equipment For Use In Lighting Products
CSA C22.2 No. 250.13, Light emitting Diode (LED) Equipment for Lighting Applications



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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DESCRIPTION

PRODUCT COVERED:

USR, CNR - Component LED Driver, Series EVMPPPA-XXXXX-VV-YYY-ZZZ, EWMPPPA-XXXXX-110-YYY-ZZZ, EVBPPPA-XXXXX-VV-YYY-ZZZ and EWBPPPA-XXXXX-110-YYY-ZZZ.

Where "PPP" - Denotes output power (Pout) rating code. If $40W < P_{out} \leq 50W$, "PPP"=050; if $50W < P_{out} \leq 60W$, "PPP"=060; if $60W < P_{out} \leq 70W$, "PPP"=070; if $70W < P_{out} \leq 80W$, "PPP"=080; if $80W < P_{out} \leq 90W$, "PPP"=090; if $90W < P_{out} \leq 100W$, "PPP"=100; if $100W < P_{out} \leq 110W$, "PPP"=110; if $110W < P_{out} \leq 120W$, "PPP"=120; if $120W < P_{out} \leq 130W$, "PPP"=130.

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Notes: Models EVMPPPA-XXXXX-26-YYY-ZZZ, EVMPPPA-XXXXX-28-YYY-ZZZ, EVMPPPA-XXXXX-42-YYY-ZZZ, EVMPPPA-XXXXX-45-YYY-ZZZ, EVMPPPA-XXXXX-48-YYY-ZZZ, EVMPPPA-XXXXX-52-YYY-ZZZ, EVMPPPA-XXXXX-58-YYY-ZZZ, EVBPPPA-XXXXX-26-YYY-ZZZ, EVBPPPA-XXXXX-28-YYY-ZZZ, EVBPPPA-XXXXX-40-YYY-ZZZ, EVBPPPA-XXXXX-42-YYY-ZZZ, EVBPPPA-XXXXX-58-YYY-ZZZ have been evaluated as Low voltage Limited energy (LVLE) output when "PPP"=050; "PPP"=060; "PPP"=070; "PPP"=080; "PPP"=090; "PPP"=100.

Notes: For Series EVMPPPA-XXXXX-VV-YYY-ZZZ, maybe followed by suffix "S", which denotes output lead wires exit from the side of the housing. See ILL. 1 for detailed dimensions.

Conditions of Acceptability:

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by UL LLC.

1. Rated output loading for these products was achieved using electronic loads.

2. The products have been tested in a still oven required the case temperature (Tc) achieve 90°C with rated load. Tc location as shown in ILL. 22 for series EVMPPPA-XXXXX-VV-YYY-ZZZ and EWMPPPA-XXXXX-110-YYY-ZZZ, Tc location as shown in ILL. 23 for series EVBPPPA-XXXXX-VV-YYY-ZZZ and EWBPPPA-XXXXX-110-YYY-ZZZ. And the oven ambient listed in the table accordingly for information. Acceptable operation at a higher temperature should be determined in end products.

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EVMPPPA-XXXXX-61-YYY-ZZZ	40	49.3	80.7	90
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EVBPPPA-XXXXX-28-YYY-ZZZ	40	46.1	83.9	90
EVBPPPA-XXXXX-58-YYY-ZZZ	40	46.6	83.4	90
EVBPPPA-XXXXX-100-YYY-ZZZ	40	44.6	85.4	90
EVBPPPA-XXXXX-61-YYY-ZZZ	40	46.4	83.6	90
EWBPPPA-XXXXX-110-YYY-ZZZ	40	46.9	83.1	90

3. These products utilize a UL Recognized OBJ2 Class F (155) electrical insulation system.

4. These products are intended for building in. **The enclosure for these products have optional openings for output connection.** Acceptability of the LED driver- with respect to mounting, spacing, casualty, temperature and segregation- is to be determined as part of the end device evaluation.

5. These products are provided with 18 AWG, stranded, leads, rated 105°C, 300 V minimum for input and output connections. Acceptability of the leads relative to strain relief and secureness, is to be determined as part of the end device evaluation.

Model EVMPPPA-XXXXX-24-YYY-ZZZ - FIGS. 1 - 6

(ALSO REPRESENT TO MODELS EVMPPPA-XXXXX-26-YYY-ZZZ, EVMPPPA-XXXXX-28-YYY-ZZZ, EVMPPPA-XXXXX-42-YYY-ZZZ, EVMPPPA-XXXXX-45-YYY-ZZZ, EVMPPPA-XXXXX-48-YYY-ZZZ, EVMPPPA-XXXXX-52-YYY-ZZZ, EVMPPPA-XXXXX-58-YYY-ZZZ)

General - The general design, shape and arrangement shall be as illustrated except where variations are specifically described.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F) IG (I) LL
*1	Housing (For model with suffix "-S")	-	-	-	Made by Aluminum, 0.6 mm thick min. Two-part construction, secured together by snap-fit. See ILL. 1 for detailed dimension.	ILL.1
*1.1	Alternate Housing (For model without suffix "-S")	-	-	-	Same as above except for output wires routed through Housing cover. See ILL. 2 for detailed dimensions.	ILL.2
*						
2	Bushing	QMFZ2	-	-	Silicone Rubber, rated min. HB, 105°C. Snap fit to the Housing for Input/ Output leads protection.	-
3	Input/ Output Lead Wire	AVLV2, CN	Various	Various	18 AWG, rated 300 V , 105°C min.	-
4	Dimmer leads	AVLV2, CN	Various	Various	Located at secondary circuit. 22 AWG, rated 300 V , 105°C min.	-
5	Insulation Sheet	QMFZ2	DUPONT TEIJIN FILMS U S L P (E93687)	Mylar A	Two layers provided. Each, Polyethylene Terephthalate (PET) film, rated VIM-2, 105°C, min. 0.25 mm thick. See ILL. 3 for dimension details. Fully wrapped around the LED Driver.	ILL.3
6	Potting compound	QMFZ2	DONGGUAN ZHAOSHUN SILICONE NEW MATERIAL TECHNOLOGY CO LTD (E329120)	ZS-GF series	Rated V-0, 150°C, gray in color. Fully covered all the components inside housing.	-
7	Printed Wiring Board	ZPMV2	Various	Various	Rated min. V-1, 130°C. Suitable for support of live parts. See ILL. 4 for trace layouts.	ILL.4
8	Fuse (F1)	JDYX2, CN	CONQUER ELECTRONICS CO LTD (E82636)	MST	Rated 300 V, 1.6 A, connected in series with ungrounded supply.	-
-	Alternate Fuse (F1)	JDYX, CN	Various	Various	Rated 300 V, 1.6 A, connected in series with ungrounded supply.	-
9	Varistor (MV1)	VZCA2, CN	Various	Various	Rated Maximum Continuous Operation Voltage min. 320 V ac, 1000 Vpk protection voltage. Type 5, min. 85°C.	-

TEST RECORD NO. 4

SAMPLES:

A representative sample of LED Driver, Series EVMPPPA-XXXX-VV-YYY-ZZZ-S as revised naming as indicated below was submitted for review and evaluation.

- All models with output lead wire exit openings located to side of Housing have added suffix to identify the lead wire exit opening locations.

GENERAL:

No testing was considered necessary due to engineering considerations.

The test methods and results of the above tests have been reviewed and found in accordance with the requirements in the following:

Standard	Title	Edition or Publication Date	Latest Revision Date
CAN/CSA C22.2 No. 250.13-14	Light emitting diode (LED) equipment for lighting applications	2 nd	2014-07-01
UL 8750	Light Emitting Diode (LED) Equipment For Use In Lighting Products	2 nd	2016-11-23

Test Record Summary:

The results of this investigation indicate that the products evaluated comply with the applicable requirements and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report. Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Test Record by:

Reviewed by:

Jacqueline Leung
Engineer
UL International Ltd.

Cathy Fan
Project Engineer
UL International Ltd.

Andrew Butt
Senior Project Engineer
UL International Ltd.