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For your convenience, the below describes the related updates:

E537910-vol1-Index
E537910-20240129-CertificateofCompliance
E537910-20240129-Description
Figure-6-Total
Illustration-4-Total
E537910-20240129-TestRecord

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INDEX

Product Covered	Section	USR	CNR	Report Date
Heating film, models: *JL-D25, JL-D30, JL-D35, JL-D40, JL-T2040, JL-T2545, JL-T3045, JL-XXYY, JL-XXXYYY (XX/XXX = 10/010 to 99/100 representative length in cm of heater, YY/YYY = 10/010 to 99/100 representative width in cm of heater)	1	x	x	2024-01-29

Note: USR - Evaluated to United States Standards - Recognized
CNR - Evaluated to Canadian National Standards - Recognized

Certificate of Compliance

Certificate Number:

UL-US-2404318-1

Report Reference:

E537910-20240129

Issue Date:

2024-09-26

Issued to:

JIELING TECHNOLOGY (GUANGZHOU) CO.,LTD
2F HuaXiu Road16, DongHua Industry Park, RenHe Town,
BaiYun District, GuangZhou City (White clouds in the airport)
Guangzhou, Guangdong 510470
China

This certificate confirms that representative samples of:

KSOT2 - Heaters, Specialty - Component

See Addendum Page for Product Designation(s).

Have been evaluated 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.

UL 499, Edition 14, Issue Date 2014-11-07, Revision Date 2023-05-31

Additional Information:

See UL Product iQ® at <https://iq.ulprospector.com> for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Recognized Component Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance 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.

Look for the UL Recognized Component Mark on the product.



A handwritten signature in black ink, appearing to read 'David Piecuch'.

David Piecuch
UL Mark Certification Program Owner

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CERTIFICATE OF COMPLIANCE

Certificate number UL-US-2404318-1
Report reference E537910-20240129
Date 2024-09-26



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CERTIFICATE OF COMPLIANCE

Certificate number UL-US-2404318-1
Report reference E537910-20240129
Date 2024-09-26

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

Model	Product Description
JL-D25	Heating Elements - Component
JL-D30	Heating Elements - Component
JL-D35	Heating Elements - Component
JL-D40	Heating Elements - Component
JL-T2040	Heating Elements - Component
JL-T2545	Heating Elements - Component
JL-T3045	Heating Elements - Component
JL-XXXXYY, (XXX = 010 to 100 representative length in cm of heater, YYY = 010 to 100 representative width in cm of heater)	Heating Elements - Component
JL-XXYY, (XX = 10 to 99 representative length in cm of heater, YY = 10 to 99 representative width in cm of heater)	Heating Elements - Component



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Certificate of Compliance

Certificate Number:

UL-CA-2403673-1

Report Reference:

E537910-20240129

Issue Date:

2024-09-26

Issued to:

JIELING TECHNOLOGY (GUANGZHOU) CO.,LTD
2F HuaXiu Road16, DongHua Industry Park, RenHe Town,
BaiYun District, GuangZhou City (White clouds in the airport)
Guangzhou, Guangdong 510470
China

This certificate confirms that representative samples of:

KSOT8 - Heaters, Specialty Certified for Canada - Component

See Addendum Page for Product Designation(s).

Have been evaluated 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.

CSA C22.2 NO. 72-10, 3rd Ed., Issue Date: 2010-02-01, Revision Date: 2019-05-01

Additional Information:

See UL Product iQ® at <https://iq.ulprospector.com> for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Recognized Component Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance 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.

Look for the UL Recognized Component Mark on the product.



A handwritten signature in black ink, appearing to read 'David Piecuch'.

David Piecuch
UL Mark Certification Program Owner

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CERTIFICATE OF COMPLIANCE

Certificate number UL-CA-2403673-1
Report reference E537910-20240129
Date 2024-09-26

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

Model	Product Description
JL-D25	Heating Elements - Component
JL-D30	Heating Elements - Component
JL-D35	Heating Elements - Component
JL-D40	Heating Elements - Component
JL-T2040	Heating Elements - Component
JL-T2545	Heating Elements - Component
JL-T3045	Heating Elements - Component
JL-XXXXYY, (XXX = 010 to 100 representative length in cm of heater, YYY = 010 to 100 representative width in cm of heater)	Heating Elements - Component
JL-XXYY, (XX = 10 to 99 representative length in cm of heater, YY = 10 to 99 representative width in cm of heater)	Heating Elements - Component



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File E537910
Project 4791077833

January 29, 2024

REPORT

ON

COMPONENT - HEATERS, SPECIALTY

JIELING TECHNOLOGY (GUANGZHOU) CO.,LTD
Guangzhou, China

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DESCRIPTION

PRODUCT COVERED:

*USR, CNR - Heating film, models: JL-D25, JL-D30, JL-D35, JL-D40, JL-T2040, JL-T2545, JL-T3045, **JL-XXYY, JL-XXXYYY. (XX/XXX = 10/010 to 99/100 representative length in cm of heater, YY/YYY = 10/010 to 99/100 representative width in cm of heater)**

ELECTRICAL RATINGS:

Model	Voltage (V)	Frequency (Hz)	Wattage (W)	Max. Wattage Density (W/cm ²)	Size Length (mm) * Width (mm)
*JL-D25, JL-D30, JL-D35, JL-D40, JL-T2040, JL-T2545, JL-T3045	120	60	40	0.0267	300*500
JL-XXYY, JL-XXXYYY	120	60	5-240	0.024	JL-015015 means 15 cm by 15cm

GENERAL:

The components covered by this report are heating films comprised of heating wire connected to leads. The resistance heating wire is encased by two sheets of plastic PET film. The heater has a self-adhesive back for mounting.

MODEL DIFFERENCES:

*JL-D25, JL-D30, JL-D35, JL-D40, JL-T2040, JL-T2545, JL-T3045 are identical except the model designation.

JL-XXYY and JL-XXXYYY are identical to JL-D25 except for dimension and Wattage Density.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):

Use - The components covered by this Report are intended for use in an end product appliances and similar equipment where the suitability of the combination is to be determined by UL LLC.

USR indicates evaluation to the US Safety Scheme. Details of standard and version refer to Test Record.

CNR indicates evaluation to the Canadian Safety Scheme. Details of standard and version refer to Test Record.

Conditions of Acceptability

The following items are to be considered when evaluating these heaters in the end use product.

1. This Report covers only the general construction features of the Heaters. Only limited evaluation of the performance characteristics have been made. Therefore, the acceptability of these heating elements when operated under normal or abnormal load conditions within an appliance or enclosure must be determined for each use.
2. The component heating film do not employ electrical insulation or an enclosure. The suitability and need for insulation and an overall enclosure shall be determined in the end use.
3. Products provided with securement/mounting means (adhesive) have not been evaluated for securement performance and the suitability should be considered under the end product evaluation.
4. The heater shall not be mounted to dead-metal parts which are conductively bonded to ground or are exposed to user contact. No grounding provided on this heating film.
5. These products have not been evaluated for use outdoors or wet locations. Suitability shall be determined in the end-product investigation.
6. The heating elements have not been tested for bending or flexing. Any use where flexing will occur in the end-use application shall be given consideration.

7. The heaters described in the report have been tested suspended in air considering this condition representative of the worst-case working condition simulating the disconnection of the heaters from a heat dissipating surface. The following temperature limits shall be considered in the end use application during normal temperature test:

Insulation Layer - Maximum 105°C
Connection Cover - Maximum 130°C
Flexible Cord - Maximum 105°C
Silicone Glue - Maximum 105°C
8. The suitability of the strain relief means shall be determined in the end use application.
9. The suitability of connectors leads, including the temperature rating, voltage rating, and AWG shall be determined and described in the end use application.
10. These heaters have been designed to deliver nameplate wattage as supplied. They should not be cut in an attempt to resize the units.
11. The heater envelope shall not be pierced during installation.
12. The max. surface temperature of the heater envelope shall not exceed 50°C.

CONSTRUCTION DETAILS:

General - For details of construction, reference should be made to the following photographs and their accompanying descriptions. The general design, shape and arrangement shall be as depicted unless otherwise specified.

Dimensions - All dimensions are approx. unless specified as "max" or "min".

Markings - See Section General.

Spacings - See Section General.

Illustration - The following illustrations are included in this report.

ILL.	Description	Model
1	Layout Drawing for Resistance Heating Wires	JL-D25
2	Drawing for Connection Cover	All
3	Exploded drawing	All
4	Layout for Resistance Heating Wires	JL-100100

Figures - The following figures are included in this report.

FIG.	Description	Model
1	Overall view for model	JL-D25
2	Internal view of Insulation Layer for model	JL-D25
3	Internal view of Connection Block	All
4	Front view	JL-100100
5	Bottom view	JL-100100
6	Internal View	JL-100100

*Heating film, Model **JL-D25** - FIG. 1, 2, 3

*General - FIG. 1, 2, 3 show an overall view **and internal view** of JL-3050, also represented model **JL-D25, JL-D30, JL-D35, JL-D40, JL-T2040, JL-T2545, JL-T3045**.

1. Insulation Layer - R/C (QMFZ2/8) CELANESE INTERNATIONAL CORP (E93687), PET, designated Melinex 238(b), rated VTM-2, 140°C, HWI=0, HAI=2, CTI=0). Measured thickness 0.13 mm. Top and Bottom layer. Two layers are secured together by Adhesive, Type HMDFR, Manufactured by DONGGUAN CITY HENGMAO ADHESIVE PRODUCT CO., LTD.
2. Flexible Cord - Two Provide, Any Listed (ZJCZ/7), Type SPT-2, rated min. 300 V, 105°C, 18 AWG size. One end interwind Resistance Heating Wires and soldered together.
3. Resistance Heating Wires - Enamelled nickel-copper wire, 8.96g/cm², 0.1 mm OD. Keep 10 mm to 20 mm spacing from the edge.
4. Connection Cover - R/C (QMFZ2/8) SABIC INNOVATIVE PLASTICS US L L C (E121562), Type 945(GG), PC, rated V-0, 130°C, HWI=3, HAI=3, CTI=2. Measured 1.0 mm thickness. See ILL.2 for dimension details. (Eng. Note: contacts uninsulated live parts).
5. Silicone Glue - R/C (QMFZ2/8) Guangzhou Huitian New Material Co Ltd (E306078), Type 9661E, RTV, rated V-0, HWI=0, HAI=0, RTI=105°C, CTI=0. Minimum 3.2 mm thick. Used for securing the Connection Cable and Connection Cover onto Insulation Layer. (Eng. Note: contacts uninsulated live parts).
6. Adhesive (optional) - Pressure sensitive adhesive, be applied to surface of Insulation.

Heating film, Model JL-100100 - FIG. 4, 5, 6

General - FIG. 4, 5, 6 shows an overall view and internal view of JL-100100, also represented series model JL-XXYY and JL-XXXYYY.

1. Insulation Layer - R/C (QMFZ2/8) CELANESE INTERNATIONAL CORP (E93687), PET, designated Melinex 238(b), rated VTM-2, 140°C, HWI=0, HAI=2, CTI=0). Measured thickness 0.13 mm. Top and Bottom layer. Two layers are secured together by Adhesive, Type HMDFR, Manufactured by DONGGUAN CITY HENGMAO ADHESIVE PRODUCT CO., LTD.
2. Resistance Heating Wires - Enamelled nickel-copper wire, 0.03 to 0.21 mm OD. Keep 10 mm to 20 mm spacing from the edge.
3. Connection Cover - R/C (QMFZ2/8) SABIC INNOVATIVE PLASTICS US L L C (E121562), Type 945(GG), PC, rated V-0, 130°C, HWI=3, HAI=3, CTI=2. Measured 1.0 mm thickness. See ILL.2 for dimension details. (Eng. Note: contacts uninsulated live parts).
4. Silicone Glue - R/C (QMFZ2/8) Guangzhou Huitian New Material Co Ltd (E306078), Type 9661E, RTV, rated V-0, HWI=0, HAI=0, RTI=105°C, CTI=0. Minimum 3.2 mm thick. Used for securing the Connection Cable and Connection Cover onto Insulation Layer. (Eng. Note: contacts uninsulated live parts) Used for securing the Leads and Connection Block onto Insulation Layer.
5. Leads - Listed (ELBZ/7), SPT-1 or SPT-2, rated min. 300 V, 105°C, 18 AWG x 2. One end interwind Resistance Heating Wires and soldered together.
6. Lead connector (optional)- R/C (ECBT2/8), HUIZHOU CITY TAIJI ELECTRONICS INDUSTRIAL CO LTD (E305281) Type: TCH4201 Series, Rated 250 Vac, 10 A, 85°C, 2 poles, suitable for conductor sizes 18-22 AWG.
7. Adhesive (optional) - Pressure sensitive adhesive, be applied to surface of Insulation.

Figure-1 Page-1



Figure-2 Page-1



Figure-3 Page-1



Figure-4 Page-1



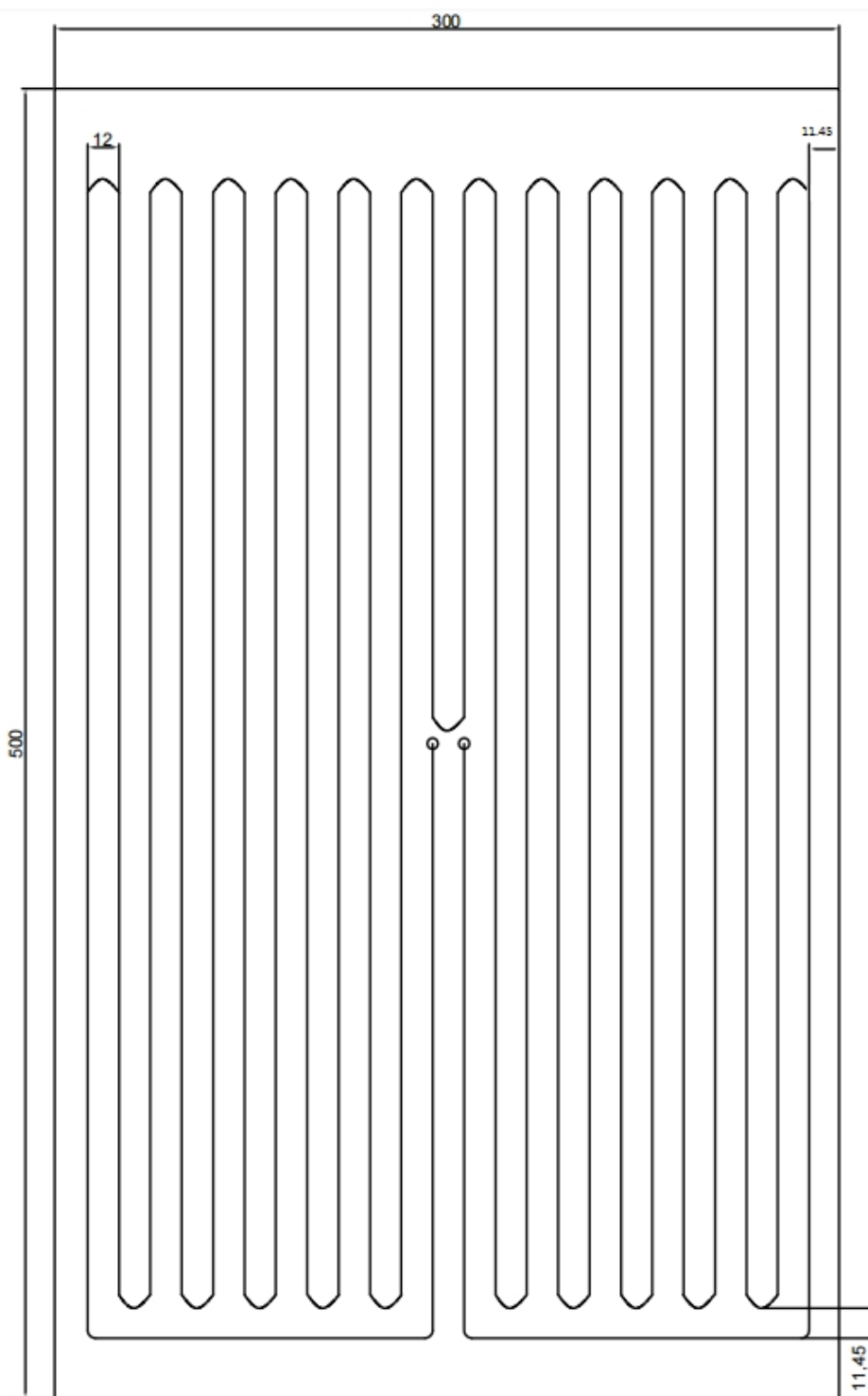
Figure-5 Page-1



Figure-6 Page-1

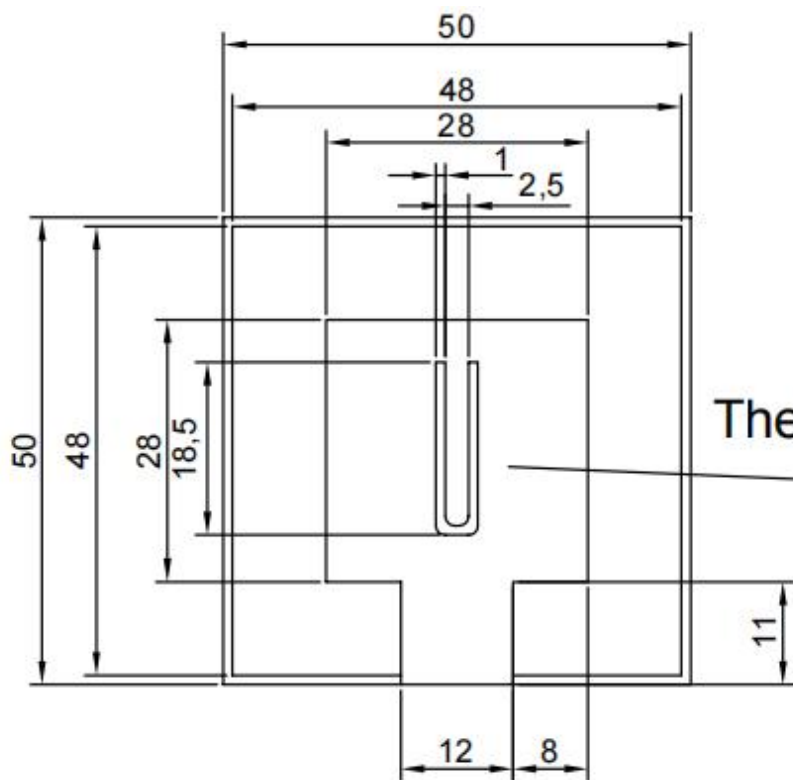


The following Page(s) are related to Illustration-1. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

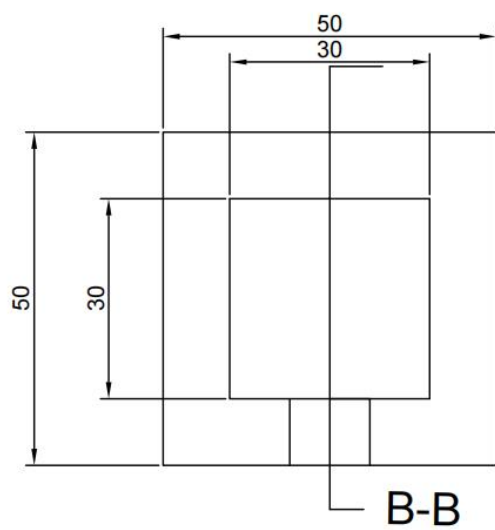


- 1、 Material:Copper
- 2、 Resistance:30Ω/m
- 3、 Total length:11.65m
- 4、 heating consumption:about 40W with input 120Vac
- 5、 Unit: mm

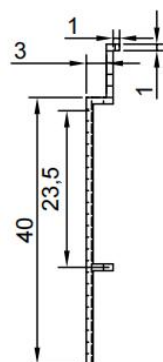
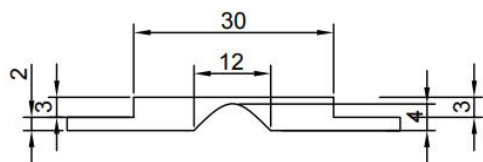
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The height of the wall is 3mm



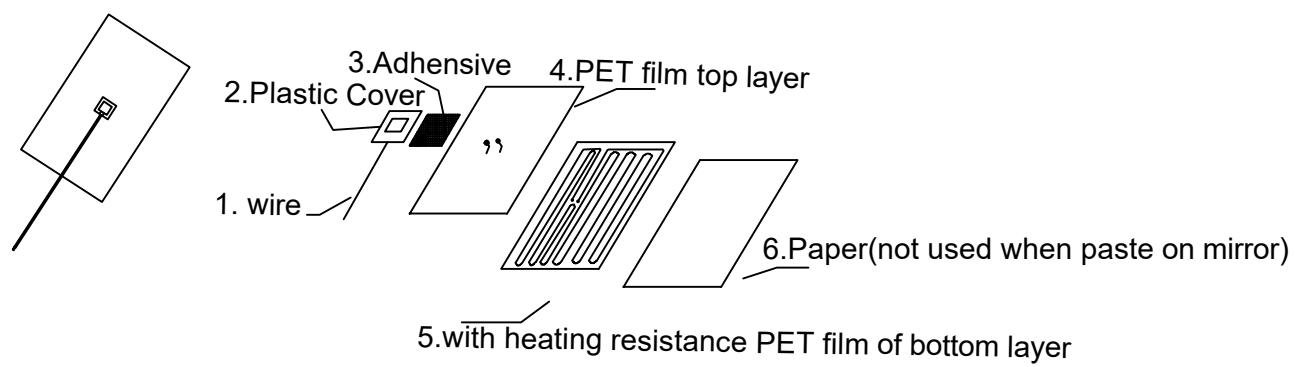
B-B



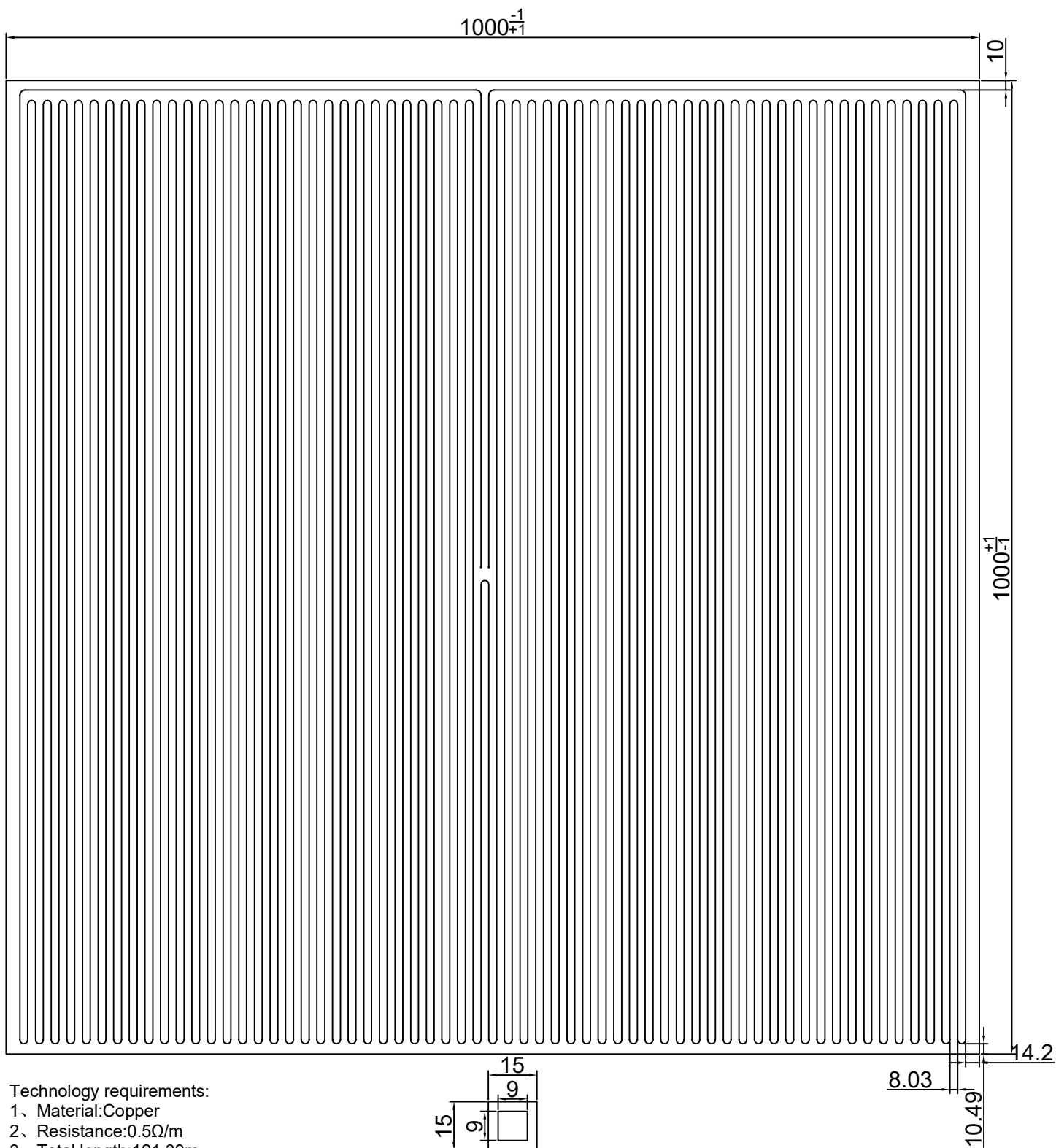
Section B-B

Unit: mm

The following Page(s) are related to Illustration-3. The next supplement, if applicable, will be identified with a new Supplement Page Heading.



The following Page(s) are related to Illustration-4. The next supplement, if applicable, will be identified with a new Supplement Page Heading.



Technology requirements:

- 1、Material:Copper
- 2、Resistance: $0.5\Omega/\text{m}$
- 3、Total length:121.39m
- 4、heating consumption:about 240W with the input voltage 120Vac

Technology requirements:

- 1、Material:PC
- 2、thickness:1mm

TEST RECORD NO. 1

PRODUCTS:

Samples of Heating film, JL-3050, JL-2030, JL-2040, JL-2540, JL-2550, JL-3040, JL-3045, JL-3060, JL-3070, JL-3550, JL-3555, JL-4040, JL-4050, JL-4060, JL-4070, JL-4080, JL-4540, JL-4550, JL-4560, JL-4570, JL-4580, JL-5050, JL-5060, JL-5070, JL-5080, JL-6060, JL-6070, JL-6080, JL-6090, JL-60100, JL-6570, JL-6580, JL-6590, JL-65100, JL-D25, JL-D30, JL-D35, JL-D40, JL-T2040, JL-T2545, JL-T3045 as indicated below and constructed as described herein, were submitted by the manufacturer for examination and test.

Model	Voltage (V), Frequency (Hz)	Maximum Wattage (W)	Wattage Density (W/m ²)	Maximum Size Length(mm) * Width (mm)
all	120V, 60Hz	40	267	300*500

Because all models are identical except of model designation, model JL-3050 was used for investigation purposes and was considered as representative of all models.

GENERAL:

Test results relate only to the items tested.
The following tests were conducted.

TEST	STANDARD	CODE (See Below)	CLAUSE
POWER INPUT TEST (RATING)	UL 499 (CSA C22.2 No. 72)	S	33 (6.2)
LEAKAGE CURRENT TEST (CORD CONNECTED PRODUCTS) LEAKAGE CURRENT TEST (ALL PRODUCTS)	UL 499 (CSA C22.2 No. 72)	S	34 (6.11)
NORMAL TEMPERATURE TEST	UL 499	OS	36
INSULATION RESISTANCE AS A RESULT OF MOISTURE	UL 499	OS	37.1 and 37.2
DIELECTRIC VOLTAGE- WITHSTAND TEST (DIELECTRIC STRENGTH)	UL 499 (CSA C22.2 NO. 72)	S	38 (6.4)
MOLD STRESS TEST	UL 746C	OS	(61)
AGING TEST (SILICONE, POLYAMIDE OR SIMILAR SPECIAL HEATERS ONLY)	(CSA C22.2 NO. 72)	OS	(6.6)
S = Same test. OS = Testing requirements come from one standard only.			

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standards noted below and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Latest Revision Date
UL 499	ELECTRIC HEATING APPLIANCES	14th	05/31/2023
CSA C22.2 No. 72	HEATER ELEMENTS	3rd	05/2019

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TEST RECORD NO. 2

SAMPLES:

Samples of Heating film, series model JL-XXYY and JL-XXXYYY (XX/XXX = 10/010 to 99/100 representative length in cm of heater, YY/YYY = 10/010 to 99/100 representative width in cm of heater) as indicated below and constructed as described herein, were submitted by the manufacturer for examination and test.

Model	Voltage (V)	Frequency (Hz)	Wattage (W)	Wattage Density (W/cm ²)	Size Length (mm) * Width (mm)
JL-XXYY, JL-XXXYYY	120	60	5-240	0.0240	JL-015015 means 15 cm by 15cm

Model JL-100100 rated 120V, 60Hz, 240W, 0.024W/cm² was used for investigation purposes and was considered as representative for series model JL-XXYY and JL-XXXYYY due to max. Wattage with same Wattage Density.

GENERAL:

Test results relate only to the items tested.
The following tests were conducted.

TEST	STANDARD	CODE (See Below)	CLAUSE
POWER INPUT TEST (RATING) #1	UL 499 (CSA C22.2 No. 72)	S	33 (6.2)
LEAKAGE CURRENT TEST (CORD CONNECTED PRODUCTS) LEAKAGE CURRENT TEST (ALL PRODUCTS)	UL 499 (CSA C22.2 No. 72)	S	34 (6.11)
NORMAL TEMPERATURE TEST	UL 499	OS	36
INSULATION RESISTANCE AS A RESULT OF MOISTURE	UL 499	OS	37.1 and 37.2
DIELECTRIC VOLTAGE-WITHSTAND TEST (DIELECTRIC STRENGTH)	UL 499 (CSA C22.2 NO. 72)	S	38 (6.4)
MOLD STRESS TEST	UL 746C	OS	(61)
AGING TEST (SILICONE, POLYAMIDE OR SIMILAR SPECIAL HEATERS ONLY)	(CSA C22.2 NO. 72)	OS	(6.6)
S = Same test. OS = Testing requirements come from one standard only.			

#1 - Model JL-100100, JL-070070 and JL-015015 were subjected to POWER INPUT TEST only.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standards noted below and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Latest Revision Date
UL 499	ELECTRIC HEATING APPLIANCES	14th	2023-05-31
CSA C22.2 No. 72	HEATER ELEMENTS	3rd	2019-05-01

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Senior Project Engineer

Reviewed by:

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Senior Staff Engineering Associate

CONCLUSION

Samples of the components covered by this Report have been found to comply with the requirements covering the category and the components are found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the sample(s) investigated by UL and does not signify the product(s) described as being covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the Recognized Marking on such products which comply with UL's Follow-Up Service Procedure and any other applicable requirements of UL LLC. The Recognized Component Mark of UL LLC on the product, or the Recognized Marking symbol on the product and the Recognized Component Mark on the smallest unit container in which the product is packaged, is the only method to identify products investigated by UL to published requirements and manufactured under UL's Recognition and Follow-Up Service.

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